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# Implementation of the Precautionary Approach in the Regulation of Genetically Modified Organisms:

**An African Context**

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Thesis presented for the approval of Senate in fulfilment  
of the requirements for the degree of **DOCTOR OF  
PHILOSOPHY** in the Department of Public Law

**SEPTEMBER 2011**

## DECLARATION

I declare that this thesis for the degree of Doctor of Philosophy at the University of Cape Town hereby submitted, has not been previously submitted for a degree at this or any other University. The thesis is my work in design and execution and all the materials contained herein have been duly acknowledged.

I draw the attention of the Doctoral Degrees' Board to the fact that my hard drive containing my research up to 24 February 2011 was stolen from my office on that date. However, a backup copy, which contained my work completed up to 02 February 2011, was available. Thus work for a period of three weeks was lost and recommenced on 24 February 2011. This information is deemed relevant in the event that my research is fraudulently used by another party as their own work for any purpose. The Dean of the Faculty of Law at the University of Cape Town, my Supervisors and the Chairperson of the Doctoral Degrees' Committee were informed of this at the time.

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**Charles Otuke Moitui**

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**Date**

MTXCHA002

## DEDICATION

To my beloved parents, the late Henry Moitui Omweno (1925-2009), and *Mama* Elizabeth Moraa for their continuous love, sacrifice and support.

To my dearest and beloved wife, Marcella Otuke and our children Edgar Moitui, Kenn Moreka Otuke and Brian Mecha Otuke for their sacrifice, love, encouragement and support. I have no words to express my most sincere and wholehearted gratitude to each of them.

University of Cape Town

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## LIST OF ABBREVIATIONS

ABSF	African Biosafety Stakeholders Forum
ABSP	Agricultural Biotechnology Support Programme
AU	African Union
BAZ	Biosafety Authority of Zambia
BSWG	Working Group on Biosafety
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CIL	Customary International Law
CIMMYT	International Maize and Wheat Improvement Centre
EAC	East African Community
ECGMOs	Executive Council for Genetically Modified Organisms
EMA	Environmental Management Act
EC	European Community
EU	European Union
FAO	United Nations Food and Agriculture organization
GM	Genetically modified
GMOs	Genetically modified organisms
ICESCR	International Convention on Economic, Social and Cultural Rights.
ICJ	International Court of Justice.
ICTSD	International Centre for Trade and Sustainable Development.
IEL	International Environmental Law
IFPRI	International Food Policy Research Institute
IPRs	Intellectual property rights
ISAAA	International Service for Acquisition of Agri-Biotech Applications

ISNAR	International Service for National Agricultural Research
KARI	Kenya Agricultural Research Institute
KIRDI	Kenya Industrial Research and Development Institute
LMOs	living modified organisms
MEAs	Multilateral Environmental Agreements
NBA	National Biosafety Authority - Kenya
NBF	National Biosafety Frameworks
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act.
OAU	Organisation of African Unity
OECD	Organisation of Economic Cooperation and Development
RECs	Regional Economic Communities
SADC	Southern African Development Community
SPS	Agreement on Sanitary and Phytosanitary Measures
TBT	Agreement on Technical Barriers to Trade
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea .
UNCTAD	United Nations Conference on Trade and Development.
UNESCO	United Nations Educational Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
USAID	United States Agency for International Development
USGC	US Grains Council
WTO	World Trade Organization

## **Short Forms**

Art. Article

para Paragraph

R&D Research and development

s. Section

SC Selected Countries

v. versus

## **Abbreviations for Law Reports**

CLR Commonwealth Law Reports

FCAFC The Federal Court of Australia.

LGERA Local Government and Environmental Reports of Australia

R.I.A.A Reports of International Arbitral Awards

SCC Supreme Court Cases of India

SKQB Saskatchewan Court of Queen's Bench

I L Reports International Law Reports

SA South African Law Reports

ZACC South African Constitutional Court Law Reports

## ABSTRACT

This thesis critically examines the regulation of genetically modified organisms (GMOs) in the selected countries of South Africa, Kenya, Zambia and Namibia. It investigates whether a jurisprudence may be developed through the implementation of the precautionary approach. This should be done in such a manner as to enhance the credibility of their biosafety legislation, but still promote biotechnology, with a view of possible replication across Sub-Saharan Africa (SSA).

In the 1970s, advances in scientific innovations in biotechnology, resulted in the introduction of genetically modified (GM) seed into global agriculture. The inherent uncertainty of scientific experimentation generated controversy that polarised the international community into two camps. Those opposing include environmentalists, and some members of the public who argue that GMOs are potentially harmful to the environment and humans. Proponents such as biotechnology companies, claim that GMOs may increase farm yields and contribute to protection of the environment. Underlying the debate, are issues concerning international trade in GMOs.

Most African countries are in a dilemma on whether to accept GMOs, and if so, how and to what extent such organisms may be regulated. In 2000, the Cartagena Protocol on Biosafety was adopted to 'govern' trans-boundary movement of living modified organisms (LMOs, a different acronym for GMOs). It embraced the precautionary approach—often understood to mean 'better safe than sorry'—which opponents consider a useful tool for addressing scientific uncertainty. Some proponents, however, regard it as a mechanism which may be used by states to unnecessarily restrict trade to suit their political interests.

The success of the Protocol is dependent upon effective domestic implementation. Most African states are parties to it, but, for them, implementation is problematic for various reasons which include the lack of capacity and absence of workable biosafety legislation. The framework of this thesis is therefore anchored on a dilemma attributable to a set of three issues.

First, biotechnology operates in the face of irreconcilable socio-economic, political and environmental values. African states need to protect their rich biodiversity and the health of the people against potential harm of GMOs. At the

same time, they have large undernourished populations and their economies are largely dependent on agriculture.

Second, the precautionary approach is a tool that may be used to achieve an effective balance between protection of the environment, human health and agricultural trade. While the Cartagena Protocol is founded on the precautionary approach, implementation of the approach in the selected countries is essential, but problematic, because there is confusion as to its meaning and purpose. The result is that their biosafety legislation is flawed, such that achieving an effective balance among the competing imperatives in regulation of GMOs remains a challenge. Thus there is a need to develop a coherent jurisprudence on implementation of the approach in such a manner as to enhance the credibility of their biosafety legislation but simultaneously promote biotechnology.

Third is the democratic imperative for good governance founded on transparency in decision-making and effective public participation. Some of the stakeholders including sections of the public and farmers are not adequately involved in decision-making.

The analysis in the thesis reveals that the biosafety legislation of the selected countries, particularly Kenya and Zambia, provided a forum for testing the relative power of the opponents and proponents of biotechnology (most notably, the European Union (EU) and the USA respectively). The prize in this contest is control of global agriculture and the associated international trade.

The thesis concludes that, although embracing the precautionary approach in biosafety legislation by African countries is imperative, its implementation requires transparency in decision-making and public participation, so much so that these two may even serve as incentives for effective implementation of the approach and may reinforce it. Courts will also play a key role in developing a jurisprudence relating to implementation of the approach.

## Chapter One

### INTRODUCTION

‘A thing is right, when it tends to preserve the integrity, stability, and beauty of the biotic community. It does wrong when it tends otherwise’.<sup>1</sup>

#### 1.1 Contextualising the GMO Controversy and Regulation

New technologies, biotechnology in particular, present opportunities and challenges to humanity. Balancing the potential benefits and potential harm often remains problematic. Countries must decide as to whether to accept or reject such technologies. If they accept they must consider the extent to which associated potential risks may be managed.

While it is not possible to attain zero risk with any new technology, countries will be keen to ensure that potential harm is minimised. They need to assess what risks are to be considered and how they are to be minimised. This is where the precautionary approach (often referred to as ‘principle’) becomes critical. In the area of agricultural biotechnology, the approach takes two dimensions. There are purely scientific aspects that relate to risk assessment and risk management on the one hand, and considerations that seek to reconcile public demands for safety and the need for public acceptance of biotechnology on the other hand. Achieving an effective balance remains problematic particularly in the regulation of genetically modified organisms (GMOs), which are among the key products of biotechnology

Regulation is part of governance. Mugabe describes governance here as the exercise of ‘economic, political and administrative authority’ to deal with GMO activities. It comprises ‘mechanisms, processes and institutions through which the public expresses its interests, exercises its legal rights and seeks to resolve its differences.’<sup>2</sup> Realisation of these goals is thus dependent on the existence of

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<sup>1</sup> Leopold A A *Sand County Almanac: with Essays on Conservation from Round River* (1970):262.

<sup>2</sup> Mugabe J ‘Governance of GMOs in Africa’ available at <http://www.assaf.org.za/wp-content/uploads/2011/07/Governance-of-GMOs-in-Africa-MUGABE.pdf> (accessed 12 June 2011).

workable biosafety frameworks. In Africa however, the development of biosafety<sup>3</sup> legislation is in its infancy, even though countries have been obligated to do this since 1994. South Africa, Kenya, Zambia and Namibia are among the countries that have enacted such legislation. By so doing, these selected countries have taken decisive action with regard to the regulation of GMOs. In addition, legislation is, to some extent, a form of precaution. However, the difficult task ahead is how they may achieve effective implementation of that legislation.

This thesis critically examines the regulation of GMOs in the selected countries and investigates whether a jurisprudence<sup>4</sup> may be developed through implementation of the precautionary approach.<sup>5</sup> This would need to be done in such a manner as to enhance the credibility of their biosafety legislation, and at the same time, promote agricultural biotechnology<sup>6</sup> if appropriate, with a view to possible replication across Sub-Saharan Africa (SSA). The focus of the thesis is on the introduction of GMOs into the environment. The thesis is written from a legal perspective and is therefore not an authority on detailed scientific phenomena.

Genetically modified (GM) crops, such as cotton and maize, result from the scientific manipulation of genes to produce novel plants and organisms.<sup>7</sup> A key issue regarding the alleged harm caused by such genetic modification is the debate about the potential adverse effects on the environment and humans. This remains a major concern to the international community.

In 1992 the Convention on Biological Diversity (CBD) was adopted.<sup>8</sup> Art. 8(g) of the Convention requires that 'as far as possible and as appropriate' parties must 'establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms (LMOs) resulting from

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<sup>3</sup> The term biosafety refers to the safety of biological processes.

<sup>4</sup> The term jurisprudence is broadly used here to mean a system or practice of law.

<sup>5</sup> The precautionary 'approach' is often referred to as precautionary 'principle'. Thus, the term precautionary 'approach' is used in this thesis save where the context may dictate that the term precautionary 'principle' be used, such as in chapter three. At (3.5) a discussion on the terminologies of precautionary 'principle' and 'approach' is carried out.

<sup>6</sup> For purposes of this thesis, the term biotechnology is used to denote agricultural biotechnology as well as modern biotechnology.

<sup>7</sup> Article 3 (1) of the Cartagena Protocol on Biosafety 39 *International Legal Materials* (2000):1027. The Protocol was adopted in 2000 and entered into force 11 September 2003.

<sup>8</sup> The Convention on Biological Diversity 31 *International Legal Materials* (1992): 822. It entered into force on 29 December 1993. See the discussion at (4.2)

biotechnology which may pose potential harm on the environment and humans. Parties to the CBD subsequently adopted the Cartagena Protocol on Biosafety that is founded on the precautionary approach as contained in Principle 15 of the Rio Declaration.<sup>9</sup> Principle 15 is applicable to threats of serious or irreversible harm. Together with other mechanisms, the Protocol establishes minimum criteria for regulating transboundary movement of LMOs.<sup>10</sup>

It means that at the international level, the precautionary approach is applicable within the thresholds established by principle 15 of the Rio declaration. Art. 26 of the Protocol provides for the taking into account of socio-economic considerations relevant to the impact of LMOs, particularly with regard to value of biological diversity to the local communities. Art. 23(2) of the Protocol provides that parties shall, in accordance with domestic law, consult the public in the decision-making process regarding LMOs.

In developing countries, the safety of food is an increasing concern, in that it should be both sufficient and nutritious. Hence, food security is a major concern of the early 21<sup>st</sup> century. The production of more food, however, requires an increase in the cultivation of land which adversely impacts on the natural environment. A balance must be struck between the production of ample food and the protection of the environment for the benefit of present and future generations. A degraded environment cannot sustain ecosystems and the species in it, including humans.

Degradation is largely attributable to the loss of and threats to biodiversity<sup>11</sup> due to population increase,<sup>12</sup> habitat loss, over-exploitation of natural resources, invasive alien species and climate change.<sup>13</sup> A combination of these factors has made the conservation and sustainable use of biodiversity a challenge.<sup>14</sup> In addition, many natural ecosystems have been interfered with by humans, some to the point of

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<sup>9</sup> The Rio Declaration 31 *International Legal Materials* (1992):876. It was adopted in 1992 at Rio de Janeiro.

<sup>10</sup> Article 13 and Annex I of the Cartagena Protocol (n7).

<sup>11</sup> Speth G and Haas P *Global Environmental Governance* (2006):18.

<sup>12</sup> Meffe G and Carroll R 'What is Conservation Biology?' in Meffe G and Carroll R (eds) *Principles of Conservation Biology* (1994):3-23 at 3.

<sup>13</sup> See 'Global Biodiversity Outlook No 3' (2010) Executive Summary available at <http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf> (accessed 24 March 2010).

<sup>14</sup> See 2(6) *Biodiversity letters* (1994):186-187 at 186.

disintegration.<sup>15</sup> As a result, poor people in developing countries bear the brunt of the adverse effects of ecological degradation,<sup>16</sup> such as floods, droughts and other unpredictable environmental crises which have contributed to a decline in food production and an increase in its prices.<sup>17</sup> Some analysts, assert that this will make low-income families in Africa 'poorer, hungrier or both'.<sup>18</sup>

There are about 800 million undernourished people in the world,<sup>19</sup> of which 200 million live in Africa.<sup>20</sup> There is an urgent need for new technologies to increase crop yields<sup>21</sup> without increasing land use, improve the nutritional quality of food and reduce crop losses.<sup>22</sup> Analysts such as Schuman argue that such technologies would develop 'hardier, more productive seeds [and] new techniques to conserve dwindling water resources...'<sup>23</sup> In the 1970s, scientists introduced genetically modified (GM) crops that included maize, cotton and soybean into global agriculture in an attempt to (primarily) increase food production.

Biotechnology<sup>24</sup> is an emerging knowledge-intensive field which makes possible specific man-made changes in deoxyribonucleic acid (DNA) or genetic materials in plants, animals and microbial systems, leading to useful products and technologies.<sup>25</sup> Using biological processes such as genetic engineering or modern biotechnology enables scientists to isolate and combine multiple copies of a piece of DNA or an entire gene,<sup>26</sup> from one organism to another in a way that could not be

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<sup>15</sup> Meffe G and Carroll R (n12) at 3.

<sup>16</sup> See 'Global Environmental Outlook' GEO Report No 4 (2007):11 available at [http://www.preventionweb.com.net/files/2298\\_GEO4ReportFullen.pdf](http://www.preventionweb.com.net/files/2298_GEO4ReportFullen.pdf) (accessed 20 February 2011).

<sup>17</sup> Schuman M 'A Future of Price Spikes' 178(4) TIME Magazine 25 July 2011 p.48.

<sup>18</sup> Ibid at 49.

<sup>19</sup> Phipps R, 'Safety for Human Consumption' in Ferry N and Gatehouse M *Environmental Impact Assessment of Genetically Modified Crops* (2009) 278-295 at 279.

<sup>20</sup> See 'The Challenge of African Agriculture' InterAcademy Council available at <http://www.interacademycouncil.net/CMS/Reports/AfricanAgriculture/6993/6995.aspx> (accessed 18 April 2009). Notably, the hunger crisis at the Horn of Africa is a major concern for the United Nations. See Poblete-Enriquez 'UN Appeals for \$500M to Fight Hunger in the Horn of Africa' available at <http://www.unmultimedia.org/radio/english/2011/07/un-appeals-for-500m-for-famine-aid-in-horn-of-africa/> (accessed 23 July 2011).

<sup>21</sup> See 'The Challenge of African Agriculture' (n23).

<sup>22</sup> Phipps R (n19) at 279.

<sup>23</sup> Schuman M (n17) at 50.

<sup>24</sup> In this thesis, the term biotechnology is used interchangeably with the term genetically modified organisms (GMOs).

<sup>25</sup> See Agenda 21 Chapter 16 'Environmentally Sound Management of Biotechnology' available at <http://www.un.org/esa/dsd/agenda21/> (accessed 20 April 2009).

<sup>26</sup> Kinchy A, Kleinman D, and Handelsman J 'Introduction: from Maize to Menopause' in Kleinman D, Kinchy A and Handelsman J *Controversies in Science and Technology* (2005):3-20 at 8.

achieved naturally or because the technology makes it easier to transfer information between organisms.

GM crops resulted in global controversy rooted in scientific uncertainty, fear and distortions concerning their safety for the environment and humans. For example, ongoing reports of physical 'land-mine like' explosions of non-organic watermelons that had been injected with growth chemicals may exacerbate suspicions concerning the safety of GM food.<sup>27</sup> Even if the watermelons were not genetically modified, the introduction of growth chemicals could have caused the explosions. This is sufficient to scare consumers and the general public concerning the safety of chemically treated and GM food.

Biotechnologies represent 'extraordinary scientific ingenuity, invention and technical brilliance and seem to offer solutions to social and economic problems ranging from hunger to disease...these advances and developments challenge our very understanding of science and the responsibilities of scientists and technologists to people and the environment.'<sup>28</sup> Thus reconciling public demands for safety of GM crops and food,<sup>29</sup> with the need to promote scientific innovation and trade, remains a sensitive issue for regulation globally. The issue is exacerbated by increasing recognition of social values as legitimate concerns in environmental governance.<sup>30</sup>

Genetic engineering is a tool that enables scientists and biotechnology companies to identify, manipulate and make use of genetic resources for economic ends,<sup>31</sup> through patenting and resultant temporary monopolies. For example, in 1982, Boyer and Cohen produced the first genetically engineered organism which they patented, and allegedly enabled Stanford University to earn 300 million dollars.<sup>32</sup> Thus the interests of industry appear to impact and influence the

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<sup>27</sup> Adap2k J 'Chemical-infused Watermelons Explode in China' (May 2011) available at <http://snardfarker.ning.com/profiles/blogs/chemicalinfused-watermelons> (accessed 24 May 2011).

<sup>28</sup> Kinderlerer J 'Globalisation, Intellectual Property Rights and Biotechnology' (2009) in a speech he delivered at his inaugural lecture at the University of Cape Town on 13 May 2009 (copy in file with this researcher).

<sup>29</sup> Stewart R 'GMO Trade Regulation and Developing Countries' *Acta Juridica* (2009):320-380 at 323; Thomson J *Seeds for the Future* (2006):109 CSIRO Publishing Collingwood (Australia).

<sup>30</sup> Sands P *Principles of International Environmental Law* (2003):9.

<sup>31</sup> Rifkin J *The Biotech Century* (1998):8.

<sup>32</sup> Jasanoff S, 'Let them Eat Cake: GM Food and the Democratic Imagination' in Leach M, Scoones I and Wynne *Science and Citizens* (2005):183-198 at 189.

development of GM crops, safety testing and other issues relevant to governance of GMOs.<sup>33</sup> Even so, over the years the controversy concerning the potential risks and the alleged benefits of GM crops remains largely unresolved.

Since the middle of the twentieth century, environmental protection was a critical issue for the international community. This is largely attributable to dwindling non-renewable energy reserves due to overpopulation, logging, grazing and development such as industrialization, harmful accumulation of global warming gases and devastation of biological diversity.<sup>34</sup> In addition, most economies in developing countries are dependent upon agriculture to remain viable. The protection of the environment must however be reconciled with other legitimate activities such as agriculture.

People need food, clothing and housing, all of which derive from agriculture or from oil based products (and oil is running out). The irony is that a growing population requires more food, while clearing more land for agricultural purposes causes many strains, including those on biodiversity.<sup>35</sup> For over 10 000 years, agriculture has consisted of 'a set of ideas, a set of tools and a set of selected species'.<sup>36</sup> Over the years however, agriculture in Sub-Saharan Africa has failed to demonstrate its sustainability and continues to present challenges.

Furthermore, the conflict between safety and profit imperatives creates tension, making the regulation of biotechnology largely a political issue.<sup>37</sup> In seeking to reconcile the varying interests, states are expected to promote biotechnology but at the same time regulate the ecological and social impact of biotechnology generally and GMOs specifically. Attempts by the international community to achieve an effective balance, within a web of intertwined socio-economic, environmental, cultural, political and other concerns underlying the regulation of GMOs, remain problematic. While the Cartagena Protocol (the Protocol)<sup>38</sup> provides for the use of

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<sup>33</sup> Newell P 'Corporate Power and "Bound Autonomy" in the Global Politics of Biotechnology' in Falkner R (ed) *The International Politics of Genetically Modified Food* (2007):67-84 at 71.

<sup>34</sup> Rifkin J (n31) at 32.

<sup>35</sup> The importance of biodiversity is discussed at (2.5).

<sup>36</sup> Swanson T and Johnson S *Global Environmental Problems and International Environmental Agreements* (1999):58 Edward Elgar in association with UNCTAD Cheltenham (UK).

<sup>37</sup> Newell P, 'Globalization and the Governance of Biotechnology' 3(2) *Global Environmental Politics* (2003):56-71 at 61.

<sup>38</sup> The Cartagena Protocol (n7).

the precautionary approach as the guiding criterion. However, in many countries in Sub-Saharan Africa (SSA), the approach may not always be applied effectively in decision-making. . The effect is that regulation may not achieve an objective balance between potential risks and benefits of biotechnology.

The precautionary approach is a risk management tool that may be used by decision-makers to take action in the face of scientific uncertainty.<sup>39</sup> Arguably, such measures may include delaying, postponing or even rejecting an activity. Risk regulation however requires the striking of a balance among the three phases of risk, namely risk assessment, risk management and risk communication.<sup>40</sup> This is a complex process which has made the identification, assessment and managing of risks a major challenge for international environmental policy making,<sup>41</sup> in particular, the regulation of GMOs.

### **1.1.1 Risk Assessment, Risk Management and Risk Communication**

In environmental governance, risk exists where there is a possibility of adverse outcomes.<sup>42</sup> Risk assessment estimates the probability and severity of the risk to human health, safety and the natural environment.<sup>43</sup> It is a scientific process carried out by experts for the purpose of achieving four main objectives, namely hazard identification, hazard characterization, exposure assessment and risk characterisation<sup>44</sup>.

Risk assessment plays two important roles in implementing the precautionary approach. It can be used to understand in a better way the risks of an activity and to compare options for prevention. It may also be used in conjunction with the

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<sup>39</sup> Zander J *The Application of the Precautionary Principle in Practice* (2010):20.

<sup>40</sup> Ibid at 17-20.

<sup>41</sup> Weiss E 'Global Environmental Change and International Law: The Introductory Framework' in Weiss (ed) *Environmental Change and International Law: New Challenges and Dimensions* (1992):15.

<sup>42</sup> Gough J 'Environmental decision making and Risk Assessment for Groundwater Systems' available at [http://www.gdrc.org/decision/gough-edm\\_risk.html](http://www.gdrc.org/decision/gough-edm_risk.html) (accessed 12 March 2009).

<sup>43</sup> Finkel A, 'Should We - and Can We - Reduce the Worst Risks First?' In Finkel A and Golding D, (eds) *Worst things First? The Debate Over Risk-Based National Environmental Priorities* (1994)3-20 at 6; Holder J and Lee M (eds) *Environmental Protection, Law and Policy* (2007):15 Cambridge University Press Cambridge (UK).

<sup>44</sup> Latifah A 'Potential Risks of Genetically Modified Organisms Release into the Environment' *Proceeding of the Regional Conference on Environment and Natural Resources*. 10-11th April 2002. Renaissance Hotel, Kuala Lumpur: 205-214 at 210. (copy in file with the researcher).

involvement of the public to prioritize activities such as hazardous waste cleanups and restoration of activities.<sup>45</sup> These are achievable when the driving forces of policy and decision-making are precaution and prevention as opposed to risk.<sup>46</sup> Thus, from a scientific perspective, effective implementation of the precautionary approach is dependent upon independent and objective risk assessment.

In assessing risks however, experts use quantitative methods whose objectivity and reliability to provide all the answers is hampered by various factors. Bell and McGillivray identify three factors; First, risk assessment operates on assumptions that are often determined with reference to subjective and unscientific criteria. Second, the differing assumptions that underpin risk assessment may lead to different conclusions. Third, scientific risk assessment fails to take into account the public perceptions of risk which are not necessarily based on objective criteria.<sup>47</sup> This partly explains why Art. 15 of the Protocol requires that risk assessment be carried out in 'a scientifically sound manner'.

Furthermore, the dominance of experts in risk assessment has the effect of framing issues somewhat narrowly either as technical or scientific, reducing consideration of socio-economic and political dimensions.<sup>48</sup> Moreover, the public perception of risk is multi-dimensional and qualitative, with particular risks meaning different things to different people, depending on their underlying interests and the context of the risk.<sup>49</sup> Additionally, any resulting environmental harm is likely to affect everyone in the impacted environment, hence the need for risk management.

Risk management is concerned with finding ways to eliminate, react, alleviate, mitigate, transfer or learn to live with the risk<sup>50</sup>. There are two primary approaches used in risk management: (i) preventive approaches that concentrate on eliminating the cause of the risk at its source and (ii) approaches based on the precautionary approach that impose higher thresholds which require the adoption of control

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<sup>45</sup> Ticker J and Raffensperger C 'The Precautionary Principle in Action A Handbook' available at <http://www.biotech-info.net/handbook.pdf> (accessed 15 August 2009).

<sup>46</sup> Ibid.

<sup>47</sup> Bell S and McGillivray D *Environmental Law* (2006):53.

<sup>48</sup> Anderson K and Wene C 'The RISCUM Model in Practice – Recent Experiences from New Areas of Application' available at 586-593 at 587, available at [http://www.iaea.org/inis/Collection/NCLCollectionStore/\\_Public](http://www.iaea.org/inis/Collection/NCLCollectionStore/_Public) (accessed 10 January 201).

<sup>49</sup> Holder J and Lee M (n43) at 16.

<sup>50</sup> Gough J (n42).

measures before harm is proved.<sup>51</sup> Equally important, risk management should aim at achieving a high degree of legitimacy because of the democratic right of citizens to hold decision-makers accountable for their actions.<sup>52</sup>

The precautionary approach plays a crucial role in attempts by the international community to resolve the dilemma concerning GMOs. African countries need to develop acceptable criteria 'to weigh risks/ benefits while considering agricultural productivity, environmental and human health concerns'.<sup>53</sup> These and other concerns relevant to biotechnology are discussed below.

Risk communication has increasingly become important in addressing risks, because of the growing public demands for transparency and the right to know.<sup>54</sup> In addition, fear associated with potential harm of GM food and increasing media and public attention, especially in Europe (and parts of Africa) has made risk communication, an essential component of addressing environmental risks.<sup>55</sup> Complications arise when the media simplifies issues on risk to attract public attention, resulting in the latter making demands that the regulator may not comply with.<sup>56</sup> Such demands may be manifested in public protests for outright rejection of GMOs. The demands would be difficult to fulfil, particularly if they are made when government policy and legislation are in place, and commercialisation of GM crops has or is about to take place.

### **1.1.2 The Global GMO Controversy: an Overview**

The GMO debate covers many areas including promoting scientific innovations, environmental issues such as threats to biodiversity, transparency and public participation in decision-making, control by large biotechnology companies over food and societal issues of cultural diversity and resistance to globalization in

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<sup>51</sup> Gough J (n42).

<sup>52</sup> Zander J (n39) at 9.

<sup>53</sup> See 'Biotechnology: Eastern African Perspectives on Sustainable Development and Trade Policy' (2007) 1-106 at 12 a Report by the International Centre for Trade and Sustainable Development (ICTSD) available at [www.ictsd.org](http://www.ictsd.org) (accessed 20 May 2007).

<sup>54</sup> Zander J (n39) at 20.

<sup>55</sup> Ibid.

<sup>56</sup> Ibid.

agriculture.<sup>57</sup> The factors causing the GMO controversy are discussed under broad intertwined themes including ethical concerns;<sup>58</sup> safety for humans and the environment;<sup>59</sup> and socio-economic as well as political concerns.<sup>60</sup>

Ethical issues relate to the moral status of interfering with nature, hence creating a sense of blasphemy as some people, sections of religious groups in particular, equate genetic engineering to 'playing God'.<sup>61</sup> The patenting of living organisms (even temporarily), issues of accountability and the right of the public to know the type of food we eat are ethical issues at the centre of the debate.

Uncertainty concerning the safety of humans and the environment is a major concern. GM crops come from scientific experiments, where scientific uncertainty is a common characteristic attributable to many factors. These include lack of or insufficient scientific understanding of the subject matter, limited knowledge concerning the GM organism in question and methodological uncertainties that arise from the choice of methods of detection and identification of the effects.<sup>62</sup> Interference with the genetic content of food by scientists within an environment of uncertainty is a sensitive issue. People know intuitively that living organisms constitute the last resort and the remaining hope for regenerating the planet.<sup>63</sup> Genetic manipulation of food may therefore have unknown potential adverse effects on the health of humans and of the environment.<sup>64</sup> However, the thesis argues (and as stated at (8.4), rapid and continuous advances in technologies as well as the

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<sup>57</sup> Tiberghien Y 'The Battle for the Global Governance of Genetically Modified Organisms' (2006):1-49 at 7-8 available at <http://www.ceri-sciencespo.com/publica/etude/etude124.pdf> accessed 14 February 2009.

<sup>58</sup> See 'Ethical Aspects of Agricultural Biotechnology' (1999) BABAS Report ISBN 9076110050 available at <http://files.efbpublic.org/downloads/ethical.pdf> (accessed 1 February 2009).

<sup>59</sup> Mackenzie R, Burhenne-Guilmin F, Kinderlerer J *et al* 'An Explanatory Guide to the Cartagena Protocol on Biosafety (2003): par 12 and 13 The World Conservation Union *Environmental Policy and Law Paper* No. 46 available at <http://www.cbd.int/doc/books/2003/B-01669.pdf> (accessed 10 July 2008).

<sup>60</sup> Young T 'Genetically Modified Organisms and Biosafety: A Background Paper for Decision-makers and others to assist in Consideration of GMO Issues' (2004):8 The World Conservation Union available at <http://data.iucn.org/dbtw-wpd/edocs/PGC-001.pdf> accessed 23 October 2009 (accessed 16 June 2009).

<sup>61</sup> See BABAS Report (n58) at 10-12.

<sup>62</sup> MYHR I and Traavik T 'Genetically Modified (GM) Crops: Precautionary Science and Conflicts of Interest' 16 *Journal of Agricultural and Environmental Ethics* (2003):227-247 at 232.

<sup>63</sup> Mae-Wan Ho 'No to GMOs: Civil Society and Corporate Empire' (1999) Institute of Science in Society available at <http://www.i-sis.org.uk/washington.php> (accessed 13 March 2009).

<sup>64</sup> See the discussion in chapter two.

consumption of GM food over the last few decades weighs heavily against suspicion on safety of such food.

Environmental protection is a matter of global concern particularly because mankind is facing three crises simultaneously – the decrease of Earth’s renewable energy reserves, global warming and the steady decline in biological diversity.<sup>65</sup> Loss of or threats to loss of biodiversity is of particular concern because biodiversity supports life and the well-being of both humans and the environment.<sup>66</sup>

The inherent uncertainty in science creates distrust and fear in the public about the safety of GM food for the environment and humans. Distrust and fear have given rise to negative perceptions among consumers, religious groups, civil society and the public about safety of GM food.<sup>67</sup> Negative perceptions have, over the years, resulted in resistance (including violent protests) to GMOs in many parts of the world, most notably, in Europe.<sup>68</sup> The effect is that acceptance of GMOs remains a contentious issue in many jurisdictions including some of the countries in Sub-Saharan Africa. These include Zambia,<sup>69</sup> Zimbabwe<sup>70</sup> and Kenya.<sup>71</sup> By way of contrast, there is hardly any overt evidence of the demand for GM food by biotechnologists, GM farmers or the public in Africa<sup>72</sup> However, and as shown at (2.2), increasing production of GM crops in countries such as the USA, Brazil and Argentina clearly suggests the GM technology is entrenched in global agriculture. This strongly suggests that there is an increase in demand for GM seed by farmers.

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<sup>65</sup> Rifkin J (n31)at 8.

<sup>66</sup> See the Preambular paragraphs of the Convention on Biological Diversity 31 *International Legal Materials* (1992): 822. The Convention was adopted in 1992 and entered into force 29 December 1993. See the discussion at (4.2).

<sup>67</sup> The issues raised by different interest groups are discussed in chapter two of this thesis.

<sup>68</sup> Mae-Wan Ho (n63).

<sup>69</sup> Manda O, ‘Controversy rages over GM food Aid’ 16(3) *Africa Renewal* available at <http://www.un.org/ecosocdev/geninfo/afrec/vol16n04/16food2.htm> (accessed 22 May 2010). In 2002 Zambia experienced serious food shortages but the government refused to accept GM Food, raising safety concerns on the health of its people and the environment. See the discussion in chapter seven.

<sup>70</sup> Mpofu T, ‘Starving Zimbabwe Rejects GM Maize’ (June 2010) available at <http://www.thenational.ae/news/worldwide/africa/starving-zimbabwe-rejects-gm-maize> (accessed 19 November 2010).

<sup>71</sup> Moola S and Munnik V, ‘GMOs in Africa: Food and Agriculture Status Report (2007):7 The African Biosafety Centre ISBN 978-0-620-40099-2 available at [www.biosafetyafrica.net](http://www.biosafetyafrica.net) (accessed 28 December 2010). Delay in the adoption of biosafety legislation in Kenya was attributable to widespread opposition from the civil society in the country.

<sup>72</sup> Demand for food by the hungry and impoverished communities does not fall in this category. See the discussion in chapter two.

Socio-economic issues relate to a wide range of interests. This is mainly because biotechnology is a set of disciplines characterised by a heterogeneous coalition of actors, institutions and interests competing for control of the technology for commercial advantage<sup>73</sup> and for benefits which may impact on the way of life of peoples around the world. Thus, advancements in biotechnology seem to go hand in hand with, globalization, international trade and maximization of profits. These are characteristics of capitalism, an ideology widely believed to benefit the economies of many countries including major world powers. Further, being embedded in scientific experiments, it is only reasonable that innovations in biotechnology be encouraged and protected within legally permissible and reasonable limits. The associated ingenuity of scientists and the leading role of science in socio-economic and political development are major factors that necessitate such protection.

Protection of innovations in biotechnology, mainly through patenting has, however, resulted in the monopolisation of the global seed market by multinational companies. Such companies include Monsanto, Syngenta, DuPont-Pioneer, and Bayer which own most of the world's commercial seed.<sup>74</sup> By 2005, for example, Monsanto became the world's largest seed firm and in 2007 it increased its control through the purchase of Delta and Pine Land, the largest cotton seed company.<sup>75</sup> Investments in research and the development of GMOs (both of which are expensive<sup>76</sup>), the tests undertaken to assess safety (if not carried out in a scientifically sound manner) and the means of distribution, are among other means of control.<sup>77</sup>

The commercial interests and monopolies in GMOs therefore seem to have enabled the biotechnology industry to establish a strong financial base. Such a base is crucial in promoting GMOs globally. However, both promotion and resistance to GMOs require enabling legal frameworks. Developing such frameworks is cumbersome because issues such as the use of biotechnology by whom and for

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<sup>73</sup> Bauer M and Gaskell G 'Researching the Public Sphere of Biotechnology' in Bauer M and Gaskell G *Biotechnology: The Making of a Global Controversy* (2002):1-17 at 4.

<sup>74</sup> See 'Who benefits from GM Crops? Executive Summary (January 2008):5 Friends of the Earth available at [www.foei.org](http://www.foei.org) (accessed 26 December 2010).

<sup>75</sup> Ibid.

<sup>76</sup> See 'Africa Environmental Outlook 2: Our Environment, Our Future' (2006):309 United National Environmental Programme available at <http://www.unep.org/dewa/africa> (accessed 31 May 2010).

<sup>77</sup> Newell P (n37) at 56.

whose benefit remain contentious. Hence, questions such as how and to what extent to regulate GMOs and using what criteria, largely explain the global controversy concerning GMOs.

These and other concerns become political when individual states decide on whether to accept or reject GMOs. Moreover, a state is the custodian of its natural resources and hence has the responsibility to protect and conserve biodiversity. The political leaders are or should be accountable to the people in matters concerning safety of the environment and humans when GMOs are viewed with suspicion by consumers and the public. In 2005 in Switzerland for example, voters rejected GMOs in a referendum that sought to determine whether a moratorium should be placed on GM food in that country.<sup>78</sup>

### 1.1.3 Framing the Global GMO Debate

The GMO controversy has divided the international community into two camps: proponents led by the USA, Canada, Argentina and more recently Brazil<sup>79</sup> and sceptics (commonly referred to as opponents) led by the European Union (EU).<sup>80</sup> Allegedly relying on the concept of substantial equivalence, the proponents, particularly the USA, have adopted a liberal pro-science approach towards GMOs.<sup>81</sup>

The concept of substantial equivalence requires that 'if a novel GM food can be shown to be fundamentally equivalent in composition to an existing food then it can be regarded as safe as its conventional equivalent'.<sup>82</sup> Juma does not agree with claims by critics that substantial equivalence is a preconceived commitment to avoid properly examining crops and food modified by biotechnology. He instead argues that it is a conclusion reached when crops and food have been shown 'not to be different from their conventional counterparts in terms of any significant parameters involving molecular composition, potential allergenicity or toxicity, and nutritional or

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<sup>78</sup> The referendum took place on 27 November 2005. See 'The Swiss Adopt a Moratorium on GMO' (2005) available at [http://www.bio-pro.de/magazin/umfeld/archiv\\_2005/index.html?lang=en&artikelid=/artikel/02913/index.html](http://www.bio-pro.de/magazin/umfeld/archiv_2005/index.html?lang=en&artikelid=/artikel/02913/index.html) (accessed 15 July 2009).

<sup>79</sup> Tiberghien Y (n57).

<sup>80</sup> Bodansky D 'International Decisions' *101 American Journal of International Law* (2008):453-459 at 453.

<sup>81</sup> Tiberghien Y (n57).

<sup>82</sup> See 'Genetically Modified Plants for Food Use and Human Health-an Up Date' Policy Document 4/02 (2002):5 The Royal Society available at [www.royalsoc.ac.uk](http://www.royalsoc.ac.uk) (accessed 20 June 2011).

dietary impact'.<sup>83</sup> Once such a conclusion has been reached, no additional or exceptional regulatory regime is needed.<sup>84</sup>

Since the US government policy identifies the risks posed by GM Food to human health and the environment as essentially the same as those in foods derived from conventional methods, no new legislation has been passed to specifically regulate biotechnology products.<sup>85</sup> The proponents further claim that, genetic modification may contribute towards increased food production and improved food quality, foods from which allergenic or toxic substances have been removed, significant environmental benefits, and a wide range of other alleged benefits.<sup>86</sup> As a result, proponents of biotechnology– industry in particular, have put intense pressure on developing countries to speed up acceptance and production of GMOs without delay.<sup>87</sup> In contrast, developing countries view this vulnerability as a way of using their soil for testing products that have been rejected in the North.<sup>88</sup>

By way of contrast, opponents of biotechnology have used (and possibly misused) the precautionary approach as a way of requiring protective regulation when current knowledge is insufficient to assess potential risks.<sup>89</sup> Critics who include the Independent Science Panel on Biosafety<sup>90</sup> claim that the introduction of new genes and gene products from bacteria, viruses and even genes made entirely in the laboratory, into crops, including food crops, poses potential risks.<sup>91</sup>

Some opponents argue that artificial constructs introduced into cells by invasive methods result in random integration into the genome, giving rise to unpredictable random effects including gross abnormalities in animals and plants,

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<sup>83</sup> Juma C 'Biotechnology in a Globalizing World: The Coevolution of Technology and Social Institutions' 55(3) *Bioscience* (2005):265-272 at 267.

<sup>84</sup> *Ibid.*

<sup>85</sup> Tiberghien Y (n57).

<sup>86</sup> Mackenzie R *et al* (n62) par 35; Paolo V 'Compatibility of GMO Import Regulations with WTO Rules' in Weiss E (n41):579-627 at 586-587.

<sup>87</sup> Newell P (n40) at 68.

<sup>88</sup> *Ibid.*

<sup>89</sup> Tiberghien Y (n57).

<sup>90</sup> On 10 May 2003 The Panel was launched in London. It comprises prominent scientists from seven countries spanning disciplines that include agroecology, agronomy, botany, ecology, nutritional biochemistry, physiology, toxicology and virology. See [www.i-sis.org.uk](http://www.i-sis.org.uk)

<sup>91</sup> Mae-Wan Ho and Ching L 'The Case for A GM Free Sustainable World (2003):15 Independent Science Panel London ISBN:0-9544923-0-8 (ISIS) available at <http://www.i-sis.org.uk/TheCaseforAGM-FreeSustainableWorld.php> (accessed 8 June 2009).

unexpected toxins and allergens in food crops. These attributes make quality control impossible.<sup>92</sup> In addition, the alleged instability of transgenic lines makes risk assessment difficult.<sup>93</sup> Other critics further allege that the release of GMOs into the environment may adversely affect biological diversity and that the socio-economic consequences may potentially be severe.<sup>94</sup> They thus question the patenting of living organisms on ethical grounds.<sup>95</sup> Whether these views are representative of the views of most scientists is difficult to determine particularly because the GMO debate attracts different views among and even within stakeholders, on one hand. Such views could otherwise be on the margin of scientific credibility on the other hand.

The differences in opinion concerning GMOs have given rise to conflicting hopes, values and interests,<sup>96</sup> making the GMO debate an emotive issue worldwide. Biotechnology affects both public and private interests, including those of states,<sup>97</sup> consumers,<sup>98</sup> scientists,<sup>99</sup> multinational biotechnology companies,<sup>100</sup> civil society<sup>101</sup> and the general public. It has given rise to seemingly irreconcilable socio-economic, ethical, cultural, environmental, political and other concerns that have made its regulation a complex issue globally. Furthermore, technologies (including biotechnology) have acquired a will and strength of their own; they are 'tending to dominate and bend to its necessities even the most powerful human rulers and groups'.<sup>102</sup> Technologies comprise instruments of power (which include financial and political influence) resulting in domination and using society to underpin them.<sup>103</sup>

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<sup>92</sup> Ibid.

<sup>93</sup> Ibid.

<sup>94</sup> Mackenzie R *et al* (n59) par 36.

<sup>95</sup> Ibid.

<sup>96</sup> Perrez F 'GMOs and International Law: The Swiss Example' *14(2) Review of European Community and International Environmental Law* (2005):161-172 at 161.

<sup>97</sup> For example, in a 27 November 2005 referendum, Swiss voters approved by 55%, a five year moratorium on GMOs, putting pressure on the government to adopt strict laws. See 'Swiss vote for five year moratorium' available at <http://www.grain.org/?id+61>

<sup>98</sup> Consumers are concerned with safety of GM Food, the right to know (labelling), redress and liability, among other things.

<sup>99</sup> Scientists may have vested interests because they manipulate the genes mainly through genetic engineering; they are keen to promote advances in biotechnology and largely, they are the decision-makers under domestic law.

<sup>100</sup> Such companies including Monsanto and Syngenta which work closely with governments to promote GMOs, monopolise ownership of patents and trade in GMOs.

<sup>101</sup> These include Greenpeace that aggressively seek to promote protection of the environment.

<sup>102</sup> Nicholson M *The Environmental Revolution: A Guide for the New Masters of the World* (1972):324.

<sup>103</sup> Ellul J *The Technological system* (1980):5,18.

The mass media also plays a significant role in arousing negative perceptions concerning GMOs in the public domain. The media's main role is reporting events and educating the public<sup>104</sup> but a lack of informed and balanced media reporting creates suspicion. Many media sources do not have the capacity to make the complex environmental issues understandable while others are interested in matters that may easily attract bigger audiences.<sup>105</sup> To attract attention, issues concerning potential benefits and risks are often exaggerated. For example a section of the media in Kenya published information with the title 'Tough Rules to Govern GMOs'.<sup>106</sup> This heading appears biased and could be misleading. It created the impression that the Biosafety Act No 2 of 2009 that had just been enacted provided for strict regulation of GMOs. The heading could be applauded by the proponents of biotechnology. It could also terrify the general public as it may be understood to mean that GMOs are so dangerous that they require tough rules. Still, none of all these propositions could be true or false.

Terms like 'mutant' and 'Frankenstein' foods have been used to convey the risks associated with GMOs, while terms like 'value added', 'safer' and 'better quality' have been used to reinforce potential benefits.<sup>107</sup> When journalism feeds on controversy, its popular gladiatorial approach divides people into opposing camps.<sup>108</sup> These trends have tended to influence consumers and the general public to view biotechnology as either good or bad,<sup>109</sup> aggravating the controversy. As a result, establishing and maintaining a 'perceived balance' between the potential risks and benefits of GMOs is a major global concern for the regulation of biotechnology.<sup>110</sup>

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<sup>104</sup> Susskind L *Environmental Diplomacy* (1994):136.

<sup>105</sup> Ibid.

<sup>106</sup> See Daily Nation (Kenya) 14 March 2009 available at <http://www.nation.co.ke> (accessed 14 March 2009).

<sup>107</sup> Leonie M, 'On the Media roller Coaster: Will Biotech Foods Finish the Ride? – Newspaper Coverage of Genetically Modified Foods (2002) available at [http://findarticles.com/p/articles/mi\\_moHIC/is\\_2\\_17/ai\\_98543755/pg\\_2/?tag+content;col1](http://findarticles.com/p/articles/mi_moHIC/is_2_17/ai_98543755/pg_2/?tag+content;col1) (accessed 22 March 2008).

<sup>108</sup> Edward W *The Future of Life* (2002):154.

<sup>109</sup> Schaal B 'Biodiversity, Biotechnology and the Environment in *McManis Biodiversity and the Law* (2007):137-148 at 137.

<sup>110</sup> Kinderlerer J and Adcock 'Agricultural Biotechnology, Politics, Ethics and Policy' in *Biotechnology, Agriculture, and Food Security in Southern Africa* (2005):71-112 at 71.

#### 1.1.4 The Regulation of GMOs

Governments have a responsibility to ensure human safety from hazards including the potential harm associated with GMOs. The function of law is mainly to establish limitations if not prohibitions.<sup>111</sup> Often, it should promote the consistency in, accountability for and transparency of decision-making and control the discretion of decision-makers.<sup>112</sup> Biotechnology raises questions such as: how to regulate it and to what extent; the criteria to use and in whose interest is the regulation? Moreover, environmental law reflects political aims and goals defined by scientific criteria.<sup>113</sup> Its framework is a reflection of the values, culture, and institutions that invariably influence how states define their interests.<sup>114</sup> Thus in implementing environmental protection policies, regulatory agencies are essentially carrying out a political balancing process of conflicting interests.<sup>115</sup> However, translating science into the normative language of policy and ultimately law is cumbersome.<sup>116</sup>

While the regulation of biotechnology is provided for in Agenda 21,<sup>117</sup> hard law regulation of biotechnology is mainly traceable to the Convention on Biological Diversity (CBD).<sup>118</sup> The CBD obligates parties to establish or maintain means to regulate, manage or control the risks associated with living modified organisms (LMOs) resulting from biotechnology that could adversely affect biological diversity, 'taking also into account the risks to human health'.<sup>119</sup> Being a framework Convention, the CBD urged parties to consider the need for and modalities of a protocol that would specifically govern LMOs<sup>120</sup>. Subsequently, its Cartagena Protocol (the Protocol) was adopted by parties to the CBD,<sup>121</sup> to regulate the

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<sup>111</sup> Mazzoni C 'Ethics and Law in Biological Research' in Mazzoni C (ed) *Ethics and law In Biological Research* (2002):3-7 at 7.

<sup>112</sup> Bell S and McGillivray D (n47) at 52.

<sup>113</sup> Ibid at 48.

<sup>114</sup> Huntington S *The Clash of Civilizations and the Remaking of the World Order* (1996):34.

<sup>115</sup> Bell S and McGillivray D (n47).

<sup>116</sup> Tallacchini M 'The Epistemic State – the Legal Regulation of Science' in Mazzoni C (n112):79-96 at 81.

<sup>117</sup> Agenda 21 was a Plan of Action adopted at the United Nations Conference for Environment and Development (often referred to as the Rio Conference) at Rio de Janeiro in 1992. Its chapter 16 was devoted to 'Environmentally Sound Management of Biotechnology' available at [http://www.un.org/esa/dsd/agenda21/res\\_agenda21\\_00.shtml](http://www.un.org/esa/dsd/agenda21/res_agenda21_00.shtml) (accessed 13 July 2009).

<sup>118</sup> The Convention on Biological Diversity (n8).

<sup>119</sup> Article 8(g) of the Convention on Biological Diversity (n8).

<sup>120</sup> Ibid Article 19 (3).

<sup>121</sup> The Cartagena Protocol on Biosafety 39 *International Legal Materials* (2000) 1027 was adopted in 2000 and entered into force on 11 September 2003.

transboundary movement of LMOs. The negotiations on the Protocol were however complicated, among other things, by disagreements on applicable criteria for the regulation. A strict regime would seem to impede the promotion of biotechnology while a weak one would seem to enhance it. Only parties to the CBD are legible to be parties to the Protocol. For example, the USA which is non-party to the CBD is not a party to the Protocol. It participated and still does as an observer.<sup>122</sup> It is therefore neither bound by the CBD nor the Protocol yet its influence in the GMO debate cannot be overemphasised.

Proponents of biotechnology sought a regime founded on scientifically sound risk assessment.<sup>123</sup> From a practical perspective, this seemed to suggest that biotechnology was a purely scientific discipline governed solely by scientific criteria. Such an argument would possibly have been plausible if the scientific innovations in GMOs were restricted to laboratories. The introduction of GMOs into the environment is another matter. The environment is common heritage and supports the well-being of all species including humans. Everyone has rights and obligations as well as legitimate expectations relating to it. Moreover, nature is more than a resource for humans.<sup>124</sup>

Opponents sought a strict regime founded on the precautionary principle – a regime that would provide holistic governance for biotechnology. They viewed the principle as placing emphasis (at least in part) on ‘transparency, accountability, foresight, recognition of uncertainty, and quick, appropriate proactive action to prevent harm’.<sup>125</sup> By way of a compromise, the Protocol adopted both criteria – the scientifically sound risk assessment<sup>126</sup> and the precautionary approach.<sup>127</sup> Other mechanisms include Advance Informed Agreement (AIA)<sup>128</sup> which takes into account

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<sup>122</sup> Enright C ‘Miami Group: United States’ in Bail C, Falkner R and Marquard H *The Cartagena Protocol on Biosafety: Reconciling Trade in biotechnology with Environment and Trade* (2002):95-104 at 98.

<sup>123</sup> Article 15 of the Cartagena Protocol (n7). Also see Annex III to the Protocol.

<sup>124</sup> Kidd M, *Environmental Law* (2008):14

<sup>125</sup> Ticker J and Wright S ‘The Precautionary Principle and Democratizing Expertise: a US Perspective’ *Science and Public Policy* (2003) 213-218 at 213.

<sup>126</sup> Article 15 of the Cartagena Protocol (n7). See the detailed rules contained in Annex III to the Protocol.

<sup>127</sup> Ibid article 1.

<sup>128</sup> Ibid article 11.

the socio-economic considerations in decision-making,<sup>129</sup> public awareness and participation<sup>130</sup> and the Biosafety Clearing House.<sup>131</sup>

The precautionary approach adopted by the Protocol is what has been laid down in Principle 15 of the Rio Declaration,<sup>132</sup> which provides '[w]here there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation'. By adopting the precautionary approach, the Protocol seeks to 'ensure an adequate level of protection in the field of safe transfer, handling and use of living modified organisms<sup>133</sup> resulting from biotechnology' that may adversely affect biological diversity and human health.<sup>134</sup> Establishing whether there will be serious or irreversible environmental damage requires an assessment of scientific, social and economic factors while taking into account the public's perceptions and values in respect of GMOs.<sup>135</sup>

Furthermore, the Protocol obligates each Party to 'take necessary and appropriate legal, administrative and other measures to implement their obligations under this Protocol'.<sup>136</sup> Such measures require domestic implementation. Moreover, the Protocol is premised upon a system of functional national biosafety frameworks, and information exchange.<sup>137</sup> In addition, the Vienna Convention on the Law of Treaties<sup>138</sup> (which is declaratory of customary international law<sup>139</sup>) requires that '[e]very treaty in force is binding upon the parties to it and must be performed in good faith'.

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<sup>129</sup> Ibid article 26.

<sup>130</sup> Ibid aarticle 23.

<sup>131</sup> Ibid Article 20.

<sup>132</sup> The Rio Declaration (n9).

<sup>133</sup> The term living modified organisms rather than genetically modified organisms (LMOs) was preferred by the proponents of biotechnology at the negotiations on the Cartagena Protocol (n7) so as to avoid the negative connotations that were already attached to genetic engineering.

<sup>134</sup> Article 1 of the Cartagena Protocol (n7).

<sup>135</sup> Deville A and Harding R *Applying the Precautionary Principle* (1997):26.

<sup>136</sup> Article 2(1) of the Cartagena Protocol (n7).

<sup>137</sup> Mackenzie R, 'Towards the Future Implementation of the Biosafety Protocol' – in 'Cartagena Protocol on Biosafety: From negotiation to Implementation' A Report by the Secretariat of the Convention on Biological Diversity (n67) available at [www.biodiv.org](http://www.biodiv.org) (accessed 17 April 2009).

<sup>138</sup> Article 26 of the Vienna Convention on the Law of Treaties available at [http://untreaty.un.org/ilc/texts/instruments/english/conventions/1\\_1\\_1969.pdf](http://untreaty.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf) (accessed 13 January 2009). The Convention was adopted at Vienna on 23 may 1969, entered into force 27 January 1980.

<sup>139</sup> Villiger M, *Commentary on the 1969 Vienna Convention on the law of Treaties* (2009):363 Martinus Nijhoff Publishers Leiden.

By ratifying the Protocol, the Parties, including the selected countries, are themselves, bound to comply, in good faith. Consequently, the adoption of the precautionary approach in domestic biosafety legislation is obligatory. The precautionary approach is a tool intended to enable the Protocol to achieve its objective. Since its entry into force in 2003, the effective implementation of the Protocol together with its precautionary approach is yet to be fully realised.

To implement the Protocol, the selected countries have adopted biosafety legislation that reveals the different approaches to biotechnology. Some are promotional while others were strict. The approaches manifest the conflicting attitudes and priorities concerning GMOs, as well as the shifting attention of the associated controversy to the selected countries and Sub-Saharan Africa in general. These varying attitudes and priorities have an impact on the relevance and hence the credibility of the existing and emerging biosafety regimes, particularly in relation to the various approaches towards domestic implementation of the precautionary approach.

Biotechnology is a revolutionary science which has given rise to a powerful industry and it has great potential to reshape the world around us.<sup>140</sup> Having changed agriculture, what we eat<sup>141</sup> and politics, for biotechnology to be accepted, it requires the reshaping of society.<sup>142</sup> Apparently, this is a process that requires among other things, time, holistic legislation and public acceptance of GMOs. Time because GM food is already entrenched in the global food chain; holistic legislation and public acceptance due to fears concerning the safety of such food. South Africa and Burkina Faso are currently among the few countries in SSA that commercially grow GMOs. Countries such as Kenya, Zambia, Uganda, Malawi, Nigeria, Ghana, and Mali have been conducting research and field trials on GM crops that include maize, rice, wheat, cotton and sorghum.<sup>143</sup>

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<sup>140</sup> Africa Environmental Outlook No 2: Our Environment, Our Wealth' (n77) at (2006):361.

<sup>141</sup> Africa Environmental Outlook No 2: Our Environment, Our Wealth' (n77) at (2006):361.

<sup>142</sup> Jasanoff S (n32): at 189.

<sup>143</sup> See 'More African Countries Seen Growing GM Crops' The Namibian of 5 April 2011. Also see Nangayo F 'The Status of Regulations for Genetically Modified Crops in Countries of Sub-Saharan Africa' (2006) available at [http://www.aatf-africa.org/userfiles/Status-Regulations-GM-Crops\\_Africa.pdf](http://www.aatf-africa.org/userfiles/Status-Regulations-GM-Crops_Africa.pdf) (accessed 14 June 2008).

Ultimately the key challenge is not how we can learn to live with biotechnology but 'whether and under what conditions' we want it to be part of our lives.<sup>144</sup> A population biologist, Godfray, takes the view that biotechnology may be a politically contentious issue, due to resistance from environmentalists, but it may be part of the food solution.<sup>145</sup> The development of biosafety legislation in the selected countries is therefore at a defining moment. By adopting biosafety legislation, the selected countries have taken decisive action with regard to GMOs. Issues concerning the extent to which such biosafety regimes satisfy the criteria of a good biosafety regulatory system ie being 'understandable, workable, equitable, fair, adaptive and enforceable',<sup>146</sup> remains a challenge to scholars and other stakeholders, as long as the debate on potential risks and benefits continues.

In attempting to establish how and the extent to which biosafety legislation in the selected countries may be said to be workable, the thesis uses the precautionary approach as a tool for analysis. The extent to which the legislation seeks to balance issues concerning safety of GMOs on the environment and humans on one hand and the need to promote scientific innovation on the other hand remains controversial.

## 1.2 Problem Statement

The point of departure, then, is that in order to serve a meaningful purpose, new technologies should be accepted by the public but there are barriers that hamper acceptance.<sup>147</sup> Biotechnology has given rise to seemingly competing yet legitimate interests that impact on the adoption and application of biosafety legislation in various jurisdictions. The design and implementation of a national biosafety system attempts to balance or align public policy goals, perceptions of safety and risk and economic, political and technical realities.<sup>148</sup>

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<sup>144</sup> Rifkin J (n31) at xiv.

<sup>145</sup> Schuman M (n17) p.50.

<sup>146</sup> Jaffe G 'Comparative Analysis of Biosafety Systems' in in Sengooba T, Cohen J and Zawedde B (eds) 'Regulatory Cooperation, Using Information, Regional Policies, and National Expertise' (2005):28 Proceedings of an East Africa Biosafety Policy Roundtable April 18-20 2005 Entebbe, Uganda available at <http://www.biovisioneastafrica.com/publications...> (accessed 27 June 2009).

<sup>147</sup> Anderson K and Wene C (n48) at 586.

<sup>148</sup> Cohen J and Paarlberg R, 'Unlocking Crop Biotechnology in Developing Countries – A Report from the Field' 32(9) *World Development* (2004) 1563-1577 at 1572.

Over the past three decades, developing countries have adopted national biosafety frameworks and guidelines, often in an *ad hoc* manner.<sup>149</sup> There was need and pressure, mainly from industry, to commence research activities before relevant legislation was in place.<sup>150</sup> Changing from *ad hoc and* reactive legislation to proactive substantive legislation should arguably satisfy two requirements.

First, under the provisions of the Vienna Convention on the Law of Treaties the incorporation of the Protocol in domestic legislation is obligatory. Additionally, the effectiveness of international regulation is dependent upon the willingness of parties to comply with their obligations under the Protocol. The Protocol has put in place relevant binding criteria for regulation, an element of which is the precautionary approach.

Second, are public demands that biotechnology should serve the interests, needs and priorities of the people in each country. In practical terms, a major source of public interest, need and priority is food. Important questions range from what food, what quality, what quantity, to issues concerning access to food. Biotechnology seeks to provide part of the solution but the controversy over GM food continues.

Since the 1990s the international community, governments, scientists, biotechnology companies, civil society groups and other stakeholders have grappled with the issue of how to promote the responsible use of biotechnology.<sup>151</sup> The conflict between safety and profit making creates tension, making regulation largely a political issue.<sup>152</sup> In seeking to reconcile the varying interests, states are expected to promote biotechnology at the same time regulating the ecological and social impacts of the industry.<sup>153</sup> Objectivity and rationality can hardly be achieved without adequate public participation which brings into question the legitimacy of political and

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<sup>149</sup> Before enactment of substantive biosafety legislation, each of the selected countries had rules and regulations that made it possible for contained and field trials in respect to GM crops to take place.

<sup>150</sup> Cohen J and Paarlberg R (n148) at 1572.

<sup>151</sup> The concept of responsible use of biotechnology is traceable to Agenda 21 (chapter 16 in particular (n26) – a fundamental programme of action for the realisation of sustainable development. See *The Programme for Further Implementation of Agenda 21* United Nations General Assembly Resolution A/RES/S-19/2 adopted on 19 September 1997 available at [www.un.org/documents/ga/res/spec/aress19-2.htm](http://www.un.org/documents/ga/res/spec/aress19-2.htm) (accessed 20 February 2009).

<sup>152</sup> Newell P, 'Globalization and the Governance of Biotechnology' *Global Environmental Politics* 3:2 (May 2003): 56-71 at 61.

<sup>153</sup> Newell P, 'Globalization and the Governance of Biotechnology' *Global Environmental Politics* 3:2 (May 2003): 56-71 at 61.

scientific institutions.<sup>154</sup> Moreover, the imposition of risk calls for some sort of consent and opportunities for the public to make voluntary and informed choices. Public involvement is therefore required in matters with potential long-term effects such as GMOs.<sup>155</sup>

Governments have an obligation not only to inform the public of the decisions made but also to ensure that it has access to adequate information, to enable it to participate meaningfully in the decision-making processes.<sup>156</sup> According to Jones, this may minimise the emotion and disinformation that characterises the GMO debate (particularly through the media), and enable people to make informed decisions based on facts rather than imagination.<sup>157</sup> In Africa however, decision-making in the regulation of biotechnology is sometimes dependent on the extent of political influence that multinational biotechnology companies and selected individuals may muster in a country.<sup>158</sup>

In attempts to achieve a balance, two things may make a significant contribution. The first is the use of the precautionary approach as a tool for managing the scientific uncertainty inherent in biotechnology. The second is good governance, a process that encompasses public accountability and transparency in decision-making. It requires that public demands for safety and making biotechnology relevant to local needs and priorities be addressed. The implementation of the precautionary approach and good governance significantly enhance the credibility of decision making.

Thus, the problem for discussion in the thesis is anchored on dilemma attributable to a set of three issues:

First is the global GMO controversy that pits proponents and opponents against each other. This has given rise to a transatlantic political divide between the

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<sup>154</sup> Street P, 'Constructing Risks: GMOs, Biosafety and Environmental Decision-making' in Somsen H (ed) *The Regulatory Challenge to Biotechnology* (2007):95-117 at 114.

<sup>155</sup> MYHR I and Traavik T (n62) at 242.

<sup>156</sup> Street P (n154) at 114.

<sup>157</sup> See an Independent Assessment by Steve Jones 'BBC Trust Review of Impartiality and Accuracy of the BBC's Coverage of Science' (July 2011) available at [http://www.bbc.co.uk/bbctrust/assets/files/pdf/our\\_work/science\\_impartiality/science\\_impartiality.pdf](http://www.bbc.co.uk/bbctrust/assets/files/pdf/our_work/science_impartiality/science_impartiality.pdf) (accessed 18 August 2011).

<sup>158</sup> Sinebo W and Kazuo W 'The Fate of Politically Modified Crops in Africa 22 (3) *Plant Biotechnology* (2005):185 -193 at 191.

United States of America (USA) and the European Union (EU) mainly concerning the manner and extent to which GMOs may be regulated. The extent of and criteria for regulation remain contentious

The USA is not a party to the CBD hence not a party to the Protocol, yet its influence on developments in biotechnology cannot be underestimated. Its global leadership in biotechnology as well as its domination of the World Trade Organisation (WTO)<sup>159</sup> on the one hand and the EU's resistance to GMOs on the other translates into a global power struggle<sup>160</sup> for the control of food and markets among other things. As a result, the conflict between biosafety under the Protocol and trade under the WTO regime is yet to be resolved.<sup>161</sup>

The effect is that international regulation of biotechnology is taking place within a political environment in which each side of the transatlantic political divide appears to have vested commercial and political interests to protect. In that environment, African states have found themselves caught in 'crossfire'.<sup>162</sup> They have a rich biodiversity to protect and huge populations to feed, sections of which are undernourished and even starving, as evidenced by the current food shortage crises in the Horn of Africa and Kenya. Relying on these factors, the USA has sought to legitimise its push for GM food in SSA, while the EU citing health concerns and the need to protect organic food imports, urged Zambia to reject GM food.<sup>163</sup>

The latter factors that underpin the political economy of biotechnology are essential in appreciating the development of biosafety legislation in the selected countries. The transatlantic divide clearly manifested itself in the negotiations on the Protocol.<sup>164</sup> The development of biosafety legislation in some of the selected countries appears to represent the unfolding, in Sub-Saharan Africa, of this political divide over GMOs. Such legislation may seek to implement the Protocol, while at the

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<sup>159</sup> Stewart R (n29) at 320.

<sup>160</sup> See the discussion in chapter seven.

<sup>161</sup> See the discussion in chapter four, particularly with reference to the *Biotech* case.

<sup>162</sup> Meijer E and Stewart R 'The GM Cold War: How Developing Countries Can Go from Being Dominos to Being Players' 13:3 *REICEL* (2004) 247-262 at 247.

<sup>163</sup> Manda O (n72) is among the analysts who argue that while the GMO debate in Zambia was going on, local civic groups and scientists conducted a study tour in a number of countries including the Europe. Upon their return, they were of the opinion and reported that GMOs were a health hazard.

<sup>164</sup> See the discussion at (4.3.1)

same time serve testing the balance of power between proponents and opponents of biotechnology.

Developing biosafety legislation within such a politicised environment in the selected countries appears to be as complex as biotechnology itself. Seeking to address local concerns for alleged increased food production using biotechnology against opposition on grounds of safety and amid external pressure for or against flexibility in the regulation, presents both opportunities and challenges.

Second, is the controversy concerning the precautionary approach. Critics such as Pieterman and Hanekamp take the view that it is rejected on several grounds, including allegations that due to its many formulations, it has serious flaws with regard to logic and rationality. Furthermore, it lacks legal and moral quality by reason of being ambiguous with no clear meaning.<sup>165</sup> The ferocity of the debate concerning the precautionary approach is driven by competing political and economic interests and is heightened by the intrinsic ambiguities in its varying formulations.<sup>166</sup>

Opponents such as Sunstein assert that the principle is 'a crude and often a perverse way of promoting desirable goals' thus reducing its effectiveness and workability.<sup>167</sup> Others argue that the principle is embedded in arbitrariness and may be manipulated for political gain;<sup>168</sup> it is absolutist, unscientific and may be used to hold science hostage to group politics<sup>169</sup> or be misused to justify protectionist commercial interests.<sup>170</sup>

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<sup>165</sup> Pieterman R and Hanekamp J, 'The Cautious Society? An Essay on the Rise of the Precautionary Culture' ISBN 9076548099 available at [http://www.groenerekenkamer.nl/grkfiles/images/The\\_Cautious\\_Society\\_\\_HAN\\_.pdf](http://www.groenerekenkamer.nl/grkfiles/images/The_Cautious_Society__HAN_.pdf) (accessed 2 March 2010).

<sup>166</sup> Stirling A 'Participation, Precaution, and Reflective Governance for Sustainable Development' in Adger N and Jordan A (eds) *Governing Sustainability* (2009):193-225 at 199.

<sup>167</sup> Sunstein C *Laws of Fear* (2005):34.

<sup>168</sup> Marchant G and Mossman K *Arbitrary and Capricious: The Precautionary Principle in the European Union* Court (2005):3 International Policy Press ISBN 1-905041-08-X available at [www.policynetwork.net/uploaded/pdf/arbitrary-web.pdf](http://www.policynetwork.net/uploaded/pdf/arbitrary-web.pdf) (accessed 30 September 2009); Trouwborst A *Precautionary Rights and Duties of States* (2006):21.

<sup>169</sup> Renn O 'Precaution and Governance of Risk' in Adger and Jordan (eds) *Governing Sustainability* (2009) 226-258 at 228 Cambridge University Press Cambridge (UK).

<sup>170</sup> Majone G 'What price safety? The Precautionary Principle and its Policy Implications' *40(1) Journal of Common Market Studies* (2002):89-109 at 89.

Proponents of the precautionary principle such as Fisher, argue that it is, in general, relevant to risk regulation, a process that consists of three distinct but often overlapping activities ie standard setting, the application of those standards and enforcement.<sup>171</sup> Implementing the standard setting process and reconciling facts, science and scientific uncertainty are intricate because they are often influenced by broader issues such as the legitimacy of regulation, globalisation, public participation and the interface between science and policy.<sup>172</sup> These imperatives must be viewed against another role of the precautionary approach of providing guidance by assigning the benefit of the doubt in favour of human health and the environment.<sup>173</sup> Justice Stein concludes that the principle is one of the most remarkable developments of the last few decades and a milestone in the history of international environmental law.<sup>174</sup> Thus, adoption or failure to adopt the principle in biosafety legislation arguably impacts on the credibility of such legislation.

The precautionary approach stands between setting standards, application of those standards and enforcement<sup>175</sup> on the one hand and enhancing the credibility of legislation on the other hand. The latter created a paradox of using a contested principle to address a controversial technology involving competing interests that may negatively impact on transparency in decision-making. Though contested, its implementation is a milestone in GMO regulation. It is material in assessing the functionality of the Protocol and the credibility of domestic biosafety legislation. Thus implementation remains theoretical unless it is translated into reality for decision-making.

Third, institutional governance must be tested using the democratic imperative for good governance. For purposes of the thesis, good governance in respect of GMOs governance is discussed from the perspective of transparency in decision-making and public participation, which includes access to information.<sup>176</sup> Improved access to information and public participation in decision-making enhances the

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<sup>171</sup> Fisher E 'Is the Precautionary Principle Justiciable?' 13(3) *Journal of Environmental Law* (2001):315-334 at 317.

<sup>172</sup> *ibid.*

<sup>173</sup> Stirling A (n166) at 204.

<sup>174</sup> Stein J 'A Cautious Application of the Precautionary Principle' 2 *Environmental Law Review* (2000):1-10 at 10.

<sup>175</sup> Fisher E, (n171) at 317.

<sup>176</sup> Stallworthy M *Understanding Environmental Law* (2008):158.

quality and the implementation of decisions and strengthens public support for such decisions.<sup>177</sup> Arguably, it is during decision-making that theory relating to implementation of the precautionary approach, as well as legitimate expectations of the public in relation to GMOs, translates, or should translate, into reality. Moreover, the protection of the environment will only be enhanced globally when two rights go hand in hand—the right to information and the right to participation.<sup>178</sup> A major concern however is that many African countries lack credible regulatory instruments and institutions for risk assessment in relation to the GM technology.<sup>179</sup> In addition institutions should have the competencies that are commensurate to their regulatory mandate.<sup>180</sup>

According to Justice Barak, reality entails ‘recognition of law in its entirety and the relationship between it and society’s values and principles, the ability to balance conflicting demands and to give expression to what is fundamental and basic’.<sup>181</sup> Within this context, it may be argued that in practice, it is the decision-maker who determines the benefits and safety of GM crops intended for commercial release.<sup>182</sup> Consequently, the precautionary approach’s impact will ultimately depend on how far it becomes effective in legislative, administrative and judicial law-making within national jurisdictions and regional bodies<sup>183</sup> Part of the barrier is that ‘[t]here are people and organisations who use certain terms just to please donors while on the

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<sup>177</sup> The preambular paragraphs of the Aarhus Convention on Access to Information, Public Participation in Decision-making and access to Justice in Environmental Matters (adopted at Aarhus Denmark on 25 June 1998) available at [www.moew.government.bg/aarhus/text\\_e.html](http://www.moew.government.bg/aarhus/text_e.html) (accessed 2 October 2009).

<sup>178</sup> Machado A ‘Information and Environment: The Evolution of Environmental Law’ 37(2-3) *Environmental Policy and Law* (2007):198-200 at 200.

<sup>179</sup> Clark N, Mugabe J and Smith J ‘Governing Agricultural Biotechnology in Africa: Building Public Confidence and Capacity for Policy-Making’ available at <http://www.acts.or.ke/dmdocuments/books/biotech.pdf> (accessed 12 May 2011).

<sup>180</sup> Juma C (n83) at 269.

<sup>181</sup> Barak A *The Judge in a Democracy* (2006):310.

<sup>182</sup> See ‘Project 4: Water and Efficient Maize for Africa (WEMA) (2011) available at <http://www.aatf-africa.org/userfiles/WEMA-brief.pdf> (accessed 10 May 2011). This is an ongoing a project jointly funded by Bill and Melinda Gates and Howard G. Buffett Foundation. The project seeks to introduce drought tolerant GMO yellow maize in Kenya by 2018. See Paarlberg R ‘Drought Tolerant GMO Maize in Africa: Anticipating Regulatory Hurdles’ (2011) available at <http://www.ilsa.org/Documents/2011%20AM%20Presentations/CERAPaarlberg.pdf> (accessed 10 May 2011).

<sup>183</sup> Stallworthy M (n176) at 157.

ground they have a different work ethic ... one needs to see how they are reflected in the national documents to judge the commitment of countries to the ideal'.<sup>184</sup>

Effectiveness is a relative concept, which here means good outcomes<sup>185</sup> that must arguably emanate from government response that is transparent, participatory and based on freely available scientific and statistical information.<sup>186</sup> Moreover, in order for science to become or remain relevant in democratic societies that depend on informed decision-making, scientists must communicate with the public for two main reasons namely revealing the socio-economic and safety impacts of biotechnology as well as the related moral dilemma.<sup>187</sup>

Decision-making becomes complicated because the major stakeholders in risk decision-making (politicians, biotechnology investors, scientists, civil society and the public) should jointly engage in identifying the problem, suggesting options, assessing those options and reaching consensus.<sup>188</sup> Consensus should be guided less by vested interests that originate from their role as risk producers and more by balancing it with broader social interests such as safety and environmental protection.<sup>189</sup> Attempts to reconcile these varying interests in decision-making may make transparency difficult to achieve, particularly where there is unequal representation of the various stakeholders. This leaves the question of transparency by whom, to whom and under what terms unanswered.<sup>190</sup> Lack of transparency may however be remedied at the level of risk management which has the potential to take place in the public domain.<sup>191</sup>

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<sup>184</sup> Mugwanga J 'Collaboration in Biotechnology Governance: Why Should African Countries Worry about Those among Them that are Technologically Weak?' 8(3) *Journal of Technology Management and Sustainable Development* (2009):265-279 at 272. The barrier also applies to regional bodies Such as Southern African Development Community (SADC) and the East African Community (EAC).

<sup>185</sup> Gough J (n42).

<sup>186</sup> Young T (60) at 34.

<sup>187</sup> Osseweijer P *A Short History of Talking Biotech* (2006):33.

<sup>188</sup> Renn O (n169):226-258 at 240.

<sup>189</sup> Ibid.

<sup>190</sup> Lodge M, 'Accountability and Transparency in Regulation: Critiques, Doctrines and Instruments' in Jordan J and Levi-Faur D, (eds) *The Politics of Regulation: Institutions, and Regulatory Reforms for the Age of Governance* (2004):124 -144 at 124 Edward Elgar Publishing Limited Cheltenham (UK)

<sup>191</sup> Pedersen O 'Environmental Principles and Environmental Justice' 12 *Environmental Law Review* (2010):26-49 at 33.

The public are more likely to be interested in broader issues than mere technical (biotechnological) criteria in mind.<sup>192</sup> Thus within its key institutions, society needs to incorporate the full range of relevant considerations including values and ethics that form part of the public interest.<sup>193</sup> In viable or even emerging democracies, issues such as those concerning decision-making in biotechnology, should be dealt with openly and transparently with the public playing key roles.<sup>194</sup> In any event, risk management provides an umbrella under which information from different sources can be combined in order to reach and implement a comprehensive decision.<sup>195</sup> Part of the challenge for African countries is that ‘the general public and farmers in particular are not informed about the nature of the technology, its potential benefits and risks, and rarely do they participate in deciding on what crops or problems biotechnology research and development should focus on’.<sup>196</sup> Thus, the manner and extent to which public involvement may contribute to effective implementation of the precautionary principle especially in decision-making, forms an integral part of this thesis.

Dunleavy’s proposition in respect to research for a doctorate is that ‘you define the question: you deliver the answer’.<sup>197</sup> Thus this thesis attempts to answer with respect to the precautionary approach as provided for in the Protocol, whether and, if so, how, to what extent and with what effect it has been implemented in South Africa, Kenya, Zambia and Namibia for purposes of GMO regulation?

### **1.3 Objective**

The main goal of this thesis is to examine the regulation of GMOs in an African context focusing on the selected countries of South Africa, Kenya, Zambia and Namibia. The thesis investigates and proposes the effective implementation of the precautionary approach in enhancing biosafety legislation relating to GMOs within the selected countries with possible replication across SSA. This will benefit key

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<sup>192</sup> Anderson K, Britt-Marie and Drottz-Sjöberg ‘Models of Transparency and Accountability in the Biotech Age’ (2006):46-56 at 47 available at <http://bst.sagepub.com/content/26/1/46> (Accessed 20 July 2010).

<sup>193</sup> Ibid.

<sup>194</sup> Andersson K *et al* (n193) at 49.

<sup>195</sup> Gough J (n42).

<sup>196</sup> Clark N *et al* (n179).

<sup>197</sup> Dunleavy P *Authoring a PhD: How to Plan, Draft, Write and Finish a Doctoral Dissertation* (2003) Palgrave Macmillan New York.

stakeholders including governments, consumers, the public and biotechnology investors in respect of introducing GMOs into the environment. Furthermore, the legislation may then aid decision making through balancing potential risks and benefits and hence contribute to adequate protection the environment and humans against potential harm associated with GMOs, while encouraging investment in biotechnology.

The study analyses and identifies emerging trends in implementation of the precautionary principle among countries with varying attitudes towards GMOs. Based on this analysis, the study aims to investigate whether African countries can develop workable biosafety regimes that embrace the precautionary principle and still promote biotechnology. The thesis aims to make recommendations on how theory concerning the approach may translate into reality in decision-making for the purpose of making biosafety legislation more relevant in addressing the interests, priorities and challenges of the selected countries and SSA in general.

To achieve its objective the thesis attempts to answer the following three pertinent specific questions:

- (i) What makes GMOs a controversial issue globally and how does the controversy impact on development of biosafety legislation in the selected countries?
- (ii) In attempts to resolve the GMO controversy, what are the emerging trends in the implementation of the precautionary approach in the selected countries and what accounts for such trends?
- (iii) From the perspective of precautionary approach, how may the regulation of GMOs in the selected countries be made more accountable and responsive to the people's interests, needs and priorities?

#### **1.4 Rationale of the Study**

This thesis uses the precautionary approach as a tool for analysis because of its central role as the guiding criterion in regulation under the Protocol. Analysing the regulation of GM food from the perspective of the precautionary approach provides

an opportunity for assessing the willingness, or lack thereof, in the selected countries to develop credible biosafety regimes. The approach is not only concerned with the views of scientists about the relevant data or how risk assessment is undertaken, but also with 'how the decision-making institution balances science, scientific uncertainty and the normative aspects of decision-making in the exercise of its discretion'.<sup>198</sup> To be relevant, the decision-making should safeguard the interests and priorities of all stakeholders in relation to GMOs. Moreover, developing countries have much more at stake in resolving the GM food conflict than do developed countries as the potential benefits and risks are greater in the former than in the latter.<sup>199</sup> Thus this study is important for six main reasons.

First, the alleged uncertainties, related fears, lack of data and ecological complexity associated with safety of GM food dictates that a balance must be sought between potential risks and benefits.<sup>200</sup> Consequently there is a need for application of the precautionary approach in the regulation. Unfortunately, many African states are caught up in a GMO 'cross fire'<sup>201</sup>. They find themselves in a dilemma largely attributable to differences in opinion between the USA and the EU. The opposing camps are working in one way or another to influence biosafety legislation in Africa. Furthermore, legislation in the selected countries has significant trade implications for both sides of the transatlantic divide.

Second, by analysing the evolving struggle for GMO governance in the selected countries, this thesis seeks to account for the emerging trends in the implementation of the precautionary approach. Those trends impact the credibility of biosafety legislation and may also shed light on the functionality of the Protocol in the selected countries.

Third, in Africa, as biosafety legislation is in its infancy, this study provides an early opportunity to attempt a comparative study where no similar study was found to have been conducted. The study is topical mainly because, in 1992, the international community expressed its willingness to 'enact effective legislation'.<sup>202</sup> Since then,

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<sup>198</sup> Fisher E (n171) at 319.

<sup>199</sup> Stewart R (n29) at 322.

<sup>200</sup> MYHR I and Traavik T (n62) at 227.

<sup>201</sup> Meijer E and Stewart R (n162) at 247.

<sup>202</sup> Principle 11 of the Rio Declaration (n9).

states have adopted various instruments including the United Nations Framework Convention on Climate Change (UNFCCC)<sup>203</sup> with its Kyoto Protocol<sup>204</sup> and the CBD<sup>205</sup> and its Cartagena Protocol.<sup>206</sup>

Thus the concern of the international community is increasingly shifting from norm-setting to implementation of such norms.<sup>207</sup> By assessing the emerging trends in the implementation of the principle, this study aims to provide a roadmap that may enhance the development of a jurisprudence relating to the principle across SSA. Focusing on the precautionary approach in an African context serves a number of purposes.

- It enhances a proper understanding of some of the thresholds imposed by the Protocol
- The lessons to be learnt from the emerging trends regarding implementation of the approach constitute an invaluable source for future reference, in particular, to enable some states to reconsider their attitudes towards the principle.
- In their hand book *Applying the Precautionary Principle*<sup>208</sup> Deville and Harding take the view that the hand book is useful to a wide range of people including those in government and local government who apply the principle in decision-making. Inspired by the handbook, the thesis aims to be of relevance to all GMO stakeholders including, scholars, relevant government agencies, decision-makers and the public who may be keen to participate in the GMO activities.

Fourth, the precautionary approach seeks to address scientific uncertainty in the regulation of GMOs for the purpose of minimising or alleviating serious or irreversible damage to the environment and humans. However determining the

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<sup>203</sup> The United Nations Framework Convention on Climate Change 31 *International Legal Materials* (1992):851. It was adopted in 1992 entered into force 21 March 1994.

<sup>204</sup> The Kyoto Protocol was adopted in 1997, entered into force 16 February 2005. It is available at [http://unfccc.int/essential\\_background/kyoto\\_protocol/background/items/1351.php](http://unfccc.int/essential_background/kyoto_protocol/background/items/1351.php)

<sup>205</sup> The Convention on Biological Diversity (n8).

<sup>206</sup> The Cartagena Protocol (n7).

<sup>207</sup> Corell H 'Key note address' in Nordquist M, Moore J and Mahmoudi S (eds) *The Stockholm Declaration and the Law of the Marine Environment* (2003):43-50 at 43.

<sup>208</sup> Deville A and Harding R (n135) at 7.

seriousness or irreversibility of such damage involves social, scientific and economic considerations all of which require involvement of all stakeholders, particularly their perceptions and values.<sup>209</sup> Further, there is a dearth of research creating the link between precaution, participation and sustainability.<sup>210</sup> By focusing on implementation of the principle and examining its relevance within the context of institutional governance, this study attempts to establish the important link between precaution and public participation. It also demonstrates that such implementation will not serve a meaningful purpose in the absence of a supportive administrative structure. The latter encompasses transparency in decision-making, meaningful public participation and access to information.

Fifth, the development of an agenda on the international regulation of biotechnology was arguably instigated by developing countries<sup>211</sup> and thus was a brain child of those countries. Hence, this study provides an opportunity to assess the progress made and the benefits gained by African countries from such regulation. This thesis examines the GMO controversy within an environment where many people are poor, others malnourished, most of them illiterate or semi-illiterate, with limited or no knowledge about GMOs.

In areas such as the North Eastern Province, Turkana and other parts of the Rift Valley in Kenya people have almost no food. Their concern is thus availability, access to and quantity rather than quality and choice of food. The relevance of debate on GM food is likely to be meaningless and irrelevant in the face of starvation and undernourishment.

Taking into account the data used in this study, the findings, the conclusions and recommendations made are based on a practical rather than an abstract perspective. This thesis aims to be useful to countries in three important ways. The study may be used to replicate useful regulation and develop a jurisprudence relating to the principle as follows:

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<sup>209</sup> Deville A and Harding R (n135) at 26.

<sup>210</sup> Stirling A (n166) at 193.

<sup>211</sup> Falkner R 'International Cooperation Against the Hegemon: The Cartagena Protocol on Biosafety' in Falkner R (ed) (n36):15-33 at 31.

- For countries which have no legislation governing GMOs, it provides a benchmark to develop workable biosafety regimes.
- For countries which have some legislation governing GMOs, it provides a basis for enhancing the credibility of existing legislation.
- For countries which have GMO regulations and bills relating to GMOs, it provides a roadmap to enactment of substantive biosafety legislation.

In all three situations the study aims to aid the selected countries to identify, understand and overcome the challenges to expect in GMO regulation.

Sixth, some African countries have embraced GMOs with varying degrees of caution, others are on the 'fence' and a few are strongly opposed.<sup>212</sup> The varying approaches in the selected countries exhibit interesting attributes that stimulated this study. South Africa is the leading promoter of GMOs in Africa. It enacted the Genetically Modified Organisms Act in 1997 and thus has a well-established and regulated biotechnology industry. South African farmers have ongoing plans to extend large scale commercial agriculture into twenty three African countries including Congo and Malawi.<sup>213</sup> Thus, policy, legislation and GMO activities in South Africa are likely to influence developments on GMO activities in other African countries.<sup>214</sup> South Africa has amended its existing biosafety legislation to comply with international instruments, key of which is the Protocol. Furthermore, South Africa's approach to implementing the precautionary principle, will indicate the potential trend for regulation of GMOs in SSA

Kenya is the most advanced and supportive country in East Africa in relation to GMO activities<sup>215</sup> with GM crops such as cotton<sup>216</sup> and maize awaiting

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<sup>212</sup> Stewart R (n29) at 321. Countries on the 'fence' include Tanzania which have been watching the development of GMO activities in Kenya before embracing GMOs. See the discussion at (7.3.1.2).

<sup>213</sup> Cape Times 6 April 2011 p.1.

<sup>214</sup> Gupta A and Falkner R 'The Cartagena Protocol on Biosafety and Domestic Implementation: Comparing Mexico, China and South Africa' (2006):9 The Royal Institute of International Affairs Chatham House London available at [www.chathamhouse.org.uk/eedp](http://www.chathamhouse.org.uk/eedp) (accessed 15 November 2009).

<sup>215</sup> Kameri-Mbote 'Will Kenya's Biosafety Bill 2005 Ever Become Law?' (2007) available at <http://www.checkbiotech.org> (accessed 13 September 2009).

commercialization. Hence countries in the East African Region, most notably, Tanzania, have adopted a 'wait and see' tactic, buying time to observe the developments taking place in Kenya.<sup>217</sup> As early as 1995, Zambia was already studying biosafety guidelines and regulations being developed in Kenya.<sup>218</sup> Thus, a comparative study such as this is both desirable and essential for those three categories of countries identified earlier.

Further, Kenya is one of the countries where biotechnology research and development (R&D) activities were far ahead of substantive biosafety legislation. Adopting such legislation in an environment where R&D activities are advanced makes reconciliation with the public demands for safety and democratic requirements for accountability, an intricate process.

Zambia, however, is a vehement opponent of GMOs. In 2002 when severe drought in Zambia caused starvation, government refused to accept GMO food from the USA arguing that it was better for its people to die of hunger than to eat 'contaminated' food. Such food was to be acceptable only if it was milled and imported into the country in the form of flour. While Zambia is party to the Protocol, it is an example of a country that has developed biosafety legislation from the perspective of resisting GMO. The way it implements the precautionary principle provides a basis for analysis which is biased against the introduction of GMOs.

Namibia is also a party to the Protocol and it enacted its biosafety legislation after entry into force of the Protocol. Namibia, South Africa and Kenya have implicitly reflected the precautionary approach in their legislation. In contrast to the two countries where biotechnology activities are increasing rapidly, in Namibia such activities appear to be slower despite the fact that all three countries are proponents of GMOs.

The varying attitudes described so far towards the precautionary principle and regulation of GMOs, form a basis for investigating whether the principle impedes or

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<sup>216</sup> In 2008 a group of MPs visited the Bt cotton trials at the Kenya Agricultural Research Institute (KARI) Mwea station to see for themselves the progress made in GMO activities. See Karembu M, Otunga D and Wafula D 'Developing a Biosafety Law: Lessons from the Kenyan Experience' (2010):1-61 at 24 available at [www.isaaa.org](http://www.isaaa.org) (accessed 22 March 2011).

<sup>217</sup> Kameri-Mbote (n215).

<sup>218</sup> Lewanika M 'State of the Art of Biotechnology Research in Zambia' *Africa* 3(3) *African Crop Science Journal* (1995):299-301 at 299.

facilitates the development of biotechnology and its regulation. The study provides an opportunity to examine how and the extent to which the selected and other African states may develop or otherwise improve their biosafety regimes. The study objectively analyses all the relevant issues including claims for accountability and transparency.

## 1.5 Methodology

This study is comparative. It uses the precautionary approach as a tool for analysis of GMO regulation in the selected countries. Data was collated from primary and secondary sources using extensive literature. A thematic approach is employed in analysing issues in order to avoid repetition, for example, in chapter five, public participation as a theme is discussed for each of the selected countries. The descriptive aspects of the thesis relate to background and factual information while the analytical aspects critically engage with the issues raised.

Primary sources at the domestic level in particular, are authoritative statements of legal rules by government bodies.<sup>219</sup> These include legislation, bills, policies, regulations, official government documents, opinions of courts and decided cases. At the international level, relevant primary sources include treaties, protocols and declarations by states.

Secondary sources are used to explain, interpret, develop, locate or update primary sources.<sup>220</sup> They may contain critical analyses as well as useful comments of varying degrees of persuasiveness.<sup>221</sup> Secondary sources used in this study include books, journal articles, Internet materials, reports, conference papers and newspaper reports from reputable sources. Environmental law is a field where the speed and scale of legal and regulatory change is significantly fast.<sup>222</sup> Thus internet and newspaper reports provide useful, up to date, information.

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<sup>219</sup> Jacobstein M, Mersky R and Dunn D *Legal Research Illustrated* (1994):10.

<sup>220</sup> Jacobstein M, Mersky R and Dunn D *Legal Research Illustrated* (1994):10.

<sup>221</sup> Ibid.

<sup>222</sup> Fisher E, Lange B and Scotford E 'Maturity and Methodology: Starting a Debate about Environmental Law Scholarship' 21(2) *Journal of Environmental Law* (2009) 213-250 at 213.

## 1.6 Scope

This study examines the regulation of GMOs in the selected countries from the perspective of the precautionary approach. It does not claim to cover exhaustively all aspects of the approach, in the regulation of GMOs. Writing from a legal background also means that the thesis cannot claim to effectively deal with intricate scientific terms or issues, except in so far as such terms or issues are the subject of legal scrutiny. Further, taking into account the issues of terminology concerning the terms precautionary 'principle' and 'approach',<sup>223</sup> the latter is used in the thesis except where circumstances, such as the historical developments (discussed in chapter three), dictate that the former be used.

Relevant areas of international law, including one of its major components, international environmental law, are discussed as they give legitimacy to the application of precautionary principle. Further, they contain customary international law and treaty obligations requiring implementation of the principle in the selected countries. Limited aspects of sociological jurisprudence are examined for the purpose of developing a theoretical conceptual framework for the thesis.

Institutional governance of GMOs in the selected countries provides what may be termed as the *acid test* used to assess, whether, and if so how and to what extent implementation of the principle may facilitate decision-making through effectively balancing potential risks and benefits of GMO introduction. It is within this context that two main areas of institutional governance relevant to decision-making are discussed ie decision-making institutions and public participation, including access to information.

## 1.7 Structure

The thesis systematically discusses the issues raised, starting with broader socio-economic, environmental, ethical and political issues then moving to more specific ones, such as legislation governing biotechnology. This approach has three main advantages:

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<sup>223</sup> Discussed at (3.5).

- It provides an appropriate context for discussing the imperatives that underpin regulation.
- It forms a basis for comprehensive understanding of the implementation of the precautionary approach in an African context because challenges to the approach are not restricted to developing countries.
- It is used to develop a theoretical framework<sup>224</sup> that guides the thesis.

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<sup>224</sup> See discussion at (2.8).

## Chapter Two

### CONCEPTUAL ISSUES IN THE GMO CONTROVERSY

'It must be borne in mind that food is not only an agricultural or trade commodity but also an essential emotional, political and public health issue'<sup>1</sup>

#### 2.1 Understanding the GMO Debate

Since their introduction, genetically modified organisms (GMOs) have been mired in controversy particularly on how to achieve a balance between potential risks and benefits. Complicating this debate is the existence of competing socio-economic, environmental, ethical and political interests which have polarised the international community into two opposing camps: the proponents and opponents to GMOs. This in turn has presented challenges in their regulation.

Understanding the source of the conflict, however, requires getting to grips with the arguments presented by both camps. This chapter therefore analyses these various interests and how they impact on the regulation of GMOs. Such a discussion lays the ground for a critique of the implementation of the precautionary principle in subsequent chapters of the thesis.

#### Tool Making and Biotechnology

Tool making is not a recent phenomenon in human history. Tools such as fire and nuclear technology result in both benefits and harm. Genetic engineering is one such tool of the twentieth century that has resulted in global controversy particularly concerning its alleged benefits and risks in agricultural biotechnology. The controversy is exacerbated because what we eat has a history – not merely a history of food but a history in culture and society.<sup>2</sup> For this reason, values and culture are

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<sup>1</sup> 'Ethics of Modern Development in Agriculture Technologies' Opinion No. 24 (2008):18 The European Group of Ethics in Science and New Technologies to the European Commission available at [http://ec.europa.eu/european\\_group\\_ethics/doc...](http://ec.europa.eu/european_group_ethics/doc...) (accessed 18 September 2009).

<sup>2</sup> Tansey G and Rajotte T *The Future Control of Food*:7.

areas over which conflicts arise when a state (or any other people) promote or impose its values on another civilization.<sup>3</sup>

The dilemma of protecting the environment and human health against the contested potential harm of genetically modified organisms (GMOs) without hindering scientific inventions and international trade remains problematic. As Rifkin observes, human beings make history by making a choice from among 'competing possibilities and priorities'.<sup>4</sup> In addition, all technologies develop within given economic, political, intellectual and other contexts, without which the technology will be abortive.<sup>5</sup> Moreover, agriculture itself is perceived as a 'difficult' sector for many reasons, but mainly because of the many areas it covers, various farming systems, agro-ecosystem and the various interests involved.<sup>6</sup> In addition, potential risks are essentially hypothetical as they do not relate to specific causalities but rather with probabilities and complex interrelationships. This makes it difficult to judge when such risks are real enough for politics to respond, let alone how.<sup>7</sup>

These and other considerations imply that attempts to explore the possibilities and face the challenges of any technology will not only attract increased interest in that technology; it may enhance its chances of success or failure. Further, it may validly be argued that the desire of opposing camps to promote (or even defend) their interests and perspectives in relation to biotechnology has enhanced the zeal with which these opposing camps operate.

The actions and responses of each camp may have a positive or negative impact on the development of biotechnology; it will probably have both. A clear understanding of the conceptual issues that impact the complexity and regulation of biotechnology is imperative. By analysing the conceptual issues, the thesis places the precautionary approach in its appropriate context in the regulation of biotechnology. Before discussing them, an overview of the problem in African agriculture is important. It provides justification for the introduction of GMOs into the continent.

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<sup>3</sup> Huntington S *The Clash of Civilizations and the Remaking of the World Order* (1996):208.

<sup>4</sup> Rifkin J *The Biotech Century* ((1998):xiv.

<sup>5</sup> Ellul J *The Technological System* (1980):31.

<sup>6</sup> MEA Bulletin 12 March 2009 International Institute for Sustainable Development in Conjunction with UNEP available at <http://iisd.ca/mea-1/meabulletin12.pdf> (accessed on 20 March 2009).

<sup>7</sup> Radkau J *Nature and Power: A Global History of the Environment* (2008):259.

## 2.2 The Problem with African Agriculture

About 80% of the population in Sub-Saharan Africa (SSA) live in rural areas where 70% depend on agriculture for food production through farming.<sup>8</sup> Most are engaged in small scale farming that provides employment for 60% of the population.<sup>9</sup>

Agriculture is the 'cornerstone' of most African economies, being the biggest source of foreign exchange<sup>10</sup> and the main generator of savings and tax revenues.<sup>11</sup> It remains central in efforts to achieving the poverty targets of the Millennium Development Goals (MDGs) in the continent.<sup>12</sup> These include eradication of extreme poverty, ensuring environmental sustainability, combating HIV/AIDS, Malaria and other diseases.<sup>13</sup>

Africa is a continent rich in natural and human resources but due to famine attributable to food shortages,<sup>14</sup> disease and growing populations, almost 200 million people are undernourished.<sup>15</sup> More than 60 percent of the undernourished live in countries that include the Democratic Republic of Congo (DRC), Mozambique, Angola, Cameroon, Ethiopia, Kenya, Tanzania and Zambia.

Other factors that hamper agricultural productivity include: lack of a dominant farming system on which food security largely depends, heavy reliance on rain as opposed to irrigation; lack of functional competitive markets; under-development in agricultural research and development (R&D) and infrastructure; poor soil fertility, and predominance of customary land tenure<sup>16</sup>. In Zambia for example, the

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<sup>8</sup> See 'The Crisis in African Agriculture: a More Effective Role for EC aid?' (2005):6 available at [www.practicalaction.org.uk](http://www.practicalaction.org.uk) (accessed 16 May 2009).

<sup>9</sup> Ibid.

<sup>10</sup> Barker J 'Agribusiness and Agrarian Change' in Barker J (ed) *The Politics of Agriculture in Africa* (1984):11-31 at 14 SAGE Publications London.

<sup>11</sup> See 'The Crisis in African Agriculture: a More Effective Role for EC aid?' (n8) at 6.

<sup>12</sup> Ibid.

<sup>13</sup> Other MDGs are: achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, and develop a global partnership for development. For more details on MDGs visit <http://www.undp.org>

<sup>14</sup> Stewart R 'GMO Trade Regulation and Developing Countries' *Acta Juridicta* (2009):320-380 at 327.

<sup>15</sup> See 'The Challenge of African Agriculture' (2011) InterAcademy Council available at <http://www.interacademycouncil.net/CMS/Reports?AfricaAgricultu...> (accessed 17 April 2011).

<sup>16</sup> Ibid.

agriculture sector is facing enormous challenges and endless problems which require urgent intervention by government and all the stakeholders.<sup>17</sup>

In addition, civil wars (some of which are mainly sponsored by western powers trying to control the region's mineral wealth<sup>18</sup>), political instability and other factors such as lack of access, negatively impact on food security. As a result, the need for increased food production is imperative. Whether science and technology may make a difference is a possibility to be examined.<sup>19</sup>

Over the years cultivation of GM crops has been on the increase globally. Figure 1<sup>20</sup> on the next page is a schematic presentation of the global GM crop up take by the year 2010. It shows that the uptake of GMO crops globally is increasing steadily. The year 2010 marked the 15<sup>th</sup> anniversary of the commercialisation of biotechnology crops. In a Report<sup>21</sup> for that year compiled by the International Service for the Acquisition of Agri-biotech Applications (ISAAA), the accumulated hectareage from 1996 – 2010 exceeded an unprecedented milestone one billion hectares globally. In 2010, developing countries grew 48% of the global biotechnology crops. ISAAA attributes the increase to 'consistent and substantial, crop productivity, economic and environmental welfare benefits. This assertion is perhaps true in respect to the mega-countries growing GM crops. These include USA, Brazil, Argentina, India, Canada and South Africa.

### **2.3 The Status of GMOs in Africa: An Overview**

Increased interest in GMOs in developing countries is attributable to the recent dramatic increases in food prices and the threat to developing country agriculture

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<sup>17</sup> See 'Speech for the ZNFU President at the 104<sup>th</sup> Annual Congress held at Mulungushi International Conference Centre Lusaka 4 October 2009 available at [http://www.znfu.org.zm/index.php?option=com\\_content&view=article&id=151:speech-for-the-znfu-president-at-the-104th-annual-congress&catid=46:press-statements&Itemid=67](http://www.znfu.org.zm/index.php?option=com_content&view=article&id=151:speech-for-the-znfu-president-at-the-104th-annual-congress&catid=46:press-statements&Itemid=67) (accessed 15 July 2010).

<sup>18</sup> See 'High-Tech Genocide in Congo' available at <http://www.projectcensored.org> (2007) (accessed 2 November 2009).

<sup>19</sup> See 'The Challenge of African Agriculture' (2011) InterAcademy Council (n15).

<sup>20</sup> Available at <http://www.isaaa.org/resources/publications/briefs/42/executivesummary/default.asp> (accessed 20 August 2011).

<sup>21</sup> See ISAAA Brief 42-2010: Executive Summary available at <http://www.isaaa.org/resources/publications/briefs/41> (accessed 20 August 2011).

posed by climate change.<sup>22</sup> In Africa three countries led by South Africa have commercialised GMO crops

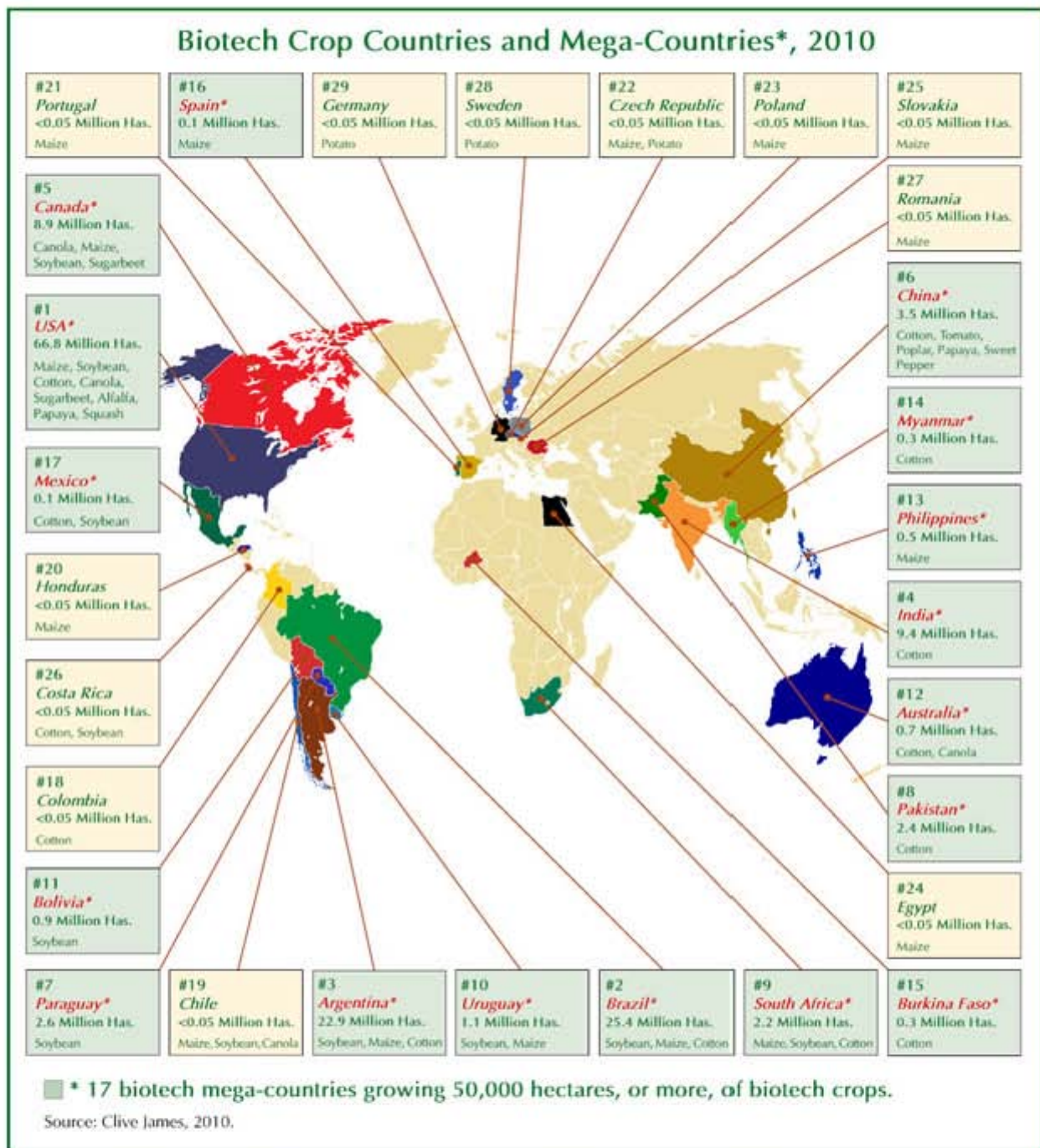


Figure 1. Global Map of Biotech Crop Countries and Mega-Countries in 2010

The other two are Burkina Faso and Egypt. Field trials for GM crops are also being conducted in countries that include Morocco, Senegal, Tanzania, Uganda, Zambia

<sup>22</sup> Stewart R (n14) at 320.

and Zimbabwe.<sup>23</sup> Uganda may soon adopt biosafety legislation<sup>24</sup> which will make commercialisation of bananas and other GM crops possible.

Currently in South Africa GM crops are commercially grown in various parts of the country. For example, maize is grown by Agro, BASF, Carnia, Pannar and Monsanto in places that include Delmas, Nelspruit, White River, Skeersport and Potchefstroom. Other GM crops grown by various companies across the country include cotton, soyabean, potatoes, tomatoes, apples and canola.<sup>25</sup>

In Kenya experimenting with GMO foods has been going on in a number of places including Kiboko, Alupe, Busia, Kabete and Mwea research centres.<sup>26</sup> The adoption of the Biosafety Act of Kenya will enable the country to commercialise GM crops in the country. These include cotton and maize which have been undergoing field trials at the Kenya Agricultural Research Institute (KARI) and other parts of the country.

The increasing uptake of or interest in GMOs in some of the African countries such as South Africa, Kenya, Uganda and Burkina Faso, dictates that as many stakeholders as possible should understand and appreciate the controversy surrounding GM food and the need for holistic approaches towards their regulation. It should however be noted that there was resistance to the commercial release of the GM potato<sup>27</sup> and the introduction of GM sorghum<sup>28</sup> in South Africa. In Kenya, there were protests to the enactment of the Biosafety Act.<sup>29</sup> The protests are still going on due to fear by the public and civil society that GM maize may be imported even

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<sup>23</sup> Ibid at 321.

<sup>24</sup> See 'Uganda Minister Assures on Biosafety Bill' (2008) available at <http://biotecuganda.com/articles.php?id=5> (accessed 23 November 2009).

<sup>25</sup> See 'Where in South Africa are GE Crops Growing?' available at [http://www.safeage.org/index.php?option=com\\_content&view=article&id=54&Itemid=43](http://www.safeage.org/index.php?option=com_content&view=article&id=54&Itemid=43) (accessed 19 September 2009).

<sup>26</sup> Thatiah P 'Alarm Raised as GMO Foods Hit the Market' The Standard 14 May 2009 available at [www.eastandard.net](http://www.eastandard.net) (accessed 14 May 2009).

<sup>27</sup> Potato farmers in South Africa are vehemently opposed to the introduction of a GM spud citing potential higher costs and loss of markets for their non-GM crop arguing that absence of mandatory labelling and tracing procedure made it impossible to keep the GM potato separate. The farmers concluded that losses outweigh any alleged benefits. See Cape Times 17 September 2008 p.6.

<sup>28</sup> In 2006 South Africa rejected a Bill and Melinda 'Super Sorghum' (Intended to elevate levels of zinc, iron and vitamins) on the grounds that it was likely to contaminate wild varieties. See 'South Africa halts 'Super Sorghum' study available at <http://www.scidev.net/en/nes/south-africa-halts-super-sorghum-study.html> After some negotiations with the relevant stakeholders, the project was accepted.

<sup>29</sup> See the discussion in chapter seven.

before the regulations under the Biosafety Act are approved.<sup>30</sup> Zambia has remained at the forefront on rejection of GM food as aid.<sup>31</sup> The varying attitudes towards GMOs must be understood within the perspectives that underpin environmental protection in general.

## 2.4 Varying Environmental Perspectives

The manner and ways in which states, individuals, groups and other stakeholders view nature (hence, the environment) is material in assessing their reasoning, responses and actions in relation to biotechnology. The different ways in which humanity views nature, has resulted in the emergence of various environmental perspectives. At the outset, it is therefore necessary to identify these perspectives (or ethics), which in one way or the other, underpin the regulation of biotechnology. Bell and McGillivray have identified four perspectives as follows.

- Environmental, that places emphasis on protection of the environment or biodiversity, and where there is no conflict with such protection, human health.
- Economic, that places emphasis on taking action where it is economically efficient based on an analysis of the costs and benefits of individual options. Effectively, it is an accounting framework that prescribes the types of costs and benefits to consider, how to assess and aggregate them.<sup>32</sup>
- Social and cultural, that questions attitudes to natural scientific assessments of risk, and that is one of the reasons why risk (and hence precaution) is construed culturally. The social and cultural perspective promote stakeholder consultation in order to arrive at objective decisions on what is acceptable.
- Scientific, that adopts a 'technocratic' approach which postulates environmental issues and disputes can be resolved scientifically and purports to reach 'objective' and conclusive opinions about such matters.<sup>33</sup>

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<sup>30</sup> See 'Kenya Farmers in Protest over Monsanto's Genetically Modified Corn' available at <http://newscastmedia.com/blog/2011/07/08/kenyan-farmers-in-protest-over-monstantos-genetically-modified-corn/> accessed 10 July 2011.

<sup>31</sup> See the discussion at chapter seven.

<sup>32</sup> Strydom H and King D *Environmental Management in South Africa* (2009):52.

<sup>33</sup> Bell S and McGillivray D *Environmental Law* (2006):54-59; *Encyclopaedia of Bioethics* 2 year:757

These perspectives have an impact on how people in different places view the environment. They tend to influence the balancing of the social-economic, environmental, cultural and other concerns relevant to the regulation of biotechnology. For example, environmentalists such as Greenpeace and the Independent Science Panel (ISP)<sup>34</sup>, give priority to the protection and conservation of biological diversity. This is an issue of major concern to the international community. A brief discussion of the subject is useful in placing the GMO controversy in its appropriate context.

## 2.5 Biological diversity

Biodiversity comprises all living beings from the most primitive forms of viruses to the most sophisticated and highly evolved animals and plants.<sup>35</sup> It is usually considered in three categories: genetic diversity that refers to variability within a species; species diversity that refers to the variety of living organisms on earth or in a given area of study and ecosystem diversity which refers to diversity and health of the ecological complexes within which species occur.<sup>36</sup> Biodiversity is therefore as varied as it is complex. Art 2 of the Convention on Biological Diversity (CBD)<sup>37</sup> defines biological diversity as:

‘the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems’.

Threats to biodiversity take place ‘when one of the members of the ecosystem is eliminated, causing degradation to the ecosystem in unanticipated ways or a series of events lead to the degradation of the environment’.<sup>38</sup> However, an ecosystem is a complicated organism whose functions depend upon dynamic interaction among its

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<sup>34</sup> Ching L and Mae-Wan Ho ‘The Case for A GM Free Sustainable World (2003):15 Independent Science Panel London ISBN:0-9544923-0-8 (ISIS) available at <http://www.isis.org.uk/TheCaseforAGM-FreeSustainableWorld.php> (accessed 8 June 2009).

The Panel was launched on 10 May 2003 in London. It seeks a GM-Free sustainable world.

<sup>35</sup> Ammann K ‘Biodiversity and Genetically Modified Crops’ in Ferry N and Gatehouse M, *Environmental Impact of Genetically Modified Crops* 2009):240-264 at 241.

<sup>36</sup> McNeely J ‘Economics and Biological Diversity: Developing and Using Economic Incentives to Conserve Biological Resources’ (1988) International Union for the Conservation of Nature available at <http://data.iucn.org/obtw-wpd/edocs/1988-MacN-001.pdf>; Raven P, Berg L and Hassenzahl D (eds) *Environment* (2008):377

<sup>37</sup> The Convention on Biological Diversity 31 *International Legal Materials* (1992): 822.

<sup>38</sup> Sutton V *Law and Biotechnology: Cases and Materials* (2007):232.

parts and such interactions are hardly understood.<sup>39</sup> Such threats are mainly attributable to over-harvesting, habitat destruction, pollution and improper introduction of alien plants and animals.<sup>40</sup> These anthropogenic activities have resulted in three crises that simultaneously threaten humanity: a dwindling of the Earth's non-renewable energy reserves (due to overpopulation, logging, grazing and development activities), a risky build up of global warming gases and continuous decline in biological diversity.<sup>41</sup> Increase in population in Africa, is of major concern because the more the people the more the strain on biodiversity. For example the need for more food necessitates the clearing of more forest land thus negatively affecting biodiversity.

The benefits of biodiversity are elusive and due to its complexity, economists have failed to identify acceptable ways of computing such benefits.<sup>42</sup> Biological diversity impacts on conservation in two main ways. (i) effective species conservation is dependent upon effective conservation of the ecosystems of which such species form part<sup>43</sup> (ii) conserving diversity should be broad based (as opposed to narrow and artificial conservation) in such a manner that allows species systems to develop and interact freely.<sup>44</sup>

The importance of biodiversity for the benefit of humans and other species cannot be overemphasised. Biological diversity serves many purposes of which Raven identifies two. All our food, medicines, most of our building materials such as timber, clothing, and chemical feedstocks are derived from biodiversity. The other one is that the communities and ecosystems that comprise biodiversity safeguard our watersheds, stabilize our soils, impact on climate change and provide insects (such as bees<sup>45</sup>) that facilitate pollination of our crops.<sup>46</sup> It is the differences within

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<sup>39</sup> Winpenny T *Values for the Environment* (1993):119.

<sup>40</sup> *The Programme for Further Implementation of Agenda 21* United Nations General Assembly Resolution A/RES/S-19/2 adopted on 19 September 1997 available at [www.un.org/documents/ga/res/spec/aress19-2.htm](http://www.un.org/documents/ga/res/spec/aress19-2.htm) (accessed 20 February 2009).

<sup>41</sup> Rifkin J (n4) at 8.

<sup>42</sup> Winpenny T (n39) at 119.

<sup>43</sup> McNeely J (36).

<sup>44</sup> Winpenny T (n39) at 119.

<sup>45</sup> Pimentel D and Pimentel M 'The Future: World Population and Food Security' in Soskolne C (ed) *Sustaining Life on Earth* (2008):285-298 at 294. The two authors assert that if bees were to be extinct thereby immensely reducing pollination, about 33 percent of the all world food would be lost.

<sup>46</sup> Raven P 'Agricultural biotechnology and the Environmental Challenge' in Kleinman D, Kinchy A and Handelsman J (eds) *Controversies in Science and Technology* (2005):169-177 at 171.

the species that we use that are important when stresses change. Biodiversity must be safeguarded so as to keep and maintain breeding varieties that are capable of resisting diseases and threats such as climate change.<sup>47</sup>

Further, biodiversity is of intrinsic value; it has 'ecological, genetic, social, economic, scientific, educational, cultural, recreational aesthetic values...' and it is important 'for evolution and maintaining life sustaining systems'<sup>48</sup> For this and other reasons, analysts recognise that:

'Our natural world is a thing of beauty largely because of the diversity of living forms found in it. Artists have attempted to capture this beauty in drawings, paintings, sculpture, and photography, and poets, writers, architects and musicians have created works reflecting and celebrating the natural world'<sup>49</sup>

Loss of biodiversity presents one of the most serious threats to the world's long-term sustainability.<sup>50</sup> Agriculture, forestry and grazing are the most destructive agents accounting for the exploitative use of more than half of the world's land surface.<sup>51</sup> In contrast however, biological resources constitute the foundation upon which we build civilizations as nature's products support diverse industries in areas such as agriculture, cosmetics, pharmaceuticals, pulp and paper, horticulture, construction and waste management.<sup>52</sup> Locally, Africa's biological richness is material in alleviating poverty, enhancing food security, promoting industrial innovation and contributing to development of new medicines.<sup>53</sup> Biodiversity may therefore be described as mainly being biological insurance for ecosystem processes.<sup>54</sup>

Further, loss of biodiversity increases the chances species of extinction;<sup>55</sup> it threatens our food supplies, opportunities for recreation and tourism, sources of

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<sup>47</sup> Tansey G and Rajotte T (n2) at 9.

<sup>48</sup> See the preambular paragraphs of the Convention on Biological diversity (n37).

<sup>49</sup> Raven P *et al* (n36) at 379.

<sup>50</sup> Raven P (n47) at 171.

<sup>51</sup> *Ibid.*

<sup>52</sup> See a Report on 'How the Convention on Biological Diversity Promotes Nature and Human well-being' Secretariat of the Convention on Biological diversity April 2000 ISBN 92-807-1094-1 available at [www.biodiv.org](http://www.biodiv.org) (accessed on 12 July 2009).

<sup>53</sup> Nnadozle K, Lettington R and Bruch C *et al* (eds) *African Perspectives on Genetic Resources: A Handbook on Laws, Policies and Institutions* (2003):1.

<sup>54</sup> Ammann K (n35) at 249.

<sup>55</sup> Winpenny T (n39) at 119.

wood, medicines and energy. Moreover rather than being an obstacle, protection of the natural environment is a core element of development as cumulative and irreversible degradation of the biosphere on which life is dependent upon,<sup>56</sup> leads to destruction both of humanity and the environment itself. During the recent International Diversitas Biodiversity and Society Conference experts confirmed that loss of biodiversity in the earth system is taking place at an accelerating rate and that such loss erodes the integrity of ecosystems and their capacity to adapt in a changing world. The experts took the view that accelerated global loss of biodiversity poses 'a serious risk to human wellbeing and a squandering of current assets and future opportunities.'<sup>57</sup>

Lack of knowledge and the imminent loss of, and threats to biodiversity have made the conservation and sustainable use of global biodiversity an awesome challenge to humanity.<sup>58</sup> Invariably, poor people living in the developing countries suffer most from the adverse effects of environmental degradation.<sup>59</sup>

Both the CBD and the Protocol seek the protection and conservation of biological diversity among other things.<sup>60</sup> In its 83<sup>rd</sup> plenary meeting, the General Assembly of the United Nations declared 2010 the International Year of Biodiversity thereby setting in motion a process of re-examining the urgent need to conserve the earth's ecosystems.<sup>61</sup>

Thus, the strength of each country's conservation ethic is measured by the wisdom and effectiveness of its legislation in protecting biological diversity.<sup>62</sup> Conserving biological diversity is an investment in immortality<sup>63</sup> and is a key concern

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<sup>56</sup> *North – South: A Programme for Survival* – The report of the Independent Commission of International Development Issues under the Chairmanship of Willy Brandt (1980):114-116.

<sup>57</sup> The Conference took place on 13-16 October 2009 at Cape Town. See the conference statement available at <http://diversitasconference.wordpress.com/2009/10/16....> (accessed 25 October 2009).

<sup>58</sup> See 2(6) *Biodiversity letters* (1994):186-187 at 186.

<sup>59</sup> Global Environmental Outlook GEO Report No 4 (2007):11q available at [http://www.preventionweb.com.net/files/2298\\_GEO4ReportFullen.pdf](http://www.preventionweb.com.net/files/2298_GEO4ReportFullen.pdf) accessed 20 February 2011.

<sup>60</sup> Article 1 Convention on Biological Diversity (n37) and Article 1 of the Cartagena Protocol on Biosafety<sup>39</sup> *International Legal Materials* (2000):1027 respectively.

<sup>61</sup> See 'United nations General Assembly General Assembly Resolution on CBD' Resolution 61/204 of 20 December 2006 available at <http://www.cbd.int/doc/notifications/2007/ntf-2007-013-unga-en.pdf> (accessed 12 June 2009).

<sup>62</sup> Wilson E *The Future of Life* (2002):185.

<sup>63</sup> *Ibid* at133.

for sustainable development.<sup>64</sup> It is a central issue in the regulation of biotechnology. Most of the issues that underpin the GMO global controversy revolve around it.

## 2.6 Biotechnology: Causes of the Global GMO Controversy

The causes of the GMO controversy are as varied and as complex as biotechnology itself. These include, differences in opinion on potential risks and benefits of GMOs, ethical issues, public perceptions about GMOs, socio-economic considerations, globalization and political considerations.

### 2.6.1 Potential Risks and Potential Benefits of Biotechnology

The debate about potential benefits and potential risks of GM crops takes place between two extreme camps which view such crops as either good or bad. Opponents view them as potentially harmful to global agriculture, the environment and human health.<sup>65</sup> Proponents argue that there are few, if any, new risks in the GM technology; they regard GM crops as the saviour of both global agriculture and the environment.<sup>66</sup> Moreover the benefits and risks associated with GM crops are difficult to quantify, making it almost impossible to determine whether and the extent to which biotechnology may provide a sustainable solution to food problems in developing countries.<sup>67</sup>

In resisting the GMO technology, opponents argue that predicting ecological consequences is difficult due to variations in environments, complexities of ecosystems and the large numbers of species that exist within most environments.<sup>68</sup> Moreover, the proper functioning of viable ecosystems is the underpinning of sustainable development and the maintenance of human life and the quality of that life.<sup>69</sup> In addition, there are uncertainties associated with the occurrence, magnitude,

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<sup>64</sup> Ammann K (n35) at 241.

<sup>65</sup> Juma C 'Biotechnology in a Globalizing World: The Coevolution of Technology and Social Institutions' 55(3) *Bioscience* (2005)265-272 at 266.

<sup>66</sup> Schaal B 'Biodiversity, Biotechnology and the Environment' in McManis C (ed) *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge* (2007): 137-148 at 137.

<sup>67</sup> See 'Africa Environment Outlook 2' (2006):300 available at [www.unep.org/dewa/africa/docs/en/AEO2\\_Our\\_Environ\\_Our\\_Wealth.pdf](http://www.unep.org/dewa/africa/docs/en/AEO2_Our_Environ_Our_Wealth.pdf) (accessed 31 July 2009).

<sup>68</sup> Wiegele T *Biotechnology and International Relations: The Political dimensions* (1991):34.

<sup>69</sup> Bereano P 'The Right to Biodiversity: a Concept Rooted in International Law and Understanding' in Krinsky E and Shorett P *Rights and Liberties in the Biotech Age* (2005):22.

timing and significance level of potentially adverse effects.<sup>70</sup> Underlying assumptions and the framing of research questions may also contribute to further uncertainty and ignorance.<sup>71</sup> Ultimately, the introduction of GMOs may adversely impact on the ecological stability of a given ecosystem.

For example, when cultivated GM farms are cleared of weeds with chemical sprays against which the crops are protected by transgenes; food for birds is reduced, resulting in a decline in population of such birds.<sup>72</sup>

Insects are instrumental in promoting significant ecological and agricultural processes that include pollination of crops, weed control, and insect pest control. Thus

'biological diversity represents a rich, untapped resource for future uses and benefits, and many as-yet-unknown species may someday provide us with products. A reduction in biological diversity decreases this treasure prematurely and permanently'.<sup>73</sup>

The introduction of alien species is another concern particularly to African states. Opponents argue that GMOs may cause or contribute to loss of biodiversity by reason of being alien species.<sup>74</sup> This assertion may not be true in its entirety. For instance, maize is not indigenous to Africa as it originated from Mexico yet it is a staple food for many people as well as animals. Schaal asserts that the tropics have the greatest natural biodiversity in the world with different types of plants, animals, fungi, bacteria and the biological relationship among species is complex. She argues that in the tropics:

'species often have highly specialized ecological niches and are frequently closely tied to other species in the community by feeding relationships, by competition, parasitism or mutualism. These intricate connections between species potentially make tropical species and communities vulnerable when biological perturbations occur. The concern

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<sup>70</sup> MYHR A and Traavik T 'Genetically Modified (GM) Crops: Precautionary Science and Conflicts of Interest' 16 *Journal of Agricultural and Environmental Ethics* (2003):227-247 at 236-237.

<sup>71</sup> Ibid.

<sup>72</sup> Ibid.

<sup>73</sup> Ibid.

<sup>74</sup> Alien species may cause adverse effect on biodiversity because the native species with which they interact had no previous evolutionary experience of such alien species and are unable to resist them. See Diamond J *Collapse: How Societies Choose to Fail or Survive* (2005) *Collapse: How Societies Choose to fail or Survive* (2005):492.

is that tropical communities may highly [*sic*] be sensitive to perturbations'<sup>75</sup>

This ground for opposing GMOs can be contested because the conventional maize found in many parts of Africa originated in Mexico. It is unrealistic to regard maize as alien especially since it is now planted in many parts of the continent and constitute staple food for the majority of people in the continent.

The proponents of biotechnology contend that that the problem of alien species may be avoided by using local genes that belong to the same environment and are hence friendly to the ecosystem in question. For instance, in 2008 at a symposium held at the University of Cape Town, Thomson argued that field trials of transgenic maize in Western Kenya are intended to produce traits of maize that derive from the local varieties. She argued that this would enhance acceptability of such maize to the local communities and make risk assessment more reliable and less cumbersome.<sup>76</sup>

Another concern that biotechnology, being industrialised agriculture 'dependant on high technology' could plunge the world into a state of helplessness in case something went wrong.<sup>77</sup> The likelihood of losing large numbers of plant species (about 60, 000 to 100,000 already threatened) due to factors that include climate change, habitat loss, invasive alien species, has led to the establishment of the Millennium Seed Bank – a project which aims to preserve species thought to be threatened with extinction or are extinct in the wild, among other things.<sup>78</sup>

Gene flow usually caused by transfer of pollen remains a matter of concern mainly for organic farmers and consumers. Pollen is usually carried by people, wind, animals and water.<sup>79</sup> The main issues raised about gene flow are twofold. It can alter the gene pool of native (and possibly related) species, resulting in homogenization

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<sup>75</sup> Schaal B (n67) at 141.

<sup>76</sup> The writer was in attendance at the Symposium held at All Africa House, on 15 September 2008 University of Cape Town.

<sup>77</sup> Wilson E (n63) at 117-118.

<sup>78</sup> See 'Why save seeds? Available at <http://www.kew.org/msbp/why/index.htm> (accessed on 24 March 2009).

<sup>79</sup> Snow A 'Genetic Modification and Gene Flow: An Overview' in Kleinman D *et al* (n47):107-118 at 111.

that may give rise to loss of critical genetic biodiversity.<sup>80</sup> The other concern is that gene flow may result in loss of genetic variation within an ecosystem. This may compromise the ability of wild populations to adapt to biological or physical environmental changes.<sup>81</sup> This may amount to genetic 'pollution' or 'contamination'.<sup>82</sup> For example, in remote areas of Mexico, transgenes were detected in organic food and maize fields.<sup>83</sup> Such developments, accompanied by domination of GM crops by private biotech industries and lack of sufficient knowledge about the biological effects of gene flow, have exacerbated uncertainty concerning potential risks and benefits of biotechnology.<sup>84</sup>

In *Hoffman v. Monsanto Canada*<sup>85</sup> the plaintiffs - organic farmers brought a class action on behalf of all organic grain farmers of Saskatchewan Province claiming damages allegedly resulting from the development and commercial introduction into Canada of GM Canola by the defendants. The plaintiffs claimed that the 'advantageous presence' of GM Canola in fields of organic grain made it impossible for organic farmers to guarantee that Canola grown as organic did not contain traces of GM Canola seed with the result that Canola could no longer be grown for the organic market. The defendants denied the claims and argued that the plaintiffs had no cause of action.<sup>86</sup> They further questioned the legality of the class action and argued that the named plaintiffs were not appropriate representatives of the plaintiffs.<sup>87</sup> They also sought further and better particulars regarding the standards or regulations the plaintiffs relied on in support of their claims.<sup>88</sup> Justice Smith dismissed the plaintiff's claim on the grounds that the pleadings failed to disclose a reasonable cause of action in negligence, strict liability or trespass.

While the plaintiff's claim was based on alleged contamination resulting in economic loss it also raised broader underlying concerns which were not

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<sup>80</sup> Schaal B (n67) at 143-144; Conner A 'Biosafety Evaluation of Transgenic Potatoes: Gene Flow from Transgenic Potatoes' (2006) available at [http://www.tari.gov.tw/GMO/book-1/\(P127-140\)-Biosafety%20Evaluation%20of%20Transgenic%20Potatoes.pdf](http://www.tari.gov.tw/GMO/book-1/(P127-140)-Biosafety%20Evaluation%20of%20Transgenic%20Potatoes.pdf) (accessed 17 August).

<sup>81</sup> Schaal B (n67) at 143-144.

<sup>82</sup> Snow A (n82) at 111.

<sup>83</sup> Ibid.

<sup>84</sup> Ibid.

<sup>85</sup> 2005 SKQB 225

<sup>86</sup> Ibid par 25 and 26.

<sup>87</sup> Ibid par 26.

<sup>88</sup> Ibid par 41.

substantively brought before the court. These included protection of traditional farming practices, appropriate balance of rights and responsibilities, safety of GMOs, and access to information.<sup>89</sup>

Proponents of biotechnology however maintain that GM agriculture will result in reduction in the use of pesticides and herbicides thereby minimising any adverse effects of such pesticides and herbicides on other species.<sup>90</sup> Developing countries in the tropics have very high levels of pesticide application<sup>91</sup> on account of the predominant traditional methods of agriculture. If the contention that use of biotechnology in reducing application of pesticides is acceptable, it would logically follow that countries within the tropics (especially in Africa) with rich biodiversity yet with many starving people need GMOs more than countries in the western world whose biodiversity is immensely depleted. In contrast, to the extent that transgenic crops are inherently part of large scale farming systems, they may significantly contribute to the reduction of genetic diversity, mainly because regular gene flow from a uniform crop is more likely to displace native genetic diversity.<sup>92</sup>

The proponents further argue that organic agriculture is not sustainable; it leads to reduced yields and has left half the population in SSA starving, meaning that it cannot solve world food shortages.<sup>93</sup> GM crops in Africa have only been commercialised in South Africa, Egypt and Burkina Faso. Whether such food will alleviate the hunger problem in Sub-Saharan Africa remains to be seen. Kenya has recently adopted biosafety legislation<sup>94</sup> and commercialisation is expected soon. In other areas, some countries such as Zambia remain vehemently opposed to GMOs. Taking into account that GM food has been consumed for more than twenty years as indicated at (2.6.5), an objective assessment by stakeholders is needed to determine its benefits rather than maintaining an attitude of 'blanket' rejection of such food.

Further, the concept of substantial equivalence as articulated by the Royal Society entails that the safety of GM foods must be assessed in comparison with

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<sup>89</sup> Garforth K and Ainslie P 'When Worlds Collide: Biotechnology meets Organic Farming in Hoffman v. Monsanto' 18(3) *Journal of Environmental Law* (2006) 459-477 at 468.

<sup>90</sup> Schaal B (n67) at 71.

<sup>91</sup> Ibid at 145.

<sup>92</sup> Gepts P 'Introduction of Transgenic Crops in Centres of Origin and Domestication' Kleinman D (n47):119-134 at 124.

<sup>93</sup> Raven P (n47):171-172.

<sup>94</sup> The Biosafety Act No 2 of 2009 Republic of Kenya.

their conventional counterparts.<sup>95</sup> In scientific language, the conventional counterpart is regarded as the control.<sup>96</sup> As indicated earlier<sup>97</sup> once GM food is shown to be substantially equivalent to its conventional counterpart, it is considered as safe as its conventional counterpart. The concept of substantial equivalence may therefore be regarded as a guiding principle in risk assessment for determining whether a GM food or food product is as safe as the traditionally bred non-GM counterpart.<sup>98</sup> If, (using chemical analyses) a GMO has been classified as 'substantially equivalent' it is regarded as posing no new health risks and will then be approved for commercial use.<sup>99</sup> This means that once a GMO has been declared substantially equivalent the burden of proof shifts to the person who questions such a finding. In practical terms, the people who may be affected are some of the consumers who may be unaware of such a finding, especially if the food is not sufficiently labelled.

Opponents of the concept of substantial equivalence argue that biotechnology companies are free to compare whatever is the most expeditious for claiming substantial equivalence and to carry out the least discriminating tests that would conceal any substantial difference.<sup>100</sup> Analysts such as Ingeborg and Traavik further criticise the concept of substantial equivalence on three main grounds. First, it lacks precision and control with respect to transgene integration. Second, it is founded on narrow frameworks, which will ultimately affect the design, implementation of methods, choice of variables/indicators and timescales of the study. Third, the use of substantial equivalence avails neither the means to detect alterations in gene expression patterns of endogenous genes nor the establishment of whether the inserted constructs or parts of it move within the recipient genome. They conclude that the concept may therefore be regarded as an attempt to scale down the complexity of the risk to manageable proportions, using traditional science to solve the complexity of the issue at hand.<sup>101</sup>

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<sup>95</sup> See 'Genetically Modified Plants for Food Use and Human Health-an Up Date' Policy Document 4/02 (2002):5 The Royal Society available at [www.royalsoc.ac.uk](http://www.royalsoc.ac.uk) (accessed 20 June 2011).

<sup>96</sup> Ibid.

<sup>97</sup> At (1.1.3).

<sup>98</sup> MYHR A and Traavik T (n71) at 236-237.

<sup>99</sup> Ibid.

<sup>100</sup> See 'The Case for A GM-Free Sustainable World (n34) at 17.

<sup>101</sup> MYHRA and Traavik T (n71) at 237-238.

In contrast to substantial equivalence, the precautionary approach questions the credibility of the risk-related scientific advice and requires identification of the areas where scientific understanding is lacking and the level of such ignorance.<sup>102</sup> The principle shifts the burden of proof to the person who claims that a GMO is substantially equivalent to its conventional counterpart.

In order for GM technology to deliver the alleged benefits, GM crops and food must not only be supported politically, but farmers must be willing to plant the crops, consumers must be willing to eat the food, and it must be capable of providing the required nutritional values.<sup>103</sup> The ability of these non-political factors to reinforce each other provides an added advantage because a demonstrable increase in nutritional value will instance enhance consumer and public acceptance of GM food thus leading to increased producer uptake.<sup>104</sup>

## 2.6.2 Socio-economic Considerations

As we argued elsewhere, socio-economic considerations are as varied as they are complex due to the varying ethical, cultural and economic dimensions they take.<sup>105</sup> In the context of biotechnology, socio-economic considerations cover a wide spectrum of concerns relating to the actual and potential consequences of biotechnology including impacts on:

‘income and welfare, cultural practices, community well-being, traditional crops and varieties, domestic science and technology, rural employment, trade and competition, the role of transnational corporations, indigenous peoples’ knowledge, food security, ethics and religion, consumer benefits, and ideas about agriculture, technology and society’.<sup>106</sup>

In SSA for example, small scale farming plays a key role in food production and provides employment for local people. For biotechnology to provide sustainable

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<sup>102</sup> Ibid at 238.

<sup>103</sup> Juma C, Paarlberg R and Pray C *et al* ‘Patterns of Political Support and Pathways to Final Impact’ 10(3) *AgBioforum* (2007) available at <http://www.agbiotechnology.org> (accessed on 30 March 2009).

<sup>104</sup> Ibid.

<sup>105</sup> Collier D and Moitui C ‘Africa’s Regulatory Approach to Biotechnology in Agriculture: An Opportunity to Seize Socio-Economic Concerns’ (17) *African Journal of International and Comparative Law* (2009) 29-56 at 39.

<sup>106</sup> Quoted in Dano E ‘Potential Socio-economic, Cultural and Ethical Impacts of GMOs: Prospects for Socio-Economic Impact Assessment’ (2007) ISBN 9788251921138- available at [www.twinside.org.sg/title2/biosafety/bio08.htm](http://www.twinside.org.sg/title2/biosafety/bio08.htm) (accessed on 1 March 2009).

solutions for peasant farmers, their interests and priorities must be taken into account. Many of them are poor people who hardly can afford to pay for farm expenses. Relevant questions that arise include whether and the extent to which GM crops may improve the lives of the farmers.

Thus, socio-economic considerations touch on almost all aspects of human life. The inevitable overlap and conflict of interests makes decision-making in biotechnology an intricate process. In addition and as Khwaja argues, existing socio-economic conditions in a state are material factors that influence the country's policy decisions. He further argues, the divergence in socio-economic conditions between developed and developing countries has given rise to a 'conflict of concern and interest' regarding the role of socio-economic considerations in the regulation of biotechnology.<sup>107</sup> These and other characteristics made inclusion of socio-economic considerations in international regulation of biotechnology inevitable.

The manner and extent to which socio-economic considerations are taken into account during decision-making determines the weight states give or purport to give to such considerations in regulation of biotechnology.

The fundamental issue in decision-making is the extent to which the alleged benefits outweigh potential risks or vice-versa. This is one of the main challenges in the regulation of biotechnology globally which comes from failure by international and domestic regulatory regimes to define what constitutes socio-economic considerations and difficulties in balancing socio-economic considerations with cultural, ethical and political imperatives.<sup>108</sup>

Further, socio-economic considerations are inextricably interlinked hence difficult to compartmentalise.<sup>109</sup> It is therefore not surprising that neither the CBD nor the Protocol provides a definition of socio-economic considerations. At the domestic level, determining socio-economic considerations and which take priority requires careful balancing of various interests relevant to the regulation of biotechnology.

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<sup>107</sup> Khwaja R 'Socio-economic considerations' in Bail C Falkner R and Marquard H *The Cartagena Protocol on Biosafety: Reconciling Trade in Biotechnology with Environment and Development* (2002):361-365 at 361.

<sup>108</sup> Collier D and Moitui C (n108) at 39.

<sup>109</sup> Khwaja R (n110) at 361.

Such balancing requires objective criteria (including precaution) and transparency in decision-making.

### 2.6.3 Ethical Considerations in Biotechnology

Ethics form an integral part of philosophy whose central theme, according to Kagan is: how should people live yet attempting to answer that question may seem 'arrogant, pretentious or embarrassing'.<sup>110</sup> Hence, this study does not claim to offer an exhaustive definition of ethics. For purposes of this discussion, ethics may be defined as moral principles that control or influence a person's behaviour<sup>111</sup>. Ethics is concerned with deciding what is morally acceptable and what is not;<sup>112</sup> contain a moral prohibition on causing serious harm to the innocent.<sup>113</sup> Ethics are significantly involved in judgements about science, risk and uncertainty<sup>114</sup> but become problematic for a number of reasons.

The complexity of ethical considerations and the manner in which ethics impacts on various aspects of human life make it rare to find ethical experts. Williams takes a more strict view. He asserts that '[t]here are notoriously no ethical experts and it is not in the least clear how there could be ethical witnesses'<sup>115</sup> Arguably, getting ethical witnesses is even trickier as different people hold different views on the subject. The other reason concerns recognising whether or when an issue becomes ethical in decision-making<sup>116</sup>. This is mainly because there is no universally acceptable criterion for determining what kind of life people want or what amounts to good life.

Finally, ethics keep on changing from time to time owing to changing human lifestyles, priorities and interests. For example, in ancient Greece, great philosophers

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<sup>110</sup> Kagan S *Normative Ethics* (1998):1.

<sup>111</sup> Oxford Advanced Learners Learner's Dictionary (2005).

<sup>112</sup> See BABAS Report 'Ethical Aspects of Agricultural Biotechnology' a Report compiled by Cambridge Biomedical Consultants (1999):5 ISBN 90-76110-050 9 available at <http://files.efbpublic.org/downloads/ethical.pdf> (accessed on 1 Feb 2009).

<sup>113</sup> Kagan S (n113) at 2.

<sup>114</sup> Carr S and Levidow L 'Exploring the Links Between Science, Risk, Uncertainty and Ethics in Regulatory Controversies about genetically Modified Crops' 12 *Journal of Agricultural and Environmental Ethics* (2000): 29-39 at 33.

<sup>115</sup> Williams 'Who needs Ethical Knowledge' in Griffins P (ed) *Ethics* (1993):26 Cambridge University Press

<sup>116</sup> MacDonald C and Dhanda R 'Ethics in Biotechnology: An executive guide' available at [www.biotechethics.ca/tools/biotech\\_guide\\_1\\_0.pdf](http://www.biotechethics.ca/tools/biotech_guide_1_0.pdf) (accessed 1 Feb 2009).

such as Aristotle held the view that making money for its own sake or for any other purpose other than for basic necessities such as food was unnatural and erroneous hence, unethical.<sup>117</sup> In more recent times however (owing to socio-economic changes in human life), charging interest on money lent is the order of the day in business. Another example derives from the Renaissance (fourteenth to sixteenth century), when humanity viewed the environment as 'indifferent, undifferentiated and mindless', as a result of which western society 'sought to exploit nature for higher things',<sup>118</sup> such as the development of capitalism.

These are among the factors that aggravated anthropogenic activities which led to the depletion of natural resources leading to degradation of the environment. Ultimately an environmental crisis evidenced by global warming, climate change, loss of or threats to loss of biodiversity and other hazards, is a major concern of the international community. Currently, critical issues include how to control, minimise or eliminate altogether such hazards for the benefit of present and future generations.

These changes in the actions of some human beings from being predators to conservers and protectors of the environment attract a conservation ethic which 'aims to pass on to future generations the best part of the non-human world'. To know this world is to gain a proprietary attachment to it. To know it well is to love and take responsibility for it'<sup>119</sup>

The changes in attitude illustrate that ethical considerations regarding the environment are continuously changing. However, one of the key ethical questions that is difficult to resolve is the extent to which humanity should exploit the environment for legitimate activities such as agriculture, without posing serious danger to human's health, future generations and the environment?

In SSA for instance, land available for agriculture is diminishing gradually, water scarcity is a perennial problem in many countries - including the selected countries, traditional methods of natural breeding in agriculture (such as hybridization) that reached their apex during the green revolution (1950-1980s) have

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<sup>117</sup> Slote 'Ethics' in Post S *Encyclopaedia of Bioethics* (2004) Macmillan Reference New York

<sup>118</sup> Opie J 'Renaissance Origins of the Environmental Crisis' *11 Environmental Law Journal* (1987):2-17 at 15-16.

<sup>119</sup> Wilson E (n63) at 131.

not solved the hunger problem. The green revolution had its proponents and critics. Whereas proponents of new technologies such as the Rockefeller Foundation are convinced that technology bypassed Africa, critics such as GRAIN<sup>120</sup> insist that technology did not do so: it failed.<sup>121</sup> Currently, resistance to biotechnology in a number of countries including Zambia and Benin illustrate this.

As mentioned in chapter one, art. 27(1) of the Universal Declaration of Human Rights (UDHR)<sup>122</sup> provides for the right to 'freely participate in the cultural life of the community... and to share in scientific advancement and its benefits'. Such a right extends to scientific advancements in agricultural biotechnology, raising doubts on claims by opponents that the new technology lacks ethical legitimacy.

#### **2.6.4 Key Ethical Issues in Biotechnology**

Ethical issues here are varied and cover the food we eat, our health, the environment and our own nature.<sup>123</sup> Pertinent questions include whether people have a right to know the type of food they eat, whether manipulation of plants and animals to create new organisms amounts to playing God and whether patenting living organisms is ethically acceptable (individuals owning such fundamental building blocks of living systems, even temporarily). It is against this background that key ethical issues leading to resistance to biotechnology must be understood.

##### **2.6.4.1 Biotechnology and Food: The Right to Know**

In 1778 Thomas Jefferson said 'If people let the government decide what foods they eat and what medicines they take, their bodies will soon be in a sorry a state as are the souls of those who live under tyranny'.<sup>124</sup> Biotechnology raises many critical issues concerning food. Some of the issues are religious, others aesthetic and

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<sup>120</sup> This is international non-profit organisation that works to support small farmers and social movements in their struggles for community-controlled biodiversity-based food systems. See <http://www.grain.org> (accessed 10 January 2011).

<sup>121</sup> See 'Another Silver Bullet for Africa? Against the GRAIN' (2006) available at [www.grain.org/publications/](http://www.grain.org/publications/) (accessed on 8 Feb 2009).

<sup>122</sup> Adopted and declared on 10 December 1948 by the General Assembly of the United Nations available at <http://www.un.org/en/documents/udhr/> (accessed 15 July 2010).

<sup>123</sup> See The BABAS Report (n115).

<sup>124</sup> See <http://foodfreedom.wordpress.com/2010/04/13/global-food-security-Act-384...> (accessed 10 July 2010).

others cultural.<sup>125</sup> The right to know seemingly cuts across all such issues. It is argued that consumers have or should have a right to know and to choose the type of food they want to eat. Based on alleged scientific uncertainty concerning safety of GMOs, consumers may want to know, as far as possible, 'where their food was grown, who grew it, when they grew it, why they grew it and how they grew it'.<sup>126</sup>

Labelling has two counteracting effects: it increases transparency, consumer information and choice on the one hand. It implies that GM foods are inherently less safe than food produced by traditional agriculture or 'organic' foods. On the other, establishing and monitoring a labelling system raises the cost of food production.<sup>127</sup> Thus, the presence or absence of labelling indicates the weight a regulatory regime places on the right of consumers to know.<sup>128</sup> By providing for mandatory identification and labelling, the biosafety regime of Zambia<sup>129</sup> appears to ensure that consumers know the type of food they may purchase while the silence of South Africa's and Kenya's regimes on labelling seem to suggest otherwise.

The right to food is recognised and provided for in international instruments and constitutions in most countries, yet the right to know remains contentious globally. Two things need to be noted at the outset: the right to know is neither a major concern of international instruments nor in domestic legislation; secondly, we are dealing with two main groups of people with different interests: the hungry and the starving and those who are not. If the right exists, both groups should be entitled to it and the right to choose the type of food they eat. Moreover, the right to choose is a material consideration enabling people to lead lives based on their religious, cultural and even political beliefs.<sup>130</sup>

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<sup>125</sup> Thompson P 'Why Food Biotechnology Needs an Opt out' in Bailey B and Lappe M *Engineering the Farm: Ethical and Social Aspects of Agricultural Biotechnology* 2002):27-43 at 29.

<sup>126</sup> Caplan R 'Ensuring the Public's Right to safe Food' in Krinsky S and Shorett P *Rights and Liberties in the Biotech Age* (2005):83.

<sup>127</sup> Mechlem K and Raney T 'Agricultural Biotechnology and the Right to Food' in Francioni F (ed) *Biotechnologies and International Human Rights* (2007) 131-160 at142.

<sup>128</sup> Nanda C and Pring G *International Environmental Law for the 21<sup>st</sup> Century* (2003):363. Also see pages 364-371 for a detailed discussion on the various approaches to labelling worldwide.

<sup>129</sup> Section 29 (1) of the Biosafety Act No 10 of 2007 of Zambia provides thus 'Any genetically modified organism or product of a genetically modified organism shall be clearly identified and labeled as such in accordance with this Act or any other regulations enacted thereunder'.

<sup>130</sup> Thompson P (n128) at 42.

International human rights instruments such as the International Convention on Economic, Social and Cultural Rights (ICESCR) recognise and provide for the right to adequate food<sup>131</sup>, the right to be free from hunger<sup>132</sup> and the right to life.<sup>133</sup> To ensure freedom from hunger, ICESCR encourages member states to 'make full use of technical and scientific knowledge... in such a way as to achieve the most efficient development and utilization of natural resources'<sup>134</sup>. In 1996 and in many other forums, the World Health Organisation (WHO) has reaffirmed the right to access safe and nutritious food, consistent with the fundamental right to be free from hunger.<sup>135</sup>

None of these instruments and declarations makes specific provision for the right to know or choose the type of food one should eat. Silence strongly suggests that the international community is more concerned with food security in a broader sense leaving details about the right to know or to choose and issues of labelling for other fora or for individual states.

Introduction of GMOs has particularly complicated the issue of the right to know for two main reasons. First, food labelling and identification - one of the means through which people may know and choose, still remain contested issues under the Cartagena Protocol. Proponents of GM food take the view that such food do not pose any higher potential threats than their conventional counterparts and hence safe to eat. Opponents, civil society groups and individuals are keen to ensure freedom to know whether food on shelves is modified.

Second, pollination associated with gene flow from GMO crops may 'contaminate' organic or conventional crops. In such cases GMOs may limit the right of farmers to choose to grow non-GM crops.<sup>136</sup> Should contamination take place,

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<sup>131</sup> Art.11 (1) International Convention on Economic, Social and Cultural Rights, General Assembly Res. 2200A (XXI) (ICESCR) adopted on the 16 December 1966 and entered into force on the 3 January 1976 available at <http://www2.ohchr.org/english/law/cescr.htm> (accessed 13 July 2010).

<sup>132</sup> Ibid Article 11 (2).

<sup>133</sup> ICESCR article 6(1) General Assembly Res.2200A (XXI) adopted on the 16 December 1966 and entered into force on the 23 March 1970.

<sup>134</sup> Article 11(2)(1) (n134).

<sup>135</sup> See the 'Rome Declaration on World Food Security' (1996) available at <http://www.fao.org> (accessed 18 September 2009).

<sup>136</sup> Olson D 'Hard Red Spring Wheat at a Genetic Crossroad: Rural Prosperity or Corporate Hegemony' in Kleinman D *et al* (n47):150-168 at 163.

one can hardly separate non-GM from GM crops, making consumer choice impossible. Contamination associated with cross pollination is particularly problematic because it is a natural process carried out by wind that nobody can effectively prevent especially in open fields. Whether contamination gave rise to a duty of care was a critical issue in *Hoffman vs. Monsanto Canada*.<sup>137</sup> Pollen from the defendants' GM Canola was alleged to have infiltrated the plaintiff's organic canola.

In real life situations, people who are starving have little or no choice on the type of food they eat. In cases of severe famine, starving people may have no opportunity to know that the food contains GMOs and even if they knew, many will readily accept such food. In essence, only people with enough food or the ability to acquire enough food may be said to have the 'capacity' to choose.

Applying the wisdom of Aristotle to the pursuit of happiness, O'Toole argues that to claim that particular people are happy, one must be sure that such people have adequate food, clothing and shelter.<sup>138</sup> It would therefore not be fair to feed starving people with GM food and claim that they accepted the food. Such acceptability is based on necessity rather than choice. It may be described as economic 'unfreedom' resulting from poverty that makes an individual powerless in the matter.<sup>139</sup> Moreover, as acreage of GMOs increases globally, the right of poor and starving people to choose may be diminishing.

Poor people may be deprived of the right to know or the capacity to choose, whether or not such a right are provided for in international instruments, domestic legislation or both. The situation in some countries in SSA provides an in-depth illustration.

#### **2.6.4.2 The Right to Know: An African Context**

In contemporary African societies, the right to know in real situations on the ground creates a paradox. Africa needs to conserve its biodiversity and at the same time feed its high and increasing population. The continent stands at two extremes: it has

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<sup>137</sup> 2005 SKQB 225 par.44

<sup>138</sup> O'Toole J *Creating the Good Life* (2005):30.

<sup>139</sup> Sen A *Development as Freedom* (2000):8 Anchor Books New York.

one the richest biodiversities in the world;<sup>140</sup> it has the highest number of a starving and malnourished population globally.<sup>141</sup> Many of its people are 'unable to choose, at the very least, or do not have enough to eat'.<sup>142</sup> It is in a dilemma on what takes priority, when and how. In addition, and for reasons that fall outside the scope of this study, the continent is lagging behind economically; imperilled by warfare, political instability and poor governance, notably the notorious case of Zimbabwe and now the global economic crisis (that could have an adverse impact on the continent for the next five years<sup>143</sup>). These social-economic factors have earned many parts of Africa a reputation of poverty, disease and war, yet there are many other African peoples who have neither starved nor been involved in war and live ordinary peaceful lives.<sup>144</sup>

Thus poverty, disease and war present many socio-economic problems with no foreseeable workable solutions. They negatively impact on agricultural production giving rise to an increasing food crisis exacerbated by the current global increase in food prices, unpredictable oil prices and the imminent world financial recession. What happened in Zambia in 2002 and what is happening in Congo and Kenya are classic examples that provide real life situations illustrating the dilemma African states are facing concerning GMOs.

In Zambia in 2002 – owing to severe drought in Southern Africa, the government rejected relief food comprising maize suspected of containing GMOs. The political leadership took the view that it was better for people to die of hunger than to eat 'contaminated' food. Because the famine threatened lives, the government reluctantly allowed the maize on condition that it was ground and

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<sup>140</sup> Schaal authoritatively asserts that the tropics have the greatest natural biodiversity in the world with unique number of plants, animals and bacteria. See Schaal B (n67) at 141. In his book *Africa: Altered States, Ordinary Miracles* (2008) at page 1, Dowden R (n147) expresses the view that '[w]esterners arriving in Africa for the first time are always struck by its beauty... lose inhibitions, feel more alive, more themselves, and they begin to understand why, until then, they have only half lived'.

<sup>141</sup> Over 200 million undernourished people live in Sub-Saharan Africa.

<sup>142</sup> 'Ethics of Modern Developments in Agriculture Technologies' Opinion No 24 (2008):14 The European Group of Ethics in Science and New Technologies to the European Commission available at [http://ec.europa.eu/european\\_group\\_ethics/doc...](http://ec.europa.eu/european_group_ethics/doc...) (accessed 18 September 2009).

<sup>143</sup> The Economist 11 Feb. 2009 available at <http://www.economist.com> (11 February 2009)..

<sup>144</sup> Dowden R *Africa: Altered States, Ordinary Miracles* (2008):1, 5 Portobello Books London.

delivered as flour. The maize was ground in South Africa. Since then Zambia has taken a strict view on the regulation of GMOs.<sup>145</sup>

In the Republic of Congo (Brazzaville), the situation is pathetic. Owing to persistent political and ethnic strife, government imports more than 99% of its food mainly from France. In attempts to alleviate the food crisis, the government has offered South African farmers 99 year leases of farmland free of charge on 10 million hectares. These farmers will plant crops such as maize and Soya and also rear animals. They are under no obligation to sell their products locally.<sup>146</sup> While these attempts are intended to minimise or alleviate the food crisis, they are temporary and success is unpredictable. In addition, the farmers will be at liberty to import seeds, thereby raising the important question of guarantees are to ensure that GMOs are not introduced without biosafety legislation.

In Kenya in 2007-2008, disputed presidential and Parliamentary election results gave rise to post election violence resulting in deaths and other devastating consequences. Farms were deserted and people became internally displaced persons (IDPs) especially in the Rift valley – the country's bread basket.<sup>147</sup>

Many people, especially IDPs and those in dry areas such as Turkana seem to be starving. This forced the government to publicly declare the famine a national disaster, admitting that more than ten million people needed food relief, blaming the election violence, the global energy crisis and rain failure.<sup>148</sup> Where would the food come from and what would be the way forward? Put in simple terms: the common man wants food. This prompted the government to import maize urgently from South Africa and Tanzania.<sup>149</sup> The American Ambassador is reported to have said '...the US was willing to bring food as long as it got a nod from Parliament'.<sup>150</sup> South Africa is the largest producer and exporter of GM maize in Africa - there is neither a guarantee nor evidence to suggest the maize imported to Kenya from South Africa was not GM.

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<sup>145</sup> See the discussion in chapter seven

<sup>146</sup> Cape Times 17 April 2009 p 1.

<sup>147</sup> The Standard available at <http://www.eastandard.net> (accessed 20 January 2009).

<sup>148</sup> Ibid.

<sup>149</sup> See 'MPs Criticise Ruto over Food Crisis, Demand Guarantee' The Standard available at <http://www.eastandard.net> (accessed 23 January 2009).

<sup>150</sup> Ibid.

In ancient Greece, philosophers such as Aristotle would have accepted the first option on the grounds that GMOs are meant to provide food – a basic need of the people. However, they would reject GMOs if they were essentially for profit-making. Aristotle believed that doing something for the purpose of making or acquiring money was unnatural and erroneous, hence, unethical, whereas making money was regarded noble if the intention was to provide necessities of life such as food<sup>151</sup>. Charging interest on money lent was seen as a form of ‘robbery’ but today is generally thought to be ‘reasonable and fair’.<sup>152</sup> This is a clear illustration of the argument that as peoples’ lifestyles and circumstances change, ethics and ethical considerations continue changing. Arguably the changing attitudes apply to GM food.

Population increase is a big problem in many African states. It is widely believed that of the all the commands God gave to humanity, the command to multiply like sand<sup>153</sup> has been obeyed most particularly in many African countries. In Africa proponents of agricultural biotechnology take the view that GMOs will contribute to alleviating hunger, starvation and poverty.<sup>154</sup> The critical issue however is whether African states should embrace GMOs to address hunger, starvation and poverty or reject them on grounds that include ethical considerations. This is a difficult question because globally, people view GM food as either good or bad. This thinking is erroneous because new technologies and scientific innovations are continuous phenomena in human life. Appropriate regulation that embraces the precautionary approach in regulation may minimise resistance to GMOs.

#### **2.6.4.3 The Moral Status of Nature**

People view nature in different ways thereby raising varying, overlapping and at times conflicting ethical issues. Some people regard it as benevolent and intrinsically useful; others see it as hostile and of no intrinsic value yet others see it as morally neutral.<sup>155</sup> In the mid-Nineteenth Century, Marsh writing from a theological and naturalist point of view saw interference with an existing order of a higher power as a situation in which:

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<sup>151</sup> Singer P *How are we to Live?* (1997):68.

<sup>152</sup> Ibid at 48-49.

<sup>153</sup> Genesis chapter 22 verse 17 and chapter 15 verse 5.

<sup>154</sup> Thomson J *Seeds for the Future: The Impact on Genetically Modified Crops on the Environment* (2006):109.

<sup>155</sup> See the BABAS Report (n115) at 10.

'Man is dealing with dangerous weapon whenever he interferes with arrangements pre-established by a power higher than his own. The equation of animal and vegetable life is too complicated a problem for human intelligence to solve, and we can never know how wide a circle of disturbance we produce in the harmonies of nature when we throw the smallest pebble into the ocean of organic being.'<sup>156</sup>

Environmental historians, among them Radkau, argue that - the strongest human impulses grow out of an interaction of 'love and fear': environmental awareness becomes an urgent passion when the love of nature combines with fear. He further argues that anxiety about nature is most acute when it is anxiety about one's own welfare; it becomes a matter of public concern when it poses a serious threat to humanity and the nation. He concludes that this kind of interconnection of anxieties gave rise to the present day environmental movement.<sup>157</sup>

Love for nature may not be as easy to determine compared to its absence. The cumulative effect of anthropogenic activities that gave rise to the global environmental crisis provides evidence that man had no love for nature. The need for man to satisfy his own desires leading to depletion of resources and environmental degradation may have made man happy or wealthy, but crisis threatens man's survival and is a source of immense fear. Currently, issues concerning the extent to which nature should be respected, tolerated, manipulated or treated remain problematic.

Nature has another moral dimension - religion. According to the BABAS Report,<sup>158</sup> many religious groups worldwide recognise and believe in the power and authority of God as the creator of the universe and everything in it. They view creation as divine and without errors. Attempts to 'improve' the perfect natural through biotechnology are viewed by sections of religious people as an affront to God's creation and may amount to 'playing God'.<sup>159</sup> It also seems to create another impression: God creates, man destroys.

Genetic engineering which has ability to determine what a living organism may look like and what it is capable of doing, has made evolution 'a conscious

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<sup>156</sup> Quoted by Davies G in 'Ethical issues and GMOs' available at <http://academic.sun.ac.za/philosophy/cae/environment> (accessed 10 February 2009).

<sup>157</sup> Radkau J (n7) at 265.

<sup>158</sup> See BABAS Report (n115).

<sup>159</sup> Ibid at 12.

process' in which new organisms are being created consistent with human will rather than by way of the natural laws of survival.<sup>160</sup> These processes give mankind the ability to create novel plants and animals with properties they could never have acquired naturally.<sup>161</sup> In so doing genetic engineering breaches the boundaries of natural species thereby violating the natural integrity of species.<sup>162</sup>

In Muslim states where religion is regarded as a cornerstone of societal behaviour, the question whether GMOs may be regarded as *halal* or *haram* seriously impacts on acceptance of such food.<sup>163</sup> It is worse if the food contains swine genes.<sup>164</sup> In Kenya for example, Muslims are worried that they will not know whether the rice they buy from shops is 'contaminated' by pig genes or not and the Hindus will not know which foods in the stores contain genes from cows.<sup>165</sup> Vegetarians may also reject fruit and vegetables modified with animal genes.<sup>166</sup> These sentiments strongly suggest that the types of food people eat constitute part of their values.

As Thompson argues, values (whether religious, cultural or aesthetic) are an important aspect of peoples' lives and are fundamental in their ability to maintain a sense of 'constancy, identity, and faith in their daily practice'. He asserts that threats to such values create a sense of helplessness and disrespect thereby undermining beliefs that give rationality to daily habits.<sup>167</sup> He concludes that '[b]y not labelling, disclosing, or even discussing the new biotechnology-based order of food products, purveyors of these new commodities threaten a way of life.'<sup>168</sup>

By interfering with an established food order, biotechnology may undermine cultural and religious beliefs, particularly of those opposed to it. If such interference is to be legitimised, the right to know the nature of the food in question becomes imperative. Absence of such a right becomes a major source of distrust and suspicion by consumers and the general public. The distrust and suspicion tends to confirm fears concerning GMOs thereby leading to resistance and in many

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<sup>160</sup> Walgate R *Miracle or Menace: Biotechnology and the Third World* (1990):2.

<sup>161</sup> Ibid.

<sup>162</sup> BABAS Report (n115) at 11.

<sup>163</sup> Dano E (109).

<sup>164</sup> Mechlem K and Raney T (n130) at 142.

<sup>165</sup> Thatiah P (n26).

<sup>166</sup> Mechlem K and Raney T (n130) at 142.

<sup>167</sup> Thompson P (n128) at 29-30.

<sup>168</sup> Ibid.

instances, rejection of this new technology. These fears and suspicion should however not be restricted to GMOs, because, over the centuries, plant and animal selection and breeding has produced crops and animals that would not, and could not, have arisen through natural selection and hence not 'natural. The thesis argues that in practical terms, it would be unfair to view GMOs as being more potentially harmful than their traditional breeding counter parts.

Objections to genetic engineering on religious grounds may be legitimate but pose the difficult question as to how such religious interests may be reflected in policy and be protected by biosafety legislation. Objections on religious grounds also raise jurisprudential issues about the minimum level of morality which biosafety legislation should contain. This researcher argues that sufficient public involvement is a strong force that is necessary for the development of credible biosafety regimes embracing the precautionary approach. Labelling will also enhance the freedom of choice on food. As discussed in chapter six, public participation may give the public a sense of ownership of the new technology as much as labelling may enable those opposed to it on religious grounds to exercise their right to choose. It should be noted however that it is not possible for biosafety legislation, or any other law, to exhaustively cover all the interests of the affected or interested stakeholders.

#### **2.6.4.4 Patenting Living Organisms**

This is the fourth dimension of ethics. A patent is a property right granted by the state excluding others from use or benefit of the patented invention without the consent of the patent holder.<sup>169</sup> The monopoly arising from a patent is limited and it is granted in exchange for disclosure of technical information by the patent holder.<sup>170</sup> As opposed to property rights in tangible things such as land, intellectual property confers rights in intangible things such as ideas, innovations, signs and information.<sup>171</sup> Patents are applicable to knowledge that may be registered and be used in industry.<sup>172</sup>

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<sup>169</sup> BABAS Report (n115) at 13.

<sup>170</sup> Bently L and Brad S *Intellectual Property Law* (2009):335.

<sup>171</sup> *Ibid* at 3.

<sup>172</sup> May C and Sell S *Intellectual Property Rights: A Critical History* (2006):7.

Intellectual property rights (IPRs) are not a recent phenomenon in human civilization. Jessop observes that Ancient Greece and Rome recognised industrial property rights and imposed ethical obligations on the authors of ideas; the medieval patent was a controlled privilege for financial benefit of local rulers and the mercantilism patents encouraged importation of technology and accruing income was for the benefit of the state.<sup>173</sup> Political leaders convinced themselves that they had a stake in the new knowledge.<sup>174</sup> For example, English monarchs granted monopoly privileges to inventors and importers of new technology in return for payment of royalties to the Crown,<sup>175</sup> enabling the monarchs to harvest where they never sowed. Under capitalism, patents guarantee monopoly privileges to individuals and legal persons on inventions and related intellectual products for commercial advantage.<sup>176</sup>

Over time and due to the proliferation of new technologies, patents have become an integral part of scientific inventions. Justification for patents is based on the belief that they provide incentives to investors and enhance their investments in (R&D).<sup>177</sup> Patenting living organisms resulting from biological innovations have however given rise to a long-standing controversy.<sup>178</sup> The concerns include whether:

- it is morally acceptable to patent living organisms which, many believe, were created by a higher authority than man
- patenting them would make GMO seeds more costly thereby reducing the potential benefits of biotechnology

In respect to costs, patenting of seeds is one of the ways through which small scale farmers particularly in the developing countries may be deprived of their right to save and plant seeds from the previous harvest. Further, more than 80 per cent of the patents granted in the developing countries belong to persons from the developed countries, usually multinational corporations.<sup>179</sup> This has caused

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<sup>173</sup> Jessop B 'Intellectual Property Rights' available at <http://dime-eu.org/files/active/0/jessop1.pdf> (accessed 28 May 2009).

<sup>174</sup> May C and Sell S (n175) at 52.

<sup>175</sup> Rimmer M *Intellectual Property and Biotechnology: Biological Inventions* (2008):1.

<sup>176</sup> Jessop B (n176).

<sup>177</sup> Bently L and Brad S (173) at 4.

<sup>178</sup> Rimmer M (178) at 1.

<sup>179</sup> Mechlem K and Raney T (n130) at 154.

inequalities between the rich and the poor and between the developed and developing countries.<sup>180</sup> Additionally biotechnology companies are keen to patent novel GM seeds, but reluctant to label GM food because it may hamper acceptance and the proliferation of such food.

While protection of IPRs has a long history, the adoption of the (Agreement on) Trade Related Aspects of Intellectual Property Rights (TRIPS),<sup>181</sup> by the World Trade Organization (WTO), was a manifestation of the need to have a modern regime governing IPRS among its members. Its objectives include ensuring that the protection and enforcement of IPRs contributes to the 'promotion of technological innovation and the transfer and dissemination of technological knowledge for the mutual benefit of producers and users and in a manner conducive to social and economic welfare'.<sup>182</sup> In formulating or amending their laws, TRIPs urges members to promote public interest in sectors of vital to their socio-economic and technological importance but in a manner consistent with it.<sup>183</sup> The Agreements makes provision requiring right holders not to abuse such rights.<sup>184</sup> Analysts take the view that IPRs should be granted within fair and ethically acceptable limits.<sup>185</sup> Should TRIPs not live up to these expectations, and considering that the development of intellectual property law is shifting towards 'monopoly' rather than 'competition',<sup>186</sup> a situation may arise where:

'intellectual property rights could be transformed from a tool for the promotion of innovation and competition, into a protectionist barrier in favour of the dominant enterprises: that is to say, into a factor that restricts supply and slows down the dynamic processes that generate innovation, while also reducing consumers' alternatives of choice'.<sup>187</sup>

Thus, care should be exercised in determining the real and the underlying intentions of the patent holders in biotechnology or applicants, especially in developing countries.

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<sup>180</sup> MYHR A and Traavik T (n71) at 243.

<sup>181</sup> The TRIPS Agreement was signed at Marrakesh (Morocco) on 15 April 1994 available at [http://www.wto.org/english/tratop\\_e/trips\\_e/t\\_agm0\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm) (accessed 4 June 2009).

<sup>182</sup> Ibid article 7.

<sup>183</sup> Ibid article 8(1).

<sup>184</sup> Ibid article 8(2).

<sup>185</sup> Spinello R and Bottis A *Defence of Intellectual Property Rights* (2009):198-199.

<sup>186</sup> Ghidini G *Innovation, Competition and the Consumer Welfare in Intellectual Property Law* (2010):19.

<sup>187</sup> Ibid.

## 2.6.5 Public Perceptions about GMOs

The term perception embraces interests and involvement, understanding of and attitudes towards biotechnology; it includes the images, hopes, fears, expectations about biotechnology.<sup>188</sup> Human beings are endowed with an inherent sense of imagination and are capable of worrying about potential risks which in one way or another influence their behaviour.<sup>189</sup> Who will take the risks, what are the potential benefits for undertaking such risks, is the extent of potential damage known and who makes the ultimate decision whether or not the risk should be assumed.<sup>190</sup> These unanswered questions that complicate public perceptions about GMOs.

There are many factors that influence public perceptions concerning potential harm of GMOs. These include media coverage, the perceived importance of the issue to the community (health related issues create more significant public concern than land degradation), and the perceived magnitude and spatial scale of impacts.<sup>191</sup> The tendency of scientists<sup>192</sup> and biotechnology companies to hoard information concerning potential harm is a major factor. In Eastern Africa perceptions about GMOs are informed by factors such as alleged benefits, potential risks, unfamiliarity, uncertainties and lack of confidence in the capacity to ensure safety.<sup>193</sup> Perceptions concerning potential harm are therefore linked to the kind of information<sup>194</sup> (if any) the general public receive (and from whom) or the lack of it. Information obtained from the Internet sources through unauthenticated sources, may contain half truths that confuse or mislead the public, leading to problems that have been described as:

[not] the violent conflict between parts of the truth but the quiet suppression of half of it, is the formidable evil; there is always hope when the people are forced to listen to both sides; it is when they attend only to

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<sup>188</sup> Bauer M and Gaskell G *Biotechnology: The Making of a Global controversy* (2002):9.

<sup>189</sup> Radkau J (n7) at 259.

<sup>190</sup> Smits D, and Zaboroski S 'GMOS: Chumps or Champs of International Trade?' *1 Asper Review of International Business and Trade Law* (2001):111-147 at 118.

<sup>191</sup> Deville A and Harding R *Applying the Precautionary Principle* (1997):30

<sup>192</sup> A study carried out by the Wellcome Trust in the UK during the period 1999-2000 found that the majority of scientists have not been trained to liaise with the media or to communicate with the public. The findings of the study are summarised in Osseweijer P *A Short History of Talking Biotech* (2006):19

<sup>193</sup> Sengooba T, Grumet R and Hancock J 'Biosafety Education Relevant to Genetically Engineered Crops for Academic and Non-academic Stakeholders in East Africa' *12(1) Electronic Journal of Biotechnology* (2009) available at <http://www.ejbiotechnology.info/content/12/issue1/full/6/index.html> ((accessed on 22 March 2009).

<sup>194</sup> See a discussion on access to information in chapter six and seven of this thesis.

one that errors harden into prejudices, and truth itself ceases to have the effect of truth, by being exaggerated into falsehood. ... [e]very truth which men of narrow capacity are in earnest about, is sure to be asserted, inculcated, and in many ways even acted on, as if no other truth existed in the world, or at all events none that could limit or qualify the first'<sup>195</sup>

Moreover, the public invariably presumes that an opinion which is compelled to silence is true.<sup>196</sup>

Biased media coverage also plays a significant role. Zambia for example, is a country afflicted by widespread poverty; public awareness of biotechnology remains very low due to high levels of illiteracy; there is a lack of dialogue on science policy and a media dominated by politics as well as fragmented information about the implications of GM crops.<sup>197</sup> Further, the accuracy of media reports seemingly depends on the level of understanding of biotechnology by the writers of such reports and their sources of information. Owing to these half truths, there is insufficient understanding of the potential risks (and benefits) of GMOs, thereby giving rise to suspicion about the safety of GM food. In evaluating the British Broadcasting Corporation's reporting on science, Jones questions the impartiality of media reporting. He suggested that objective reporting should be balanced, for example:

'Gm crops are a risk to health (no convincing evidence, after twenty years of study; that they will contaminate other potato, varieties (almost all varieties of commercial potato are grown from tubers rather than seeds; no risk of cross-contamination;... that conventional varieties may also have disease or insect resistance (partly true, but the point of GM is to bring them together),...that GM is unnecessary and ineffective (why are there a hundred million hectares of such crops?);... that most agricultural research money is devoted to genetic modification (wrong)'.<sup>198</sup>

Information compiled by the media cannot be a substitute for reports of experts. Only a few journalists have been 'schooled sufficiently to make these complex issues understandable', and only a global environmental data bank may be

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<sup>195</sup> Mill J *On Liberty and Other Essays* (John Gray ed.1991):58.

<sup>196</sup> Ibid at 59.

<sup>197</sup> Baumuller H 'Trade in Biotechnology: Development and the Clash of Collective Preferences' in Melendez-Ortiz and Sanchez V *Trading in Genes* (2005) 57-75 at 63.

<sup>198</sup> Steve Jones 'BBC Trust Review of Impartiality and Accuracy of the BBC's Coverage of Science' (July 2011) Independent Assessment available at [http://www.bbc.co.uk/bbctrust/assets/files/pdf/our\\_work/science\\_impartiality/science\\_impartiality.pdf](http://www.bbc.co.uk/bbctrust/assets/files/pdf/our_work/science_impartiality/science_impartiality.pdf) (accessed 18 August 2011).

an authentic source of information that may be accessed electronically by journalists all over the world.<sup>199</sup> Yet even if such a global data bank was to be established, many states may be reluctant to provide sufficient and accurate information. For example, under the Protocol, the Biosafety Clearing House (BCH)<sup>200</sup> seeks to serve as a means through which information is made available on scientific and other issues relevant to living modified organisms (LMOs). The BCH plays the role of a data portal. However, Parties to the Protocol, including the selected countries, have hardly posted information to the BCH.

Over the years, states have hardly complied with their treaty obligations concerning exchange of scientific information under the Protocol. It may be too ambitious to expect a global environmental data bank to achieve much success, let alone its establishment and acceptance by states. Further, access to such a global data bank will mainly benefit developed countries that have well established Internet services. People in local villages in most developing countries where Internet access is scarce may not benefit.

It is also necessary to appreciate that in ordinary life – the general public (including many non-molecular biology scientists and other professionals) may not have sufficient knowledge about GMOs. For the general public to express negative reactions to potential risks, it does not require university education or a doctorate. People do not usually like gaps resulting from lack of understanding of GMOs. They tend to fill such gaps with their own ideas and phenomena, the main one here being fear.

Analysts argue that fear, 'does not pop out of the heavens and hover in the ether before blanketing itself across huge segments of cities and societies; it has to be lived and made'.<sup>201</sup> Fear may be a disease itself. Sunstein asserts that like other emotions, fear can be infectious.<sup>202</sup> Having been created by the media or other sources including social groups, fear, this study argues, has become one of the main factors that influence public perceptions. It increases resistance to GMOs.

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<sup>199</sup> Susskind L *Environmental Diplomacy* (1994):136 Oxford University Press Oxford.

<sup>200</sup> Article 20 of the Cartagena Protocol 39 *International Legal Materials* (2000):1027.

<sup>201</sup> Pain R and Smith S 'Fear: Critical Geopolitics and Everyday Life' in Pain R and Smith S (eds) *Fear: Critical Geopolitics and Everyday Life* (2008):2 Ashgate Hampshire (England).

<sup>202</sup> Sunstein C *Laws of Fear* (2005):6.

The fear of uncertain potential risks associated with GMOs on humans is a good example. Such risks include increased allergenicity and resistance to antibiotics, all of which contribute to resistance against GMOs.<sup>203</sup> A media report in Tanzania, alleged that 'there is suspicion that the steep rise in allergies and many other health problems is not due solely to environmental irritants, but to GM products, as well'.<sup>204</sup> Such reports may be far from being accurate and yet the impact on the minds of people exposed to GM food is enormous. Whether such fears are unfounded and unscientific - as once claimed by former US President George Bush<sup>205</sup> or not, ardent opponents perceive biotechnology as proof that humankind is 'digging its own grave'.<sup>206</sup>

The notions about fear associated with GMOs are however contradicted by writers such as Hoban who argue that the alleged fear emanates from what he terms as 'myths' manifested in campaigns waged by two main groups: the organic industry that stands to benefit from uncertainty concerning GMOs and groups such as Greenpeace that finds the biotech industry a convenient target for its attacks against capitalism, agribusiness and advances in science. He contends that these groups claim to speak for consumers yet they are trying to influence public opinion to promote their own selfish interests. He concludes that ultimately, the criteria for most consumers' food preferences will remain taste, value, nutrition and convenience as opposed to seed genetics.<sup>207</sup> Such criteria presuppose that farmers shall have already accepted and grown GM food and such food shall have been eaten before consumers can evaluate its taste and related aspects.

While there are differences of opinion concerning whether the fear is justified or not, the cumulative effect is that environmentalists, the public, some consumers and other opponents of biotechnology end up viewing GMOs as potentially harmful to health and the environment, hence unacceptable. This in turn jeopardises 'legitimate' commercial and other interests of the biotechnology industry, GMO

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<sup>203</sup> Africa Environmental Outlook 2 (2006):315 UNEP available at <http://www.unep.org/dewa/africa> (accessed 28 July 2009).

<sup>204</sup> Daily News (Tanzania) 15 July 2009 p.10.

<sup>205</sup> Smith J *Seeds of Deception* (2003):1.

<sup>206</sup> Sterckx S *Biotechnology, Patents and Morality* (1997):2 Ashgate Aldershot (UK).

<sup>207</sup> Hoban T 'Addressing Today's Core Issues for Better Food and Industry Growth' *Forum Fourth Quarter 2000* available at <http://www4.ncsu.edu> (accessed 10 August 2009).

patent holders, scientists and other proponents, resulting in fear of losing business. This antagonism underlies the scepticism in each camp leading to difficulties in achieving acceptable levels of transparency in law-making and decision-making especially in countries such as South Africa and Kenya that are keen to promote GMOs aggressively.

Complications arise because fear of potential risks cannot be alleviated by scientific facts but may be mitigated by trust.<sup>208</sup> Over the years, the public has witnessed risk assessments of chemical discharges, waste disposal and mad cow disease. These resulted in a lack of confidence in, and mistrust of, political institutions, corporations and scientists as sources of reliable information.<sup>209</sup> The argument does not end there because trust is 'elusive and fragile...trust is hard to earn, easy to lose and, once lost, nearly impossible to regain'.<sup>210</sup> Trust is also important because losing it is synonymous to self-destruction of the entire biotechnology industry.<sup>211</sup>

#### **2.6.6 The African Dilemma Concerning GMOs**

Many African states still remain sceptical about GMOs but, they share two common attributes: a rich biodiversity and an ever growing starving and undernourished population. Food shortages, the effects of climate change that include drought, continuing loss of soil fertility, failing farming methods, civil wars such as in Somalia, have given rise to a compelling need to increase food production in the continent.

Should the claim that GMOs contribute to increased farm yields be acceptable to many states, and taking into account worldwide changing attitudes towards GMOs (discussed in the next chapter), it is reasonable to conclude that embracing GMOs in Africa is an upward rather than a downward trend. The pressing food crisis is slowly compelling some states to embrace GMOs, resistance notwithstanding. Apart from South Africa where there has not been vehement resistance to GM crops (except

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<sup>208</sup> Greef W 'Regulatory Conflicts and Trade' (1999-2000) 8 *New York University Environmental Law Journal* (1999-2000):579-584 at 582-583.

<sup>209</sup> MYHR A and Traavik T (n71) at 242.

<sup>210</sup> Bennis W, Goleman D and O'Toole J *Transparency: How Leaders Create a Culture of Candor* (2008):61-63.

<sup>211</sup> Williams A 'Value and Values in the Age of Transparency' (2003) available at [http://newparadigm.com/media/Tapscott\\_Value\\_and\\_Values.pdf](http://newparadigm.com/media/Tapscott_Value_and_Values.pdf) (accessed 20 July 2010)

recently in respect of the GM potato<sup>212</sup> and the Super Sorghum project<sup>213</sup>), continued resistance to or reluctance to embrace GMOs (or both) may be minimised by adoption of credible biosafety legislation. This is an important and logical starting point. Moreover, it is erroneous to view resistance from negative perspectives only as it arguably creates a sense of competition and improved quality of the products in question. Credible of biosafety legislation may hardly be achieved in the absence of or lack of effective implementation of the precautionary approach as an essential criterion for the regulation. Attitudes such as those amounting to 'sitting at the fence' or 'wait and see' appear to have no place in efforts to address the hunger problem in Africa.

### 2.6.7 Globalization, Corporate Power and Trade

Biotechnology operates in a highly globalized world.<sup>214</sup> The global economy and country specific political and social circumstances play a key role in making biotechnology a risk or a benefit.<sup>215</sup> The risk may be manifested in an increase in the poverty gap within and between societies, loss of biodiversity and negative impacts on the ecosystems. The benefits to the local population may be improved food security and reduced malnutrition.<sup>216</sup>

An understanding of biotechnology's political economy - the relationship between state regulators and market actors in particular,<sup>217</sup> is essential in placing the regulation of GMOs in appropriate context. In that relationship, the imperatives of safety and trade occupy the centre stage. Hence, the conceptual framework<sup>218</sup> of

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<sup>212</sup> Potato farmers in South Africa are vehemently opposed to the introduction of a GM spud citing potential higher costs and loss of markets for their non-GM crop arguing that absence of mandatory labelling and tracing procedure made it impossible to keep the GM potato separate. The farmers concluded that losses outweigh any alleged benefits. See report on Cape Times 17 September 2008 at p.6.

<sup>213</sup> In 2006 South Africa rejected a Bill and Melinda 'Super Sorghum' (Intended to elevate levels of zinc, iron and vitamins) on the grounds that it was likely to contaminate wild varieties. See 'South Africa halts 'Super Sorghum' study available at <http://www.scidev.net/en/nes/south-africa-halts-super-sorghum-study.html> In the long run and after some negotiations, the project was accepted.

<sup>214</sup> Juma C (n66) at 265.

<sup>215</sup> Zarilli S 'International Trade in GMOs and Multilateral negotiations' in Francioni F (ed) (2001) 39-86 at 44.

<sup>216</sup> Ibid at 44.

<sup>217</sup> Newell P 'Globalization and the Governance of Biotechnology' 3(2) *Global Environmental Politics* (2003):56-71 at 56

<sup>218</sup> Discussed at (2.8).

this study will neither be complete nor satisfactory in the absence of a brief discussion on how globalization impacts on biotechnology.

There are many perspectives through which globalization may be analysed – social and cultural, political, historical and so forth. As a result, definitions and interpretations of the term globalization vary. Here globalization is defined as ‘the integration of the world economy- markets, nation states and technologies in a way that is enabling individuals, corporations and non-states to reach the world farther, faster, deeper and cheaper than ever before.’<sup>219</sup> The integration impacts on the economy of states and the environment especially with regard to risks. The interpretation and appreciation of risks must be viewed against the extent to which they promote or hinder globalization.

Modern science and technology (both of which owe their origins to western civilization) had the exploitation of nature for utilitarian ends as their major driving force.<sup>220</sup> Exploitation is a key attribute of capitalism which aims to maximize profits and in this case, at the expense of the environment. Capitalism has given rise to various things. These include, investment in enormous technologies with little regard for the environment, powerful corporate interests whose main goal is to grow by generating profit (including profit from failing to avoid environmental damage they cause) and governments that are subservient to corporate interests and the growth imperative.<sup>221</sup> These attributes of capitalism have given rise to an economic and political reality that is immensely destructive of the environment.<sup>222</sup>

Corporations have a big role to play in advancing capitalism. Analysts assert that ‘If capitalism is a growth machine, corporations are doing the growing. If growth is destroying the environment, then corporations are doing most of the destroying.’<sup>223</sup>

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<sup>219</sup> Stenzel P ‘Why and How the World Trade Organization Must Promote Environmental Protection’ *Duke Environmental Law and Policy* (2002-2003):1-53 at 1.

<sup>220</sup> Smith Z *The Environmental Policy Paradox* (1993):11. For example a survey carried by the UN Environment programme (UNEP) in 1997 showed that between 1980-1990, 13 million species were already extinct and only 13% of them had been scientifically described. Every day 25 000 people die worldwide due to poor water quality and 1.7 billion lack safe water supply while over exploitation of the marine fisheries is estimated at over 60 % worldwide - See Weiss and Jackson ‘The Framework for Environment and Trade disputes’ in Weiss *et al Reconciling Environment and Trade* (2<sup>nd</sup> ed 2008):1. Martinus NIJHOFF Leiden.

<sup>221</sup> Speth G *The Bridge at the Edge of the World* (2008):7-8.

<sup>222</sup> *Ibid* at 7.

<sup>223</sup> *Ibid* at 165.

Large corporations are dominate advances in economic globalization; they generate half of the gases that cause global warming; they are engineering a power shift, moving economic and political power away from 'national, states and local governments and communities toward unprecedented centralization of power for global corporations, bankers and global bureaucracies'.<sup>224</sup>

Economic globalization is inherently harmful to the environment as it is characterised by ever-increasing consumption and exploitation of resources without adequately addressing issues of waste disposal.<sup>225</sup> Biotechnology is supported by the 'triple helix' of states, scientists and the biotechnology industry that promote GMOs globally.<sup>226</sup> The effect is that many governments may have lost the ability to control the flow of money in and out of their countries, the same way they have difficulties controlling the flow of ideas, technology and goods.<sup>227</sup> Moreover, promotion is being done in an environment of striking disparities between developed and developing countries, which has weakened the ability of the latter to negotiate and protect their interests.<sup>228</sup>

The capitalist reality is reflected in the ability of giant multinational biotechnology companies and powerful states to influence (and perhaps indirectly dictate) the terms upon which developing countries adopt GM crops. For example, after World War II, the global economic hegemony of the USA was largely attributable to exports in automobiles, new products including nuclear energy equipment, military technology and information technology.<sup>229</sup> Biotechnology provided a new avenue that would strengthen that hegemony and also sustain its dominance in global food politics. Moreover, the West seeks to retain its preeminent position and defend its interests in the global economy by defining those interests as the interests of the international community.<sup>230</sup> Such interests may be promoted through various entities including large biotechnology companies.

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<sup>224</sup> Speth G *The Bridge at the Edge of the World* (2008) at 171-172.

<sup>225</sup> Ibid at 172.

<sup>226</sup> Juma C (n66) at 268.

<sup>227</sup> Huntington S (n3) at 35.

<sup>228</sup> Leach M and Scoones I and Wynne B *Science and Citizens* (2005):32.

<sup>229</sup> Chase-Dunn, Lara-Millan and Niemeyer R C 'Biotechnology in the Global Political Economy' available at <http://www.irows.ucr.edu/research/biotech/isa04biotech.htm> (accessed 13 May 2008).

<sup>230</sup> Huntington S (n3) at 184.

Further, multinational corporations are capable of influencing governments and other groups to represent and protect their interests under the pretext that success of multinational corporations is, presumably, for the benefit of 'everyone'.<sup>231</sup> The unanswered question is who constitutes 'everyone'?

In most parts of Africa, it would be erroneous to include peasant farmers who constitute the majority of the poor people among the list of 'everyone', unless such peasants substantially benefit from biotechnology.<sup>232</sup> In the absence of benefit, the term 'everyone' may refer to a few people in government, a few organizations and selected individuals multinational biotechnology companies use to protect their interests. In practice therefore, the claim that the activities of multinationals seek to benefit everyone may not be true because corporate executives give priority to the corporation's interests as opposed to acting out of concern for anyone else<sup>233</sup>.

Thus, globalisation and the increasing power of transnational corporations such as those that have invested in the GM technology and its products, have already altered our lifestyles, what we eat and communicate by reason of their continued monopoly over seeds, chemicals, processing, and the genetic foundations of the world food systems.<sup>234</sup> This explains why such multinational corporations may not be keen, of their own accord, to invest in areas where the returns are low.<sup>235</sup> By 2009 in South Africa for example, GM crop cultivation stood at maize 63% of the total crop, cotton 98% and soybean 85% of the total soybean acreage.<sup>236</sup> To say the least, these crops are high income earners compared to indigenous African food crops such as sorghum and millet.

The establishment of the World Trade organization (WTO)<sup>237</sup> is seen as a manifestation of neoliberalism whereby, the responsibilities of states shift from protecting citizens (which protection was the practice under liberalism) to

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<sup>231</sup> Kutting G *Globalization and the Environment* (2004):20.

<sup>232</sup> See the discussion on the right to know at (2.6.4.2).

<sup>233</sup> Bakan J *The Corporation* (2004):50.

<sup>234</sup> See *South African People and Environment in the Global market* Booklet 4 of 5 (2002):3 available at [www.groundwork.org.za](http://www.groundwork.org.za) (accessed 15 November 2009).

<sup>235</sup> *North-South* The Report of the Independent Commission on International Development (n57) at 196.

<sup>236</sup> See 'Genetically Modified Plants: Global Cultivation Area' available at <http://www.gmo-campass.org> (accessed 24 September 2010).

<sup>237</sup> See the discussion in chapter four

strengthening their place in a competitive world economy.<sup>238</sup> Critics take the view that the greatest power of WTO lies in its dispute settlement body which has upheld corporate interests over those of people and the environment, resulting in increased opposition to the WTO regime.<sup>239</sup>

In the *Biotech* case<sup>240</sup> for example (discussed in chapter four), the EU sought and the US objected to the application of the precautionary principle in defence of the ban it had placed on importation of GM food to Europe. The WTO Panel rejected the EU's reliance on the principle on the grounds that it had not attained the status of a principle of general application in international law. By so doing, the Panel seemed to confirm that, in its present form, the WTO regime is not a tool for protecting the environment.<sup>241</sup> As discussed at (4.4), the WTO is primarily a trade regulation rather than an environmental protection regime. It remains a creation of powerful neoliberalist forces (supported by the USA<sup>242</sup>) that control a globalized economy. Thus, introduction of GMOs into a globalized trading system generates controversy on how to achieve an effective balance between free trade in agriculture and food safety.<sup>243</sup> In that system, many governments have been far more effective representatives of their countries' business interests than their citizen's environmental concerns.<sup>244</sup>

## 2.7 Political Considerations

The rules that make environmental law are a consequence of the establishment of political aims and goals and the setting of scientific standards which form a framework for the law.<sup>245</sup> In essence, then, the regulation of GMOs has almost everything to do with politics. At the domestic level decisions on whether to embrace GMOs and if so, on what terms is political. It impacts on the quality of the relevant policies and biosafety legislation. Workable biosafety frameworks require favourable

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<sup>238</sup> Kutting G (n234) at 18.

<sup>239</sup> Ibid.

<sup>240</sup> See Panel Report *European Communities – Measures Affecting the Approval and marketing of Biotech Products* WT/DS291/R, WTDS292/R, and WT/DS293/R available at [http://www.wto.org/english/tratop\\_e/dispu\\_e/status\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/status_e.htm)

<sup>241</sup> Stenzel P (n222) at 1. See further discussion at (4.4.2) and (4.4.3).

<sup>242</sup> Speth J (n224) at 73.

<sup>243</sup> Juma C (n66) at 269.

<sup>244</sup> Speth J(n224) at 73.

<sup>245</sup> Bell S and McGillivray D (33) at 48.

political will. To the extent that the GMO debate raises contentious issues concerning safety for humans and the protection of biodiversity and ecosystems,<sup>246</sup> it remains fundamentally political.

Decisions at the domestic level that relate to GMOs have an impact on the international trade. These may relate to risk assessment and restrictions on trade which become problematic especially if they are inconsistent with the WTO regime.<sup>247</sup> Currently, any negotiation of environmentally related regimes that affect transnational economic transactions 'even in the slightest manner' is influenced and shaped by the complex web of obligations regulating international trade on one hand. Owing to environmental and public health concerns on the other hand, international trade related negotiations also trudge through the muds of international politics.<sup>248</sup> Trade bans such as the EU moratorium on GM food from the USA that resulted in *Biotech*<sup>249</sup> case are trade disputes with political undertones. One of the reasons is because the commercialisation of GM crops and their products intensifies economic competition between world powers.<sup>250</sup>

Under customary international law, when a state 'admits into its territory foreign investment or foreign nationals' it is under an obligation to protect such investments or nationals.<sup>251</sup> The obligation is neither absolute nor unqualified,<sup>252</sup> leaving room for the exercise of discretion. Protection of foreign investment and foreign nationals is an issue that touches on international relations. Unfair treatment may negatively affect such relations. In South Africa and Kenya a number of biotechnology companies have invested in research and development (R&D), partly in pursuance of national interests. However, host governments have responsibility to protect such investments. Failure to do so could become a political issue between the territorial host country and the investing country. Moreover, biotechnology raises

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<sup>246</sup> Mwale N 'The Babelisation of Debate on GM Maize via the Media in Southern Africa in 2002' 36(1) *Social Dynamics* (2010) 112-121 at 113.

<sup>247</sup> See the discussion at (4.4).

<sup>248</sup> Bianchi A 'The Impact of International Trade Law in Environmental Law and Process' in Francioni F (ed) *Environment, Human Rights and International Trade* (2001) 105-134 at 106 Hart Publishing Portland (Oregon).

<sup>249</sup> See Panel Report *European Communities – Measures Affecting the Approval and marketing of Biotech Products* WT/DS291/R, WTDS292/R, and WT/DS293/R (n243).

<sup>250</sup> MYHR A and Traavik T (n71) at 243.

<sup>251</sup> *Barcelona Traction, Light and Power case* (Belgium v Spain) ICJ Reports (1970): 3 par 33.

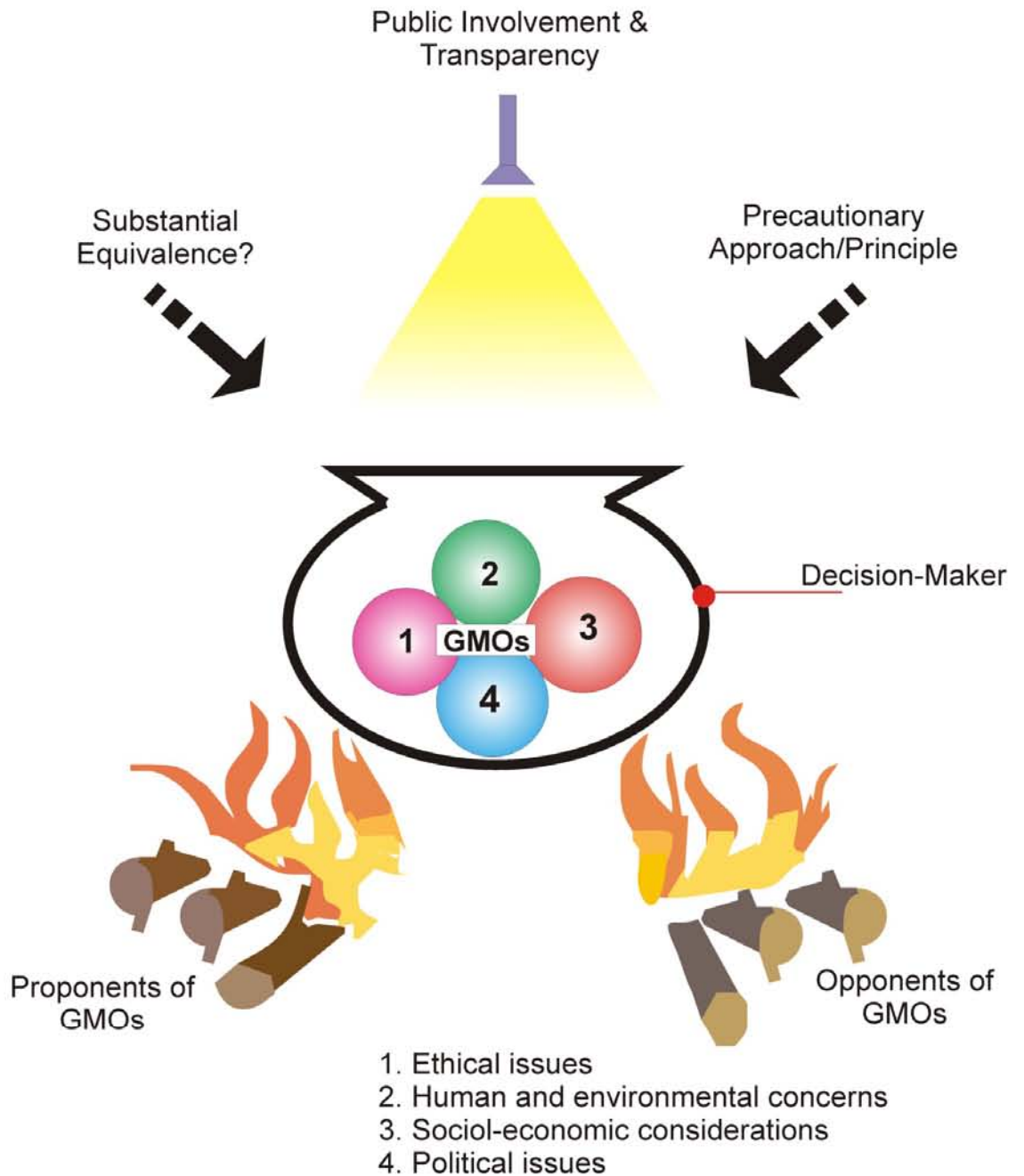
<sup>252</sup> *Ibid.*

issues such as the thresholds of regulation which are 'politically contentious'.<sup>253</sup>  
Some these issues are schematically presented in the next page.

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<sup>253</sup> Schuman M 'A Future of Price Spikes' 178(4) TIME Magazine 25 July 2011 p. 50.

**GMOs: a schematic presentation of the conceptual issues**



Source: Moitui CO ©2011

Figure 2 designed by this researcher

Figure 2 on the previous page is a schematic presentation of the conceptual issues discussed in this thesis. It shows the conflicting interests and pressure from proponents and opponents of biotechnology. It illustrates that public involvement is essential if transparency is to be achieved and be seen to have been achieved. Access to information has been described as 'sunshine' that enables society to hold government and government officials accountable for their actions.<sup>254</sup>

## **2.8 Developing a Theoretical Conceptual Framework**

Taking into account the issues discussed in this and the previous chapter, this researcher develops a conceptual framework that guides the study as a whole. It is founded on two fundamental considerations: the key assumptions and jurisprudential criteria, both of which materially contribute towards an attempt to achieve the objective of this study.

### **2.8.1 Key Assumptions of the Study.**

There are four key assumptions that guide this study

- Biotechnology remains a controversial issue globally. Its globalized nature has tended to weaken the ability of the selected countries to achieve an effective balance between safety and trade in the development of their biosafety legislation.
- The precautionary approach is a tool that may be used to resolve part of the controversy but its domestic implementation remains problematic.
- In order to translate theory into reality, effective implementation of the precautionary approach requires transparency and accountability in decision-making. In that process, meaningful public participation that encompasses access to information plays a key role.
- African countries can develop workable and transparent biosafety regimes that embrace the precautionary approach and still promote biotechnology.

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<sup>254</sup> 'A Haze of Secrecy: Access to Environmental Information in Malaysia' Article 19 (2007):3 ISBN 978-1-902598-86-4 available at [www.cijmalasia.org](http://www.cijmalasia.org) (accessed 22 October 2009).

## 2.8.2 Reconciling the Varying Interests: Jurisprudential Criteria

Scholars including Hahn and Sunstein assert that when taken seriously in decision-making, the precautionary principle can be paralyzing thereby providing no direction. In contrast, they argue, it may be used to balance costs against benefits, and thus, provide the basis of an effective approach for making intricate decisions.<sup>255</sup> These two opposing perspectives strongly suggest that the precautionary approach may be likened to a double-edged 'sword' at the disposal of the decision-makers in the regulation of biotechnology. This assertion is consistent with the views expressed in 1897 by Justice Holmes of the Supreme Court of Massachusetts. He equated law to a dragon, arguing that:

'When you get the dragon out of his cave on to the plain and in the daylight, you can count his teeth and claws, and see just what his strength is. But to get him out is only the first step. The next is either to kill him, or to tame him and make him a useful animal'.<sup>256</sup>

Inspired by this analogy and taking into account the controversy surrounding regulation of biotechnology - the precautionary approach in particular, counting the 'teeth' and 'claws' strongly suggests that the precautionary approach must be analysed 'in the day light' (objectively) both within a historical context and its domestic implementation in the selected countries. This is done for the purpose of assessing the normative value of the approach in domestic biosafety regimes and its relevance in seeking to address the varying interests that impact on regulation of biotechnology in the selected countries.

Legally prudent jurisprudential criteria may be used to identify the attributes of the rules of law which may be used to reconcile some if not all the interests associated with the regulation of biotechnology. This inevitably raises a number of pertinent issues in the minds of jurists. One such issue is how to build a scientific theoretical framework that stands the test of time - one that may be used objectively in counting the 'teeth and claws' of the precautionary approach. Such a framework requires criteria that must be sought in the science of the law – criteria with attributes

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<sup>255</sup> Sunstein C 'The Precautionary Principle as a Basis for Decision Making' (2005) 2 (2) *The Economists' Voice* (2005):1-9 at 1.

<sup>256</sup> Holmes J 'The Path of Law' (1896-1897) 10 *Harvard Law Review* 457-478 at 469.

that the study may use to test theory against reality in domestic implementation of the precautionary approach in the selected countries.

What then are the attributes that characterise the science of the law today? The answer seems to lie in sociological jurisprudence as expounded by Roscoe Pound, who has identified three attributes (among others) the science of the law has developed that may be used to assess the credibility of legislation. Pound argues that legislation may be analysed from three main perspectives:

- a functional attitude, asking not merely what law is and how it has come to be but what (in all its senses) it does, how it does it, and how it may be made to do it better;
- the study of law in all its senses in relation to the whole process of social control and
- the study of the actual social effects of 'legal institutions, of legal precepts, and of legal doctrines.'<sup>257</sup>

He further argues that from a functional dimension for example, a jurist will need to know:

- how the law works in practice assessing whether it leads to beneficial or harmful consequences;
- whether such consequences are consistent with or oppose culture and
- whether such consequences appraise values justly or unjustly.<sup>258</sup>

These attributes are critical in assessing both the content and the practical effect of the rules of law that purport to embrace the precautionary approach in the selected countries. By reason of being founded in jurisprudence, such criteria are a product of the development of legal theory over the centuries and have therefore stood the test of time.

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<sup>257</sup> Pound R *Jurisprudence* Vol 1 (1952):349-351 West Publishing Company

<sup>258</sup> *Ibid* at 358 (footnote 156).

## 2.9 Conclusion

This chapter has examined the ethical, socio-economic, environmental and political factors that account for the GMO controversy. The overlapping nature of these issues confirms that food is not only an agricultural or trade commodity but also an essential emotional, political and public health issue. Reconciling these imperatives to achieve an effective balance between safety for the environment and humans on one hand and international trade in food on the other hand, complicates regulation of GMOs. Acceptable levels of tolerance may be achieved, and this is mainly dependent upon levels of risk acceptable to society.

To address the controversy discussed in this chapter, the international community developed a set of environmental legal principles intended to strike a balance between competing interests in the regulation of GMOs. One of them is the precautionary approach, which is a risk management tool. Hence the following chapter examines its origins and attributes.

## Chapter Three

### THE PRECAUTIONARY APPROACH: ORIGINS AND ATTRIBUTES

‘If you have to test the depth of a river,  
do not put both legs into the water’<sup>1</sup>

#### 3.1 Scientific Uncertainty, Decision-making and the Precautionary Approach

Most environmental issues, including the safe use of biotechnology, involve complex analyses of scientific, technical, socio-economic and political factors, making it difficult to achieve perfect knowledge when making laws in respect of a given threat.<sup>2</sup> There is, therefore, need for a criterion that guides decisions in the face of scientific uncertainty. An example of such is the precautionary approach which evolved over the past four decades within the international environmental law regime. Today, it is increasingly invoked as a basic tool of risk management and an essential guide to decision-making on issues as varied as biodiversity loss, climate change and food safety.<sup>3</sup> The following is an analytical discussion of the precautionary approach which will illuminate issues concerning its definition, attributes, philosophical and legal foundations in international law.

#### 3.2 The Precautionary Approach and the Concept of Precaution

In the mid - 1950s, an American composer Aaron Copland was asked whether music has a meaning. ‘Yes’ he replied. The questioner asked him if he could say what the meaning was in words ‘No’ concluded Copland<sup>4</sup>. This implied that while Copland was a renowned musician, it was difficult and perhaps impossible to explain the meaning of music in words. This is equally applicable to the precautionary approach, because its meaning, content and scope are contestable and invariably problematic. While

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<sup>1</sup> A famous Zambian adage quoted in *The South African People and Environments in the Global Market Booklet 4 of 5* (2002):7 available at [www.groundwork.org.za](http://www.groundwork.org.za) (accessed 15 November 2009).

<sup>2</sup> Hunter D, Salzman J, & Zaelke D. *International Environmental Law and Policy* (2011):405-406.

<sup>3</sup> Weiss C. ‘Defining Precaution’ 49 (8) *Environment* (2007):33-48 at 33.

<sup>4</sup> Hughes D ‘Global Environmental History’ 2(3) *Globalizations* (2005) 293-308 at 293.

science does not provide all the answers thereby giving rise to uncertainty,<sup>5</sup> the precautionary approach is itself ambiguous if not uncertain.

Precaution is not a recent phenomenon in human history. Many people take precautionary measures, such as insurance for their vessels in case of an accident to mitigate loss of life and property, quarantine to avoid the spread of contagious diseases, and compliance with traffic light signs to avoid collisions. They wear seatbelts and motorcycle helmets even when chances of being involved in an accident are remote.<sup>6</sup> Another example is the establishment of the Svalbard International seed vault (seed bank) on a remote Arctic island in Norway, for the purpose of storing over three million different crops, should a catastrophe befall humanity.<sup>7</sup> These are examples of precautionary measures that explain humanity's inherent response to uncertainty. The rationale for such response is that potential risk is involved. In such circumstances, precautionary measures are arguably intended to minimise or provide a means of recovering the costs of the injury or loss that may occur.

The precaution that forms the core of this study is that which concerns the international community in relation to environmental protection. Risk or potential risk may materialise and cause harm to the environment and human health. Owing to ecological complexities discussed in chapter two, severe harm may cause irreversible damage or loss. In environmental protection and in the regulation of biotechnology in particular, the precautionary approach seeks to address scientific uncertainty in decision-making.<sup>8</sup> A closely related principle is that of prevention which addresses risks where there is evidence of harm—it seeks to prevent harm before it occurs in lieu of seeking remedies and compensation.<sup>9</sup> The principle of prevention applies when seeking to prevent known risks while the precautionary approach is applicable when seeking to prevent potential risks.<sup>10</sup>

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<sup>5</sup> Kinderlerer J 'Regulation of Biotechnology: Needs and Burdens for Developing Countries' (2008) available at <http://www.unep.org/Biosafety/Documents/Btregulation> (accessed 20 June 2008).

<sup>6</sup> Sunstein C *Laws of Fear* (2005):13 Cambridge University Press Cambridge (UK).

<sup>7</sup> See 'Seeds of Hope' *The Economist* 24-30 June (2006) p.92.

<sup>8</sup> Hunter D *et al* (n2) at 405.

<sup>9</sup> *Ibid* at 404.

<sup>10</sup> Cooney R 'The Precautionary Principle in Biodiversity Conservation and Natural Resources Management (2004):8 IUCN Policy and Global Change Series No 2 ISBN 2-8317-0810-9.

### 3.2 The Role of Principles in Law

Comprehensive definition in law of the terms principle, rules and policy, falls outside the scope of this study. For purposes of this study however, brief definitions would suffice. Dworkin defines a principle as a standard that is to be adhered to, not because it will serve certain economic, political, or social interests that are deemed desirable, but because it is a requirement of justice or some other perspective of morality.<sup>11</sup> Often the term principle is used for the more general fundamental norms of a legal order while concrete provisions are called rules.<sup>12</sup>

Policies may be propositions that describe goals.<sup>13</sup> Policy is a form of standard that sets out a goal to be achieved, usually an improvement in some socio-economic, political or cultural feature within the community (though some goals are negative, in that they require that the status quo be maintained).<sup>14</sup> Principle and policy overlap when the former is construed as stating a social goal and when policy is construed as stating a principle.<sup>15</sup> Principles seek to protect a common or individual good – an attribute that renders them value-centred.<sup>16</sup>

Rules are however viewed from a functional approach and when they intersect, one of them must be invalid, argues Dworkin.<sup>17</sup> The decision as to which rule is valid must be made by appealing to considerations beyond the rules themselves. Such considerations include preference for rules made by the higher authority, the latter rule, the more specific rule or the rule supported by the more important principles. Dworkin concludes that, at times, it may be difficult to distinguish rules from principles as both may play the same role and the difference is in form only.<sup>18</sup>

For purposes of this study the precautionary approach is construed both as setting standards and a tool for achieving goals consistent with policy. Principles of

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<sup>11</sup> Dworkin R *Taking Rights Seriously* (1978):22.

<sup>12</sup> Petersen N 'Customary Law without Custom? Rules, Principles, and the Role of State Practice in International Norm Creation' *23 American University International Law Review* (2008):275-310 at 287.

<sup>13</sup> Dworkin R (n11):90.

<sup>14</sup> *Ibid* at 22.

<sup>15</sup> *Ibid* at 22-23.

<sup>16</sup> Petersen N (n12) at 287.

<sup>17</sup> Dworkin R(n10) at 27.

<sup>18</sup> *Ibid* at 27.

international law go a step further. They are normative and cannot be regarded merely as guiding ideas and they always include definite rules of conduct irrespective of the form in which they appear.<sup>19</sup> Regarding principles as not being normative in character will in essence deprive them of their intrinsic value.<sup>20</sup>

Conversely, principles are invariably difficult if not impossible to define. They embrace a variety of legal tenets and norms of a differing nature and normative authority, some are established rules of customary international law while others are emerging rules.<sup>21</sup> While sovereignty over natural resources is an example of an established rule of customary international law, the precautionary approach represents principles that are difficult to define and may be interpreted in many ways.

In international environmental law, the pattern of state conduct has given rise to an emerging set of principles that provide for minimum standards of acceptable behaviour in attempts to protect the global environment.<sup>22</sup> Such principles include the preventive principle,<sup>23</sup> co-operation,<sup>24</sup> sustainable development,<sup>25</sup> polluter pays,<sup>26</sup> public participation,<sup>27</sup> common but differentiated responsibility<sup>28</sup> and the precautionary principle.<sup>29</sup>

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<sup>19</sup> Bobrov R 'Basic Principles of Present-day International Law' in Tunkin G (ed) *Contemporary International Law* (1969):36-58 at 37.

<sup>20</sup> Ibid.

<sup>21</sup> Paradell-Trius L 'Principles of International Environmental Law' 9(2) *Review of European Community and International Environmental Law* (2000):93.

<sup>22</sup> Swanson T and Johnson S *Global Environmental Problems and International Environmental Agreements* (1999):233.

<sup>23</sup> Principle 2 of the Rio Declaration *International Legal Materials* 31 (1992) 876.

<sup>24</sup> Ibid Principle 5 recognises the need for international cooperation in attempts to eradicate poverty as an indispensable requirement for sustainable development.

<sup>25</sup> See the dissenting judgement of Justice Weraamantry in *Case Concerning the Gabcikovo-Nagymaros* (Hungary / Slovakia) (1997) ICJ Reports 140. Also see Swanson T and Johnson S (n22) at 237.

<sup>26</sup> The principle requires that those responsible for pollution bear the costs of its consequences.

<sup>27</sup> Principle 10 of the Rio Declaration provides thus '[e]nvironmental issues are best handled with the participation of all concerned citizens, at the relevant level...' See the discussion in chapter six.

<sup>28</sup> Principle 7 of the Rio Declaration (n23); Article 4 of the 1992 United Nations Climate Change Convention (UNFCCC) 31 *International Legal Materials* (1992):851. The principle recognizes that the special needs of the developing countries must be taken into account in the development, application and interpretation of the rules of international environmental law. The principle seeks to balance a state's contribution to the creation of a particular environmental problem and its ability to respond to, prevent, reduce and control the threat. See Swanson T and Johnson S (n22) at 237.

<sup>29</sup> Principle 15 of the Rio Declaration (n23).

In many instances however, courts cite principles as the basis for accepting and applying a new rule'.<sup>30</sup> In the *Gabcikovo-Nagymaros* case<sup>31</sup> for instance, the International Court of Justice (ICJ) emphasized the need to take into account sustainable development in determining riparian rights between Hungary and Slovakia. Invariably therefore, rules and principles of law provide the 'flesh, blood, organs and bones of international law' and scholars can only study parts of this body as the 'mind' of international law is difficult to understand.<sup>32</sup>

In the context of international environmental law, Paradell-Trius identifies three roles for principles. First, international environmental law cannot achieve its objective of addressing complex socio-economic issues that inform the current environmental crisis through clear and precise legal rules that are applicable in all circumstances. Instead, he argued, the international environmental law regime worked better through application of general norms and principles which were best suited to meet environmental challenges rather than specific and detailed rules.<sup>33</sup> This explains why most multilateral Environmental Agreements (MEAs) contain principles that constitute an integral part of such instruments. For example, the precautionary principle is best envisaged as a tool that provides guidelines for formulating a decision on a problem as opposed to challenging standard decision rules.<sup>34</sup> Hence, principles facilitate the international law-making process as they allow it to continue in an incremental manner and amidst disagreement and uncertainty.<sup>35</sup> In the customary international law-making process, principles act as magnetic poles that may attract and influence state practice.<sup>36</sup>

Second, principles contained in framework conventions serve primarily to define the parameters for new obligations and to facilitate further negotiations on more detailed commitments.<sup>37</sup> For example, Art.19 (4) of the Convention on

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<sup>30</sup> Dworkin R (n11) at 28.

<sup>31</sup> *Case Concerning the Gabcikovo-Nagymaros* (Hungary / Slovakia) (1997) ICJ Reports 226 para.140  
<sup>37</sup> *International Legal Materials* 162.

<sup>32</sup> Dugard J *International Law a South African Perspective* 3ed (2005):15.

<sup>33</sup> Paradell-Trius L (n21) at 96.

<sup>34</sup> Steele K 'The Precautionary Principle: A New Approach to Public Decision-making?' *5 Law, Probability and Risk* (2006):19.

<sup>35</sup> Paradell-Trius L (n21): at 96.

<sup>36</sup> *Ibid.*

<sup>37</sup> *Ibid.*

Biological Diversity (CBD)<sup>38</sup> urges Parties to consider the need for a Protocol to regulate the transboundary movement of modified living organisms (LMOs). Meanwhile, the Convention adopted principles including those relating to public education and awareness<sup>39</sup> as well sovereignty over natural resources<sup>40</sup> all of which are relevant to the regulation of biotechnology.

Third, principles may enable decision-makers, especially the courts, to interpret the law in such a manner as to reflect or be consistent with policy.<sup>41</sup> For example, in *BP Southern Africa* case,<sup>42</sup> the court held that socio-economic considerations were an integral part of environmental responsibility. Such reasoning is arguably attributable to the judicial thinking of Judges, and the socio-economic as well as political interests, they may be keen to safeguard.

Posner identifies nine theories of judicial behaviour or thinking that influence decision – making. These include, attitudinal theory that gives rise to judicial decisions that are based on political preferences, the strategic theory where decisions are made having in mind the anticipated reaction to those decisions by other judges, legislators and the public, and the ideological theory in which there are disputants from different premises thereby giving rise to dissenting judgments. Other theories include the economic theory whose decisions reflect the principal-agent struggle for independence and the pragmatism theory that gives rise to decisions based on the effects the decision is going to have rather than on the language of the statute or of a case or a pre-existing rule.<sup>43</sup>

Effective balancing of these theories requires a good judge who, when exercising judicial discretion, makes the law that ‘best bridges the gap between law and society and best safeguards the constitution and its values’.<sup>44</sup> When such judges

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<sup>38</sup> The CBD 31 *International Legal Materials* (1992) 822.

<sup>39</sup> Article 13 of the Convention on Biological Diversity *International Legal Materials* 31 (1992):822.

<sup>40</sup> *Ibid.*

<sup>41</sup> Paradell-Trius L (n21) at 96.

<sup>42</sup> *BP Southern Africa (Pty) Ltd v MEC for Agriculture, Conservation, Environment and Land Affairs* 2004(5) SA 124 (W) paras 151 D/E – 151F.

<sup>43</sup> Posner R *How Judges Think* (2008):19-57. The other three theories of judicial behaviour Posner discusses are: the sociological theory that focuses on small group dynamics; it combines strategic and attitudinal theories, psychological usually overlaps with other theories but it focuses on the importance and sources of preconceptions in shaping responses to uncertainty and the phenomenological theory borrows from both pragmatic and legalist theories.

<sup>44</sup> Barak A *The Judge in a Democracy* (2006):307.

give expression to the fundamental values of the system, they give expression to the values that, in their eyes, seem proper and basic.<sup>45</sup>

Ultimately, courts have an important role to play in developing jurisprudence on principles (such as the precautionary principle) that underpin environmental governance. It then follows that the use and development of environmental law principles is dependent upon the level of awareness of the public towards environmental protection in society. Such awareness will be reflected in the environmental values normative legislation may seek to protect. Realisation of such values is arguably dependent upon the mind set of Judges which mind set is as important as the decisions they make.

Environmental law principles contribute towards coherence of a this regime by enhancing the ideal of rationality as they provide a specific character to the law.<sup>46</sup> For example, when reparation for ecological damage is moulded by the preventive principle, it changes the classical understanding of liability such that fault may be determined on presumptive evidence and liability assumes a collective as opposed to an individual or personal character.<sup>47</sup> Thus in the absence of environmental principles such as preventive principle, the polluter pays principle and the precautionary principle, environmental damage that is justifiable on collective rights would lack rationality in law.

Principles are important tools that enable states to set acceptable criteria on protection of the environment in multilateral treaties with flexibility. They provide regulatory guidelines that states are willing to accept without feeling that their sovereignty is threatened. This enhances adoption and ratification of such treaties. At the national level however, and as will be seen in the next chapter, principles become normative to the extent that they form a basis from which specific rules of law derive. Under the *Zambian Biosafety Act*<sup>48</sup> for instance, the power of the

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<sup>45</sup> Barak A *The Judge in a Democracy* (2006) at 105.

<sup>46</sup> Sadeleer N *Environmental Principles: From Political Slogans to Legal Rules* (2005):265.

<sup>47</sup> *Ibid.*

<sup>48</sup> No 10 of 2007 Republic of Zambia. See further discussion in chapters five, six and seven.

Authority to reject an application on grounds of public interest, appears to derive from and further strengthen implementation of the precautionary approach.<sup>49</sup>

### **3.3 The Precautionary Approach in International Environmental Law**

The precautionary principle is one of the many principles<sup>50</sup> that are ‘cornerstones’ upon which international environmental law has developed, especially since the early 1970s. In order to fully understand the nature and essence of the precautionary approach, it is first essential to examine its origins and historical development in international environmental law. History (unless manipulated to serve political and other interests) serves an important purpose in revealing conceptions about the past that form a basis for dealing with the present and the future.<sup>51</sup> It is also material in placing the precautionary approach in its appropriate context in this study

#### **3.3.1 Origins of the Precautionary Approach**

In the fourteenth century a catastrophe, the Great Pestilence<sup>52</sup> or the Black Death<sup>53</sup> commonly known as the Plague (a largely airborne disease) wiped out large numbers of the population in Europe, Asia and parts of Africa.<sup>54</sup> While others thought the Plague was caused by corruption (the term used then to connote pollution) of the atmosphere, others thought that movements of the planets caused it while others believed that it was a punishment from God. One of the precautionary measures people took at that time was to avoid touching and even trading with the infected.<sup>55</sup>

In 1990 at the Bergen Conference,<sup>56</sup> the then opposition leader in Norway, Gro Brundtland, supported the debate on the precautionary approach arguing that it took a long time from decision-making to implementation to experience its practical

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<sup>49</sup> Section 18(4) Biosafety Act No 10 of 2007 Republic of Zambia.

<sup>50</sup> Discussed at (3.2)

<sup>51</sup> Schlesinger A *The Disuniting of America* (1992):46-47.

<sup>52</sup> Generally see Gasquet F *The Great Pestilence* (1893).

<sup>53</sup> Ziegler P *The Black Death* (1969):17.

<sup>54</sup> Gasquet F (n52):160.

<sup>55</sup> Ziegler P (n53):17.

<sup>56</sup> The Bergen Conference on ‘Action for a Common Future’ was held in Bergen Norway in May 1990 as a follow-up of the 1972 Stockholm Conference and also in preparation for the 1992 Rio Conference.

effects and it cost more to restore environmental damage than to prevent it.<sup>57</sup> During the 1992 United Nations Conference on the Environment and Development (UNCED), His Holiness the XIV Dalai Lama of Tibet stated 'In the seventeenth century, we began decrees to protect the environment and so we may have been one of the first nations to have difficulty enforcing environmental regulations'.<sup>58</sup>

These two examples and many more suggest that the precautionary approach has been in existence for a long time though perhaps in rudimentary forms. If this is the case, it is justifiable to argue that present day notions of the precaution may have borrowed from medieval and middle age practices in addressing imminent harm.

Until the late 1960s, it was assumed that the impact of human activities on the environment could be determined accurately; it soon became clear that science could not come to the firm conclusions needed to protect the environment effectively and cost-effectively.<sup>59</sup> This assimilative nature of the environment was based on four assumptions, namely, science could reliably predict threats to the environment; it could provide technical solutions to mitigate such threats once they were accurately predicted; enough time remained to act and finally, such action should embody efficient utilization of scarce financial resources.<sup>60</sup> It was soon realised that this approach had failed as conclusive scientific proof came too late.<sup>61</sup> In some cases such as oil spills at sea, the changing nature of the pollutants could not easily be determined.

Thus, the precautionary approach saw a paradigm shift from the assimilative approach to one based on four elements comprising risk, damage, scientific

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<sup>57</sup> Cameron J and Abouchar J 'The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment' *14 Boston College International and Comparative Law Review* (1991):1-28 at 4.

<sup>58</sup> Statements of His Holiness XIV Dalai Lama of Tibet on 7 June 1992 at Rio de Janeiro Brazil in Collected Statements available at [www.tibet.net/diir/eng/enviro/2004/pdf/His%20Holiness%20%20environment.pdf](http://www.tibet.net/diir/eng/enviro/2004/pdf/His%20Holiness%20%20environment.pdf) (accessed 2 April 2008).

<sup>59</sup> See 'Precaution from Rio to Johannesburg' (2002) United Nations Environment Programme for the Geneva Network available at: [www.environmenthouse.ch/docspublications/reportsRoundtables/Precaution%20Report%](http://www.environmenthouse.ch/docspublications/reportsRoundtables/Precaution%20Report%20) (accessed 2 April 2008).

<sup>60</sup> McIntyre O and Mosedale T 'The Precautionary Principle as a Norm of Customary International Law' *9(2) Journal of Environmental Law* (1997):221-242 at 222.

<sup>61</sup> *Ibid.*

uncertainty and differentiated capabilities.<sup>62</sup> This new approach was embraced on two main grounds: first, it was a response to a growing appreciation of scientific uncertainties about environmental degradation since people could no longer rely entirely on scientific certainty to determine response measures, and second, some of the consequences of such degradation were irreversible.<sup>63</sup> Moreover, recent threats such as those associated with GMOs, ozone depletion, climate change, loss of or threats to loss of biodiversity and other threats such as endocrine disrupting substances and persistent organic pollutants (POPs) had given rise to a new generation of risks.<sup>64</sup> These new risks have posed challenges including the inability of scientists to predict with precision the nature and extent of potential damage.<sup>65</sup>

Current notions of the precautionary approach are traceable to the former West German jurisprudence beginning in the 1970s at a time of social democratic planning.<sup>66</sup> By embracing the concept of precaution, the Social Democrat-Free Democrat Coalition (SPD-FDP) government was linking environmental protection to the efficient and prudent management of an economy and a society in which advance planning was an essential component.<sup>67</sup>

Early conceptions of the precautionary approach (known as *Praecautio vorsorge*) were based on the belief that the state was obliged to avoid environmental degradation by careful forward planning.<sup>68</sup> The destruction or threat of destruction of forests - which Germans cherished<sup>69</sup> - exacerbated the situation. As a result, in the 1980s the German government used the precautionary approach to justify vigorous policies to minimize or alleviate harm or potential harm from acid rain, global warming and pollution of the North Sea.<sup>70</sup> At that time, both precaution and

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<sup>62</sup> See 'The Precautionary Principle from Rio to Johannesburg' (n59).

<sup>63</sup> Ibid.

<sup>64</sup> Sadeleer N (n46) at 3.

<sup>65</sup> Ibid.

<sup>66</sup> Jordan A and O'Riordan T 'The Precautionary Principle in Contemporary Environmental Policy and Politics' in Raffensperger C and Tickner A (eds) *Protecting Public Health ns the Environment* (1999): 15-35 at 19.

<sup>67</sup> O'Riordan T 'The Precautionary Principle in Environmental Management' CSERGE Working Paper 92-03 available at [http://www.cserge.ac.uk/sites/default/files/gec\\_1992\\_03.pdf](http://www.cserge.ac.uk/sites/default/files/gec_1992_03.pdf) (accessed 13 June 2009).

<sup>68</sup> Jordan A and O'Riordan T (n66):19.

<sup>69</sup> Sand P 'Sustainable Development – Forests, Ships and Law – Some Historical Annotations' 37(2-3) *Environmental Law and Policy* (2007):201-203 at 201.

<sup>70</sup> Jordan A and O'Riordan T (n66):19.

prevention were merged into the term *vorsorge*.<sup>71</sup> It is widely known that by 1976 and thereafter in Germany, *vorsorgeprinzip* had become a fundamental principle of general application in environmental policy and law, but defining the precautionary approach remained problematic.

### **3.3.2 The Problems of Defining the Precautionary Approach.**

Lack of an acceptable uniform definition of the precautionary approach makes it unclear what it means and what is required of governments, scientists and other stakeholders.<sup>72</sup> The precautionary approach is a useful tool for regulating technology and its products. Moreover, resolving the inherent dilemma as to its meaning and content is complicated partly due to lack of a formal acceptable definition for either the 'principle' or 'approach', making it unclear what either means and what each requires of governments, scientists and other stakeholders.

Defining the precautionary approach remains problematic with the result that no single acceptable definition has been developed in the international environmental law regime. It is necessary to find out why this is the case as absence of an acceptable definition leads to varying interpretations of the approach.

Problems in defining the precautionary approach are attributable to many factors. Differences in opinion between opponents of GMOs such as the European Union (EU) and proponents such as the United States (US) account for much of the controversy. While opponents of GMOs take a strict view of the approach, proponents view the approach as one that may be misused by governments to unnecessarily restrict trade.<sup>73</sup> These differences in opinion have affected the manner and extent to which the approach has been embraced in various instruments and agreements. A few examples will suffice.

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<sup>71</sup> Sadeleer N 'The Enforcement of the Precautionary Principle by German, French and Belgian Courts' 9(2) *Review of European Community and International Environmental Law* (2000) 144-151 at 144.

<sup>72</sup> Conko G 'Safety, Risk and the Precautionary Principle: Rethinking Precautionary Approaches to the Regulation of Transgenic Plants' 12 *Transgenic Research* (2003):639-647 at 639.

<sup>73</sup> Randall A *Risk and Precaution* (2011):25.

In 1987 at a Second Regional Conference for the Protection of the North Sea,<sup>74</sup> parties acknowledged in the preambular paragraphs of the agreement reached by them that:

'in order to protect the North Sea from possibly damaging effects of the most dangerous substances, a precautionary approach is necessary which may require action to control inputs of such substances even before a causal link has been established by absolutely clear scientific evidence;...'<sup>75</sup>

In 1992 the Rio Declaration<sup>76</sup> in Principle 15 embraced the precautionary approach in the following terms:

'In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation'<sup>77</sup>

The 1992 United Nations Framework Convention on Climate Change (UNFCCC)<sup>78</sup> in Art.3(3) provides that:

'The parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost'<sup>79</sup>

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<sup>74</sup> The conference took place in London 24-25 November 1987. The Agreement was reached by Belgium, Denmark, France, Netherlands, Norway, Sweden, Britain, Northern Island and the EU (which was the EC then). The proceedings are available at [www.vliz.be/imisdocs/publications/140155.pdf](http://www.vliz.be/imisdocs/publications/140155.pdf) (accessed 8 September 2009).

<sup>75</sup> See the Conference proceedings available at <http://www.sweden.gov.se/content/1/c6/05/78/43/4ffaa7cc.pdf> (accessed 8 September 2009).

<sup>76</sup> The Rio Declaration 31 *International Legal Materials* (1992):876

<sup>77</sup> Ibid Principle 15.

<sup>78</sup> The United Nations Framework Convention on Climate Change 31 *International Legal Materials* (1992):851. It was adopted in 1992 entered into force 21 March 1994.

<sup>79</sup> Ibid Article 3 (3).

The Paris Convention for the Protection of the Marine Environment of the North-East Atlantic or the OSPAR Convention<sup>80</sup> recognises the need for parties to apply:

‘the precautionary principle, by virtue of which preventive measures are to be taken when there are reasonable grounds for concern that substances ... introduced into the marine environment may bring about hazards to human health, harm living resources and marine ecosystems .. or interfere with other legitimate uses of the sea, even when there is no conclusive evidence of a causal relationship between the inputs and the effects.’<sup>81</sup>

In 2000 the Cartagena Protocol on Biosafety<sup>82</sup> embraced the precautionary approach as contained in Principle 15 of the Rio Declaration and provided that:

Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of the living modified organism in question as referred to in paragraph 3 above, in order to avoid or minimize such potential adverse effects.<sup>83</sup>

In 2000 the EU issued a Communication on the precautionary principle as follows:

‘The precautionary principle applies where scientific evidence is insufficient, inconclusive or uncertain and preliminary scientific evaluation indicates that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the high level of protection chosen by the EU’.<sup>84</sup>

The EU statement embraces the concept of proportionality, which makes it different from other formulations.

From these five examples, it is apparent that defining the precautionary approach is problematic for a number of reasons. Referring to precaution as

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<sup>80</sup> The OSPAR Convention was adopted 22 September 1992 and entered into force 25 March 1998. It is available at [http://www.ospar.org/html\\_documents/ospar/html/OSPAR\\_Convention\\_e\\_updated\\_text\\_2007.pdf](http://www.ospar.org/html_documents/ospar/html/OSPAR_Convention_e_updated_text_2007.pdf) at (accessed 24 July 2009).

<sup>81</sup> Ibid article 2(2).

<sup>82</sup> The Cartagena Protocol on Biosafety 39 *International Legal Materials* (2000):1027.

<sup>83</sup> Ibid Article 10(6).

<sup>84</sup> See the ‘Communication from the Commission on the Precautionary Principle COM (2000)’ available at [http://ec.europa.ec/dgs/health\\_consumer/library/pub07\\_en.pdf](http://ec.europa.ec/dgs/health_consumer/library/pub07_en.pdf) (accessed 15 August 2008).

'principle' as in the EU Communication and as an 'approach' in most of the other instruments, may cause problems in understanding and interpreting the effect of the concept. The World Commission on the Ethics of Scientific Knowledge (COMEST) takes the general view that there is no significant difference between the two as *principle* connotes the philosophical foundations of precaution while *approach* is its practical application.<sup>85</sup>

Had this view been acceptable, differences in opinion over adoption of precaution as a principle or approach would not have arisen between proponents and opponents of GMOs during the negotiations on the Protocol. As discussed in chapters two and three, opponents sought strict regulation. Hence, in the negotiations discussed in chapter four, the EU and the Like-Minded Group made futile attempts for a strong definition of the approach. This was vehemently opposed by the Miami Group led by the USA which lobbied for exclusion of the approach altogether. Opposition to 'principle' suggests that its use would have resulted in adoption of a strong international biosafety regime or the collapse of the negotiations, which after all stalled in 1999 at Cartagena.

Academics such as Birnie and her co-authors take the view that by insisting on adoption of 'precautionary approach' rather than 'precautionary principle', states such as the USA regard 'approach' as offering greater flexibility and being potentially less restrictive than the 'principle' on the one hand. On the other hand, 'principle' is viewed as appropriate in situations of high uncertainty with a risk of irreversible harm attracting high costs and 'approach' is appropriate in situations where uncertainty and potential costs are merely significant and the harm unlikely to become irreversible.<sup>86</sup>

In instruments such as the Protocol which adopted the precautionary principle using the wording of 'approach', the intention of the contracting parties was to end a stalemate (over the use of 'principle' or 'approach') that was one of the factors which threatened the collapse of the negotiations.<sup>87</sup> Failure to adopt the Protocol would have meant that international efforts to regulate biotechnology were futile and could

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<sup>85</sup> See 'The Precautionary Principle' (2005):23 COMEST Report United Nations Educational Scientific and Cultural Organization available at [www.unesco.org/shs/ethics...](http://www.unesco.org/shs/ethics...) (accessed 13 March 2009).

<sup>86</sup> Birnie P, Boyle A and Redwell C *International Law and the Environment* (2009):155.

<sup>87</sup> See the discussion in chapter four.

hardly have been revived in the face of stiff resistance from the USA and other proponents of GMOs.

The other reason is that use of 'precautionary measures' as in the UNFCCC and 'preventive measures' as in the OSPAR Convention, makes it difficult to ascertain whether a definition of the precautionary approach should or should not refer to or include preventive measures. Preventive measures are often associated with the preventive principle. While the two concepts may closely be related as discussed further at (3.5), adoption of the precautionary principle in most international environmental law instruments does not include 'preventive measures' but 'precautionary measures'.

In essence, lack of an acceptable definition of the precautionary approach suggests that states are determined – as they have been - to maintain flexibility in international treaty making. Such flexibility would allow powerful actors such as the EU and the USA to influence adoption of versions of the precautionary principle that would largely serve their interests especially in the developing countries in the regulation of GMOs. Moreover, environmental law is itself complex and as dynamic as the ecosystem it seeks to protect, hence, susceptible to constant change.<sup>88</sup> Defining the precautionary approach therefore remains elusive and cumbersome.

Thus, the precautionary approach may be regarded as a 'fluid' mechanism whose parameters are so wide that only individual states will decide (subject to the thresholds imposed by the Protocol) the extent to which the principle may be applicable domestically. Setting acceptable limits – if this is possible – is not only for the legislature to determine, but importantly the decision-making body. Biotechnology policy (where it exists), may give useful guidance on application of the precautionary approach in the regulation..

### **3.3.3 The Precautionary Approach: A working Definition**

Recent UNESCO's prepared the COMEST report in which the the Commission formulated a working but lengthy definition as follows:

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<sup>88</sup> Lazarus R *The Making of Environmental Law* (2004):6.

'When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. Morally unacceptable harm refers to harm to humans or the environment that is threatening to human life or health, or serious and effectively irreversible, or inequitable to present or future generations, or imposed without adequate consideration of the human rights of those affected. The judgement of *plausibility* should be grounded in scientific analysis. Analysis should be ongoing so that chosen actions are subject to review. *Uncertainty* may apply to, but need not be limited to, causality or the bounds of the possible harm. Actions are interventions that are undertaken before harm occurs that seek to avoid or diminish the harm. Actions should be chosen that are proportional to the seriousness of the potential harm, with consideration of their positive and negative consequences, and with an assessment of the moral implications of both action and inaction. The choice of action should be the result of a participatory process'.<sup>89</sup>

Analysts such as Weiss support this definition arguing – among other things – that it acknowledges that the level of prospective benefits of the action being assessed should influence the level of precaution. The definition, he further argues, discusses in detail the standard of proof to be applied to the scientific evidence if such evidence is to trigger precautionary action. He concludes that the definition is clear enough to guide decision-making in practical situations.<sup>90</sup> This thesis argues that only implementation at the domestic level may reveal trends that will inform state practice.

### **3.3.4 Common Attributes of the Precautionary Approach**

Problems of defining the precautionary approach appear to have made it difficult, if not impossible, for international environmental law instruments to attempt any such definition. In the negotiations before adoption of the Protocol for instance, the contracting parties were divided on whether or not the precautionary approach was to be adopted, and if so, in what form and to what extent. These questions caused a dilemma that would have been aggravated by any attempts to define the precautionary approach.

While definition of the precautionary approach is problematic, the various definitions contain certain discernable elements that trigger the taking of precautionary measures. The COMEST Report identifies such common elements as

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<sup>89</sup> COMEST Report 2005 (n85):14.

<sup>90</sup> Weiss C (n3):33.

those that include: existence of considerable scientific uncertainties concerning causality, magnitude, probability and nature of harm; some form of scientific analysis is mandatory; application of the precautionary approach is limited to unacceptable hazards; interventions are required before possible harm occurs or before certainty can be achieved; and interventions should be proportional to the chosen level of protection and the magnitude of the possible harm.<sup>91</sup>

Trouwborst identifies three legs of what he terms 'the precautionary tripod' as: a threat of harm, uncertainty and action.<sup>92</sup> Such threats may be attributable to global warming, loss of biodiversity, disease and so forth.<sup>93</sup> Hence, application of the precautionary approach becomes imperative when there is a threat whose consequence to the environment or the species that live in it are uncertain and action needs to be taken either to prevent potential harm or minimize harm. The three components that trigger application of the precautionary approach are discussed below.

#### **(a) Uncertainty**

The intricate workings of the natural environment and the causal mechanisms attributable to its transformation, as well as the sheer complexity of the global ecosystem, make scientific uncertainty a common feature of any legal system on protection of the environment.<sup>94</sup> Thus it is often difficult to know what will happen if certain restrictions are imposed and what may happen if such restrictions are not imposed.<sup>95</sup> Hence, scientific uncertainty is a complex phenomenon which complexity has been explained thus:

'in the open dynamic environments where humans live and operate, knowledge often has limits, and scientific certainty is difficult to attain. Uncertainty itself comes in many varieties, nonscientific as well as scientific. Some kinds of uncertainty can be addressed and reduced; others cannot'.<sup>96</sup>

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<sup>91</sup> COMEST Report (n85):13.

<sup>92</sup> Trouwborst A *Precautionary Rights and Duties of States* (2006):30.

<sup>93</sup> Sandin P 'Dimensions of the Precautionary Principle' 5(5) *Human and Ecological Risk Assessment* (1999):889-907 at 891.

<sup>94</sup> Lazarus R (n88) at 19.

<sup>95</sup> *ibid* at 19-20.

<sup>96</sup> Tickner J and Raffensperger C 'The Precautionary Principle in Action: A Handbook' available at [www.botech-info.net/handbook.pdf](http://www.botech-info.net/handbook.pdf) (accessed 5 August 2009).

Scientific uncertainty may arise from many sources. Lazarus identifies three: One, spatial dimensions of ecological injury where the scope of change is too big; the larger the spatial dimension the greater the likelihood of an increase in the number of potentially contributing sources and other variables complicating identification of cause and effect. Two, ecological injuries may take place over long periods of time thereby resulting in dissipation of information and memory but importantly, intervening activities such as global warming, make identification of cause and effect difficult. Three, environmental law's role to protect human health from harm caused by environmental contamination is complicated because determining the types, levels and periods of exposure to contaminants that cause harm to human health is difficult even using the best regime of scientific research.<sup>97</sup>

Other scholars view uncertainty only in its three main forms: technical uncertainty that arises from lack of scientific understanding; epistemological uncertainty associated with limited knowledge concerning the GM organism in question and methodological uncertainties that arise from the choice of methods of detection and identification of the effects.<sup>98</sup>

Tickner and Raffensperger, however identify different categories of uncertainty classifying them as scientific and non-scientific. Scientific categories include:

- Parameter uncertainty that arises from missing or ambiguous information in specific informational components of an analysis. Such uncertainty may be reduced by gathering more information or by using better techniques;
- *Model uncertainty* that arises from gaps in scientific theory or imprecision in the models used to bridge information gaps;
- *Systematic or epistemic uncertainty* associated with unknown effects of cumulative, multiple and or interactive exposures.

They identify non-scientific categories as those which include:

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<sup>97</sup> Lazarus R (n87) at 20-21.

<sup>98</sup> MYHR A and Traavik T 'Genetically Modified (GM) Crops: Precautionary Science and Conflicts of Interest' 16 *Journal of Agricultural and Environmental Ethics* (2003):227-247 at 232.

- *Smokescreen uncertainty* is attributable to strategies of those who create risks; they conceal the effects of a specific substance or activity to in favour of their vested interests;
- *Politically induced uncertainty (or negotiated science<sup>99</sup>)* that arises from deliberate neglect on the part of agencies responsible for protecting health and the environment. The agency may decide not to study a hazard, limit the scope of its analysis, downplay uncertainty in its decisions, or hide uncertainty in quantitative models and finally
- *Indeterminacy* where the uncertainties involved are of such magnitude and variety that they may never be significantly reduced.<sup>100</sup>

Further, scientists working in various jurisdictions or disciplinary boundaries often discover that their assessment of causes and consequences differ from those of counterparts in other countries and fields. This is mainly due to their historical experiences, intellectual priorities, standards of proof or definitions of safety, all of which lead to different interpretations. As a result, invoking such in-depth and consequential divergences is a recipe for conflict rather than harmony.<sup>101</sup>

Save for the non-scientific uncertainty, the categorization of sources of scientific uncertainty is neither materially distinct nor contradictory. For instance, the sources of scientific uncertainty identified by all the above scholars are associated to scientific research. These sources of scientific uncertainty may therefore be regarded as being complimentary yet distinct from non-scientific sources of uncertainty.

These categories of uncertainty present varying challenges to decision-makers in two respects particularly among African states where biosafety legislation is still in its infancy. First, the precautionary approach is applicable to scientific uncertainty. Levels of uncertainty would be minimized depending on many factors including levels of capacity building, financial resources and issues of governance

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<sup>99</sup> Weiss E 'Global Environmental Change and International Law: The Introductory Framework' in Weiss E (ed) *Environmental Change and International Law* (1992):3-38 at 15.

<sup>100</sup> Tickner J and Raffensperger C (n96).

<sup>101</sup> Jasanoff S and Martello M, 'Knowledge and Governance' in Jasanoff S and Martello M (eds) *Earthly Politics: Local and Global Environmental Governance* (2004):335-350 at 340.

particularly the effective implementation of biosafety legislation where it exists. Such legislation should also be credible. Many African states are lagging behind and need support here. Hence, African states that are willing to embrace the GM technology need substantive provisions on the precautionary approach to address scientific uncertainty sufficiently.

The second category which is non-scientific uncertainty poses greater challenges. Obvious culprits here are government agencies charged with the responsibility of evaluating risk assessment reports. In many cases in the selected countries, such agencies are empowered to carry out risk assessment.<sup>102</sup> Such agencies are largely manned by scientists but many of the decisions they make may be informed by a political agenda. In such circumstances, there may be no guarantee that such decisions may not be influenced by extraneous considerations for political advantage.

#### **(b) Threats to the environment and human health**

The core element that triggers application of the precautionary approach is the existence of a threat or potential threat. The threat may be one that leads to damage or irreversible damage. Principle 15 of the non-binding 1992 Rio Declaration makes provision for application of the precautionary principle where there are 'threats of serious or irreversible damage' to the environment. In so doing the Rio Declaration sets thresholds that were adopted by the Cartagena Protocol. These thresholds are problematic because neither the CBD nor the Protocol or any other instrument has attempted to define the meaning, scope and content of the two words 'serious' and 'irreversible' or any of them.

The problem is exacerbated as no guidance has been given on how to determine what constitutes serious or irreversible damage. Arguably, these are matters of fact left for scientists and decision-makers to determine based on available data. And to this extent, important issues that include the sources, quality of and expertise of collecting relevant data are critical. Even if credible data were availed, decision-making is a complicated process that attempts to reconcile

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<sup>102</sup> For example, section 24 of the Biosafety Act No 10 Of 2007 Republic of Zambia makes provision for an applicant or the Scientific Advisory Committee (SAC) to carry out risk assessment. The National Biosafety Authority (NBA) evaluates the risk assessment report.

competing socio-economic, political and other interests that may often or ultimately override scientific considerations.

The thresholds of serious or irreversible damage poses further challenges to the efficacy of the precautionary approach. The important question is whether states should wait until threats reach serious or irreversible levels before they can apply the precautionary approach to reject or restrict a GM or any other activity that may be harmful to the environment. This issue is addressed by the provisions of Art. 2(4) of the Protocol which recognizes ‘the right of a party to take action that is more protective of the conservation and sustainable use of biological diversity than that called for in this Protocol...’ The effect is that if the threshold of ‘serious and irreversible’ damage is not reached in a particular case, it is not governed by international law but national law.

In essence, a party to the Protocol has the discretion to decide which threshold(s) serve its interests so long as such thresholds do not go below the minimum standards set by the Protocol. Phrases such as ‘harm’ or ‘injury to the environment’ may be used to weaken or strengthen the thresholds that trigger application of the precautionary approach.<sup>103</sup> In other cases, the phrase ‘any damage’ could impose higher thresholds in application of the precautionary approach. In Zambia for example, the Biosafety Act has provided for a higher threshold for application of the precautionary approach by requiring that ‘where there is reason to suspect threats of any damage...’<sup>104</sup> Applicable thresholds are crucial in assessing permissible criteria for applying the precautionary approach in the selected countries.

### **(c) Action**

An integral part in implementing the precautionary approach is the concept of proportionality that entails ‘a comprehensive, systematic analysis’ of the threat and the available alternatives.<sup>105</sup> In essence, the concept requires that measures based on the precautionary approach must not be disproportionate to the desired level of

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<sup>103</sup> Cameron J and Abouchar J (n57):22.

<sup>104</sup> Section 18(3) Biosafety Act No 10 of 2007 (n101).

<sup>105</sup> Ticker J and Raffensperger C (n96).

protection and must not aim at zero risk, something which rarely exists.<sup>106</sup> Hence, measures that are too cautious may offend the precautionary approach. The action to be taken therefore depends on how much precaution is needed taking into account factors such as the seriousness or irreversibility of the threat and the level of uncertainty concerning such a threat.<sup>107</sup> The more uncertain the threat the greater the degree of precaution required.<sup>108</sup> Decision-makers need to determine how much risk is acceptable and the best option available.<sup>109</sup> The options may include, further research, completely halting the activity, preventing, controlling, mitigating.<sup>110</sup> The guiding criterion is that the action taken ought to be cost-effective.<sup>111</sup>

Determining the best option requires a cost-benefit analysis—a decision support mechanism that assesses the range of costs and benefits that inform the decision.<sup>112</sup> Essentially, it is an accounting framework that identifies the types of costs and benefits to be taken into account, how to evaluate and aggregate them.<sup>113</sup> If the cost-benefit analysis is done from an economic perspective rather than financial (which benefits the investor), it should include impacts on the environment which identified in an Environmental Impact Assessment (EIA).<sup>114</sup>

A decision-making process cannot therefore be an effective tool for protecting the environment and human health if it fails to take action whenever significant scientific uncertainty is present.<sup>115</sup> It should be accompanied by effective monitoring over a period of time for purposes of identifying and addressing expected and unexpected consequences.<sup>116</sup>

Arguably, the action taken is what counts from the perspective of the general public. The decision-maker may intelligently balance the various interests but the outcome is what is arguably significant in assessing the suitability of such a decision.

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<sup>106</sup> See 'Communication from the Commission' (n84).

<sup>107</sup> Deville A and Harding R *Applying the Precautionary Principle* (1997):37.

<sup>108</sup> Ibid at 32.

<sup>109</sup> Ticker J and Raffensperger C (n96).

<sup>110</sup> Ticker J and Raffensperger C (n105).

<sup>111</sup> Principle 15 of the Rio Declaration (n23).

<sup>112</sup> Strydom H and King N *Environmental Management in South Africa* (2009):52.

<sup>113</sup> Ibid.

<sup>114</sup> Ibid.

<sup>115</sup> Barton C 'The Status of the Precautionary Principle in Australia: Its Emergence in Legislation and a Common Law Doctrine' 22 *Harvard Environmental Law Review* (1998):509-558 at 511.

<sup>116</sup> Ticker J and Raffensperger C (n105).

Effective public involvement is a reliable basis for rationality in decision-making. It may as well be said that the action taken must not only be objective, but must be seen to be objective.

### 3.4 The Precautionary Approach in International Environmental Law

By imposing a general obligation on states not to cause harm to the environment, and having been adopted in many instruments on protection of the environment,<sup>117</sup> the precautionary approach may correctly be viewed as being part and parcel of the current international environmental law (IEL) regime. The approach has developed mainly through soft and hard law instruments. Its status in international law has been the subject of debate. It is essential to deal with that issue before embarking on the other aspects relevant to its development in IEL.

#### 3.4.1 The Status of the Precautionary Approach in International Law

International law owes its origin largely to treaties or agreements between nations and of accepted custom.<sup>118</sup> The authority, binding nature and weight of the precautionary approach in international environmental law must be considered in the context of its status in international law. This is critical because only binding rules form part of the international law regime.<sup>119</sup> . .

A principle that is established as part of customary international law provides the basis of an international action, the validity of which emanates from the legal obligations the principle creates.<sup>120</sup> However, the precautionary approach has essentially developed through international declarations<sup>121</sup> for protection of the

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<sup>117</sup> Kiss A 'The Rights and Interests of Future Generations and the Precautionary Principle' in Freestone D and Hey E *The Precautionary Principle and International Law: The Challenge of Implementation* (1996):27. Examples of instruments that have embraced the precautionary principle include: Art.4(3)(f) Bamako Convention on the Ban of Hazardous Wastes into Africa and on the Control of their Transboundary Movements within Africa 30 *International Legal Materials* (1991):773; Article 3(1) of the 1996 Protocol to the 1972 Convention on the Prevention of Dumping of Wastes and Other Matter 31 *International Legal Materials* (1997):1 Article 3 (3) of the United Nations Framework Convention on Climate Change (UNFCCC) 31 *International Legal Materials* (1992):851; Article 2(5)(a) of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes 31 *International Legal Materials* (1992):1312.

<sup>118</sup> Whiteman M *Digest of International Law* (1963):84.

<sup>119</sup> As opposed to mere usage out of courtesy, friendship or convenience. See Wallace R *International Law* (2009):9.

<sup>120</sup> Sands P *Principles of International Environmental Law* (2003):232.

<sup>121</sup> Key of which is Principle 15 of the Rio Declaration (n23).

environment but these declarations did not, (and legally could possibly not) declare such status of the approach in international law. This raises subtle and complex problems as it involves acts by states within the legislative process,<sup>122</sup> because custom is not declared but it evolves from state practice, which usually (save for instant custom) takes time. It is however a natural wish of states and other stakeholders to know the precise extent of their rights and duties under international law.<sup>123</sup>

Significantly, it is in international law that the process of coordination and ultimate integration of different regulatory traditions and attitudes to biotechnology are embedded.<sup>124</sup> For instance, in *Biotech*,<sup>125</sup> the EU sought to rely on application of the precautionary principle but the USA, Canada and Argentina objected. The WTO Tribunal upheld the objection on the grounds that the principle was not part of customary international law.

Custom and treaties are important sources of international law.<sup>126</sup> International law becomes effective when states are willing comply with existing customary international law and treaty obligations. While treaties create specific rights and binding obligations that are negotiated and agreed upon on the, effectiveness of new customary international law is largely dependent upon willingness of states to be bound by such rules.

### 3.4.1.1 Custom

Article 38 of the Statute of the International Court of Justice (ICJ) describes custom as 'evidence of a general practice accepted as law'. Evidence that a custom in this sense exists in the international community can be found only by examining state practice on of how states relate to one another, attempting to understand why they do so, and in particular whether they recognise an obligation to adopt a given

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<sup>122</sup> Hargrove J *Law Institutions and the Global Environment* (1972):102.

<sup>123</sup> Trouwborst A (n92):9.

<sup>124</sup> Cottier T 'Genetic Engineering, Trade and Human Rights' in Wuger D and Cottier T (eds) *Genetic Engineering and the World Trade System* (2008):17-55 at 17.

<sup>125</sup> See Panel Report *European Communities – Measures Affecting the Approval and Marketing of Biotech Products* WT/DS291/R, WTDS292/R, and WT/DS293/R available at [http://www.wto.org/english/tratop\\_e/dispu\\_e/status\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/status_e.htm)

<sup>126</sup> Article 38 Statute of the International Court of Justice refers to International Conventions rather than treaties. The Statute is available at <http://www.icj-cij.org/documents/index.php?p1=4&p2=2&p3=0> (accessed 10 May 2009).

course.<sup>127</sup> Brownlie enumerates sources of custom as including diplomatic correspondence, policy statements, press releases, official manuals on legal questions and resolutions relating to legal questions in the United Nations.<sup>128</sup> In applying these forms of evidence to establish the existence of an international custom, the important consideration is whether there is general recognition among states (not necessarily every state, as this may not be practicable) of a certain practice as being obligatory.<sup>129</sup> Moreover, states can only be bound by customary rules that such states have accepted and recognised but 'recognition of a particular rule as a rule of international law by a large number of states raises a presumption that the rule is generally recognised'.<sup>130</sup>

The criteria for determining what constitutes rules of customary international law are fairly well settled. Uniformity and consistency of practice; generality of practice and intention of states to be bound by such practice, which intention is commonly referred to as *opinio juris* provide acceptable criteria.<sup>131</sup>

In the *Asylum case*<sup>132</sup>, Columbia granted asylum to a rebel leader, in its Peruvian Embassy, and sought his safe conduit, a plea Peru rejected. Columbia filed a case against Peru and sought to rely on custom peculiar to Latin American states in relation to asylum. The court noted that a party that relies on a custom must prove that the custom has been established in such a manner that it also binds the other party.<sup>133</sup> Columbia's claims failed on the grounds that it had failed to prove constant and uniform usage the custom it sought to rely on. The evidence adduced before the court was uncertain, contradictory with so much fluctuation and discrepancies in the

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<sup>127</sup> Whiteman M (n118):85.

<sup>128</sup> Brownlie I Principles of International Law (2008):6-7.

<sup>129</sup> Whiteman M (n118):85.

<sup>130</sup> Lord Templeman (ed) *Public International Law* (1997):15

<sup>131</sup> Brownlie I (n128):7-8. On duration, Brownlie argues that provided consistency and generality of practice are proved, no particular duration is required. and that the International Court of Justice does not insist on the time element in its practice. Wallace R (n119):9-18 argues that justification for the position taken by the ICJ is that the duration of time required to establish a rule of customary international law will depend on other factors such as whether there is an existing rule that is to be overruled or whether no previous rule existed. The latter will require less duration. For example, UN General Assembly Resolutions may give rise to 'instant' international law (see Hargrove *Law Institutions and the Environment* (1972):102. For an excellent discussion of custom as a source of international law see Brownlie I (n127):6-10, Lord Templeman (n130)11-16 and *Restatement of the Law* (n145) at 16-40.

<sup>132</sup> ICJ reports 1950:266 (Columbia vs. Peru)

<sup>133</sup> *Ibid*:276.

exercise of diplomatic asylum. Moreover, the custom could not be invoked against Peru which had otherwise repudiated the custom by its failure to ratify the Montevideo Conventions of 1933 and 1939.

In its Advisory Opinion to the United Nations concerning *The Legality of the threat or use of nuclear weapons*<sup>134</sup> the ICJ observed that international customary law 'must be looked for primarily in the actual practice and *opinio juris* of states'. *Opinio juris* is a legal criterion for distinguishing legal rules from mere social usage and it refers to the subjective belief acknowledged by states that a particular practice is binding on them.<sup>135</sup>

In the second phase of the *South West African cases*<sup>136</sup> the ICJ noted that:

'...not only must the acts concerned "amount to a settled practice", but they must also be accompanied by the *opinio juris sive necessitatis*. Either the States taking such action or other States in a position to react to it must have behaved so that their conduct is evidence of a belief that this practice is rendered obligatory by existence of a rule of law requiring it'.<sup>137</sup>

It must however be noted that as criteria for determining the existence of customary international law, state practice and *opinio juris* are complimentary.<sup>138</sup> Further, while not all treaties give rise to customary international law, certain bilateral and multilateral treaties that embrace generalizable rules may have that effect.<sup>139</sup> For example Articles 1(1) and 2 (4) of the United Nations Charter<sup>140</sup> may be a source of customary international law by reason of the requirements to maintain international peace and to refrain from the threat or use of force against other states respectively. These are generalizable rules that seek to achieve a common goal – international peace.

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<sup>134</sup> 35 *International Legal Materials* (1957):809 par 64.

<sup>135</sup> Wallace R (n119):16.

<sup>136</sup> Reports (1966): 34.

<sup>137</sup> *South West African cases* (second phase) *ICJ Reports* (1966):34 at 108-109.

<sup>138</sup> Wallace R (n119):18.

<sup>139</sup> D'Amato A *The Concept of Custom in International Law* (1971):105.

<sup>140</sup> Signed on 26 June 1945 at San Francisco and entered into force on 24 October the same year available at <http://www.un.org/en/documents/charter/> (accessed 5 April 2009).

### 3.4.1.2 Treaties

Article 1(a) of the Vienna Convention on the Law of Treaties<sup>141</sup> defines a treaty as ‘an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation’

Brownlie refers to some treaties as ‘law making’ as they create legal obligations the observance of which does not dissolve the treaty obligation. He distinguishes them from a single enterprise treaty in which fulfilment of its objectives terminates the obligation. He asserts that law-making treaties create normative rules that govern the future conduct of the parties in terms of legal propositions which establish obligations that are mainly the same for all the parties.<sup>142</sup>

Treaties create rights and obligations for parties. By ratifying a treaty, a state expresses its consent to be bound by such a treaty internationally.<sup>143</sup> In cases where non-parties comply with rules contained in treaties, it is often presumed that such compliance does not arise from treaty obligations but rather that such a rule is on the process of becoming or has become part of the general law of nations.<sup>144</sup> Thus, treaties may codify existing customary international law and/or lead to the creation of new customary international law, especially when such instruments are intended for adherence by states generally and are widely accepted in practice.<sup>145</sup>

The importance of custom and treaties in the formation of international law cannot be overstated. On the one hand, custom does not amend a treaty but is capable of amplifying and supplementing it.<sup>146</sup> On the other hand, treaties have priority over conflicting customary rules but only in relations between parties to the treaty.<sup>147</sup>

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<sup>141</sup> The Vienna Convention on the Law of Treaties was adopted on 23 May 1969 entry into force 27 January 1980. It is available at

[http://untreaty.un.org/ilc/texts/instruments/english/conventions/1\\_1\\_1969.pdf](http://untreaty.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf)

<sup>142</sup> Brownlie I (n128):13.

<sup>143</sup> Article 1(b) Vienna Convention (n141).

<sup>144</sup> Harris D *Cases and Materials on International Law* (2010):35.

<sup>145</sup> *Restatement of the Law: Foreign Relations Law of the United States Vol 1* (1987):24.

<sup>146</sup> Lukashuk I ‘Sources of Present – day International Law’ in Tunkin G (n19):164-86 at 177.

<sup>147</sup> *Ibid.*

Having considered custom and treaties as key sources of the law of nations, three important issues arise concerning the precautionary approach: whether the approach has been elevated from one of general application to one of customary international law, and if so, does the approach reflect existing customary law or has it lead to creation of new rules of customary international law?; what is the impact of rejection of the precautionary principle in *Biotech*<sup>148</sup> by the WTO Tribunal in relation to the principles' status in customary international law?

### **Is the Precautionary Approach a Rule of General International Law or Does it Create New Rules of Customary International Law?**

Adoption of the precautionary approach or inferences drawn from it in international instruments and declarations provide proof of the willingness of states to protect the environment for the benefit of present and future generations. The need to Protect the environment gained momentum in the 1970s as evidenced by the 1972 Stockholm Conference at which states declared that such protection was 'the urgent desire of the peoples of the whole world and the duty of all Governments'.<sup>149</sup> This was a tremendous paradigm shift from the Renaissance notions in which humans were regarded as predators of the environment.<sup>150</sup>

International cooperation on protection of the environment may therefore be said to be a new approach occasioned by or potential effects associated with increasing degradation of the environment. Such cooperation is witnessed by the large number of parties Multilateral Environmental Agreements (MEAs).<sup>151</sup> It is evidence of the commitment (theoretically at least) of states to be bound by the obligations (including those imposed by the precautionary approach) contained in such instruments. Ratification of such treaties however is one thing; compliance is another.

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<sup>148</sup> See Panel Report *European Communities – Measures Affecting the Approval and Marketing of Biotech Products* WT/DS291/R, WTDS292/R, and WT/DS293/R available at [http://www.wto.org/english/tratop\\_e/dispu\\_e/status\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/status_e.htm) (accessed 7 June 2009).

<sup>149</sup> Principle 2 of the Declaration of the United Nations Conference on the Human Environment that took place in Stockholm from 5 -16 June 1972 available at <http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=97&ArticleID=1503> (accessed 6 June 2009).

<sup>150</sup> Opie J 'Renaissance Origins of the Environmental Crisis' 11(1) *Environmental Review* (1987) 2-17 at 15.

<sup>151</sup> For example current membership of the Convention on Biological Diversity (n38) stands at 193 and the Cartagena Protocol (n81) at 161.

By the 1970s the status of the precautionary approach was uncertain in international law. Four aspects of state practice strongly suggest that it is gradually emerging into the realm of customary international law. First, there was its increased adoption by a wide range of international environmental law instruments. Soft law instruments included the Rio Declaration.<sup>152</sup> Hard law instruments included the United Nations Convention on Climate Change (UNFCCC),<sup>153</sup> the Vienna Convention for the Protection of the Ozone Layer,<sup>154</sup> and its Montreal Protocol on Substances that Deplete the Ozone Layer.<sup>155</sup> In these last two, the precautionary approach was affirmed in the preambular paragraphs and the actions called for in both instruments are founded on the approach.<sup>156</sup>

Second, Agenda 21<sup>157</sup> and other declarations concerning the principle of sustainable development made a substantial contribution in elevating the status of the precautionary approach in international law. For example, in its Delhi meeting in 2002, the International Law Association noted that sustainable development involves a comprehensive and integrated approach to economic, social and political processes whose primary aim is to achieve sustainable use of the natural resources of the earth and protection of the environment. It embraces due regard to the needs and interests of future generations' as a core component.<sup>158</sup> By providing that the precautionary approach be 'widely applied by states according to their capabilities'<sup>159</sup> the Rio Declaration intended that it was to be applied in addressing both global environmental risks, such as climate change and, in furthering sustainable development.<sup>160</sup>

In the 2000 Declaration of a New Millennium at the UN, Heads of State and Government resolved that '[w]e must spare no effort to free all of humanity, and

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<sup>152</sup> Principle 15 (n110).

<sup>153</sup> 31 *International Legal Materials* (1992):851. The Convention was adopted in 1992 and entered into force on 21 March 1994.

<sup>154</sup> 26 *International Legal Materials* (1985): 1529. The Convention was adopted in 1985 and entered into force on 22 March 1988.

<sup>155</sup> 32 *International Legal Materials* (1987): 874. The Convention was adopted in 1987 and entered into force on 1 January 1989.

<sup>156</sup> Bankobeza G *Ozone Protection* (2005):36.

<sup>157</sup> Available at [http://www.un.org/esa/dsd/agenda21/res\\_agenda21\\_00.shtml](http://www.un.org/esa/dsd/agenda21/res_agenda21_00.shtml) (accessed 13 July 2009).

<sup>158</sup> See the International Law Association (ILA) 'Declaration on Sustainable Development' (2002) available at [www.ila-hq.org/download.../917ADCC2-76B0-4D5B-889D9BA9AFD2BB...](http://www.ila-hq.org/download.../917ADCC2-76B0-4D5B-889D9BA9AFD2BB...)

<sup>159</sup> Principle 15 of the Rio Declaration (n23).

<sup>160</sup> Birnie P *et al* (n86):157.

above all our children and grandchildren, from the threat of living on a planet irredeemably spoilt by human activities, and whose resources would no longer be sufficient for their needs'.<sup>161</sup> This commitment impliedly embraces the precautionary approach. The declaration is closely linked to the International Court of Justice (ICJ) observation in *Gabcikovo-Nagymaros* that there was 'need to reconcile economic development with protection of the environment' as a precondition for sustainable development.<sup>162</sup> In his dissenting judgement, Judge Weraamantry argued that the precautionary action, which has the aim of protecting the environment for the benefit of present and future generations, is widely believed to be an essential condition for achieving sustainable development.<sup>163</sup>

In *Vellore*<sup>164</sup> the Supreme Court of India noted that while the 'evolving' precautionary principle is accepted as part of international environmental law 'the circumstances of its application in any potential situation will be influenced by the circumstances of each case'. In addition, authors claim that the precautionary principle has been elevated to one of customary international law which itself may be amorphous and uncertain.<sup>165</sup>

In the *Beef Hormones case*<sup>166</sup> for example, the WTO Appellate Body expressed the view that while the precautionary principle is considered a principle of customary international law, it could not be used to override the explicit wording of article 5.1 and 5.2 of the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement<sup>167</sup>) that makes provision for risk assessment.<sup>168</sup> Whereas this reasoning is a true reflection of international law, it confirms the proactive nature of the WTO regime in protecting commercial interests. Third, many jurisdictions and other bodies have embraced the precautionary approach in

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<sup>161</sup> United Nations General Assembly Resolution 55/2 of 8 September 2000 available at <http://www.un.org/millenia/declaration/ares552e.htm> (accessed on 31 August 2008).

<sup>162</sup> *Case Concerning the Gabcikovo-Nagymaros* (Hungary / Slovakia) (1997) ICJ Reports 226 para.140.

<sup>163</sup> *Ibid* Separate Opinion by Judge Weraamantry p. 88-119 at 91.

<sup>164</sup> *Vellore Citizens' Welfare Forum v Union of India and Others* (1996) 5 SCC 647 at 734 par 35.

<sup>165</sup> Cameron J and Abouchar J 'The Status of the Precautionary Principle in International Law' in Freestone D and Hey E (n117):30 and also Trouwborst A (n92):9.

<sup>166</sup> *European Communities – Measures Concerning Meat and Meat Products* (Hormones), WT/DS26/AB/R (Jan 16 1998) WTO Panel's Report available at [www.wto.org](http://www.wto.org) (accessed 15 June 2009).

<sup>167</sup> Adopted on 1 Jan 1995. See further discussion in chapter four.

<sup>168</sup> *European Communities – Measures Concerning meat and meat Products* (Hormones), WT/DS26/AB/R (Jan 16 1998) par 120 of the Panel's Report available at [www.wto.org](http://www.wto.org).

domestic legislation. In 2002 for example, the EU sought to achieve a level of protection of the environment and humans, based on proportionality. It issued a Communication embracing the precautionary principle as follows:

'[W]here preliminary objective scientific evaluation, indicates that there are reasonable grounds for concern that the potentially dangerous effects on the *environment, human, animal or plant health* may be inconsistent with the high level of protection chosen by the community'<sup>169</sup>

Section 18 of Biosafety Act of Zambia<sup>170</sup> provides that:

'(3) Lack of scientific evidence shall not be used as a basis for not taking preventive measures where there is reason to suspect threats of any damage to socio-economic considerations, human and animal health, non-genetically modified crop, biological diversity or the environment.

(4) The Authority may reject an application under this part on grounds of public interest'<sup>171</sup>

These developments lead to an irresistible inference that, while the origin of the precautionary principle is traceable to German domestic law, its growing importance is attributable to treaty obligations contained in various multilateral environmental agreements (MEAs). Since states are the creators of , and the main actors in international law as well as the subjects of the legal regime they have created, it arguably follows that the content and rules of international law may largely depend upon the 'consensus' of nation-state officials as to what the content of the law is.<sup>172</sup> Such state officials interpret and apply the law in decision-making. These officials are agents of the state and are likely to apply international law norms in a manner consistent with the interests and values of the political leadership.

The challenge may be greater for developing countries most of which lack the capacity to implement international environmental norms. In addition, many of them have weak democracies. This means that the manner and extent to which the precautionary approach may be applied in decision-making largely depends on the views such state officials hold concerning the approach.

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<sup>169</sup> See 'Communication from the Commission on the Precautionary Principle' (2002):9 available at [http://ec.europa.eu/governance/docs/comm\\_expertise\\_en.pdf](http://ec.europa.eu/governance/docs/comm_expertise_en.pdf) (accessed 16 November 2009).

<sup>170</sup> No 10 of 2007 Republic of Zambia. See the discussion in chapters five, six and seven.

<sup>171</sup> Concerning the public interest criteria see the discussion at (7.3.2 and 8.2.2).

<sup>172</sup> D'Amato A (n139):33.

Traditional customary international law largely arose from need and the focus was largely on international peace and security. The Treaty of Westphalia of 1648, the 1919 League of Nations Covenant as well as the 1945 United Nations Charter were all primarily intended to ensure that there was international peace and security and international cooperation.<sup>173</sup> The Vienna Convention on the Law of Treaties<sup>174</sup> confirms the willingness by states to be bound by their treaty obligations and answers the need for a treaty codifying the formation of and compliance with treaties among other things.

These obligations to comply with treaties may be said to have emanated mainly from respect for state sovereignty, hence the notion of equality of all states. This being the case, it is tenable to argue that the precautionary approach is a recent phenomenon in international law. It developed along with increasing global awareness of the need to protect the environment and the compelling desire to use its resources in a sustainable manner.

Fourth, scholars have increasingly taken the view that the precautionary principle has been elevated from a principle of general application to one of customary international law. Cameron and Abouchar argue that the principle had successfully informed and should increasingly inform the effective creation and implementation of significant policies for protection of the environment. They concluded that there was sufficient state practice particularly in addressing scientific uncertainty in which the precautionary principle was the correct legal and policy tool for decision-makers.<sup>175</sup>

Trouborst takes the view that the precautionary principles embodies a norm of customary international law but determining what this means is another matter.<sup>176</sup> Renn is a little cautious. He argues that if for any other reason the precautionary principle has not attained that status in international law, it can hardly be disputed that, as the principle has expanded in scope so has it is its significance.<sup>177</sup> Those

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<sup>173</sup> For an excellent discussion on these issues, see Lauterpacht *Oppenheim's International Law* Vol. I 8ed (1955): 392-400.

<sup>174</sup> The Vienna Convention (n141).

<sup>175</sup> Cameron D and Abouchar J (n117):30-31.

<sup>176</sup> Trouwborst A (n92):9.

<sup>177</sup> Renn O 'Precaution and the Governance of Risk' in Adger and Jordan *Governing Sustainability* (2009):226- 258 at 226 Cambridge University Press Cambridge.

who refer to it as an 'approach' sometimes deny that it has been elevated to a 'principle' of customary international law.<sup>178</sup>

In effect, it is yet to be established whether or not the precautionary approach has become part of customary international law. Its close link with the principle of sustainable development (which has become part of customary international law), suggests that the approach could be creating new rules of customary international law. The more environmental degradation threatens international peace and security, the faster emerging international environmental law principles may become part of customary international law. The above finding and assertion have an impact on the third issue concerning the WTO Panel's rejection of the approach in *Biotech*.

### **The Effect of Rejection of the Precautionary Principle by the WTO Tribunal in Biotechnology**

It is custom that emanates from a treaty (not the treaty itself) that binds non-parties in international law.<sup>179</sup> In the *Biotech case*<sup>180</sup> the EU sought and the US objected to the reliance on the precautionary approach as justification for the moratorium on GMO imports to Europe. The WTO Tribunal upheld the objection on the grounds that the status of the precautionary principle was not certain in international law. The regime does not recognise or adopt the precautionary principle in its instruments predominantly because the principle is viewed as one that states may use to restrict international trade unnecessarily, including trade in agriculture.

With regard to the precautionary approach, The WTO tribunal was deciding a customary international law issue. The Protocol specifies a treaty obligation. There is no hierarchical relationship between the WTO regime and the protocol regime. In essence, rejection of the precautionary principle by the WTO Panel cannot be used as basis of assessing the status of the principle in international law. Even if it was to be claimed that the Tribunal erred in rejecting the principle, one could still argue that the Panel legitimately expressed its views on a that is yet to become part of customary international law. Those views do not affect implementation of the

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<sup>178</sup> See COMEST Report (n85):23.

<sup>179</sup> D'Amato A (n139):107.

<sup>180</sup> See Panel Report *European Communities – Measures Affecting the Approval and Marketing of Biotech Products* WT/DS291/R, WTDS292/R, and WT/DS293/R available at [http://www.wto.org/english/tratop\\_e/dispu\\_e/status\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/status_e.htm) (accessed 28 May 2009).

precautionary approach in the regulation of biotechnology as provided for under the Protocol.

### 3.5 Which Way: Precautionary 'Principle' or Precautionary 'Approach'?

The terms precautionary 'principle' and precautionary 'approach' are contested terminologies in international environmental law. In 1997, before adoption of the Protocol, the *Programme for the Further Implementation of Agenda 21*<sup>181</sup> referred to Principle 15 of the Rio Declaration as the 'precautionary principle' Principle 15 of the Rio Declaration itself provides for application of the 'precautionary approach' 'where there are threats of serious or irreversible damage'. In adopting the programme, the United Nations General Assembly noted that its focus was to 'accelerate the implementation of Agenda 21 in a comprehensive manner and not to renegotiate its provisions or to be selective in its implementation'.<sup>182</sup> Having reaffirmed that Agenda 21 remains the fundamental plan of action for achieving sustainable development, there seems to be no doubt that, the two terminologies 'principle' and 'approach' are used interchangeably for purposes of implementing Agenda 21.

The Canadian Environmental Protection Act of 1999<sup>183</sup> obligates the government to apply the precautionary principle, and requires that 'lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation...' with respect to serious and irreversible harm to the environment and humans.<sup>184</sup> Canada was an active participant in the period leading to Rio,<sup>185</sup> yet during the negotiations on the Protocol, it was the spokesperson for Miami Group, which objected to the use of the term principle in favour of approach.

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<sup>181</sup> Resolution A/RES/S-19-/2 par 3 adopted during the Nineteenth Special Session of the United Nations General Assembly on 19 September 1997 available at <http://www.un.org/documents/ga/res/spec/aress19-2.htm> (accessed 21 February 2011).

<sup>182</sup> Resolution A/RES/S-19-/2 par 3 adopted during the Nineteenth Special Session of the United Nations General Assembly on 19 September 1997 available at <http://www.un.org/documents/ga/res/spec/aress19-2.htm> (accessed 21 February 2011).

<sup>183</sup> Available at <http://www.canlii.org/en/> (accessed 14 March 2009). The current version of Act came into force on 23 June 2011.

<sup>184</sup> Section 2(1) (a) of the Canadian Environmental Protection Act of 1999.

<sup>185</sup> Ballhorn R 'Miami Group: Canada' in Bail C, Falkner R and Marquard H *The Cartagena Protocol on Biosafety: Reconciling Trade in biotechnology with Environment and Trade* (2002) 105-114 at 105

Thus, role of the precautionary approach may only become clear in its practical application.<sup>186</sup> In the light of this, Trouwborst states that:

[a]nalysis of the practice of states has shown that the only real difference seems to be the terminological distinction itself. The two terms stand for the same concept and have the same basic characteristics. No substantive differences can *prima facie* be detected between commitments to apply the 'precautionary principle' and commitments to apply the 'precautionary approach'.<sup>187</sup>

Arguably, whether an instrument or legislation refers to the precautionary principle as 'principle' or 'approach' does not make a significant difference; implementation may.

Further, the term 'precautionary approach' was used in Principle 15 of the Rio Declaration at the insistence of the USA,<sup>188</sup> which, all along, acted from its observer status.<sup>189</sup> Whenever the EU Commission claims that the precautionary principle is a 'principle', the US government prefers to phrase precautionary 'approach'.<sup>190</sup> These differences in terminology between the USA and the EU were more pronounced during the negotiations on the Protocol. Owing to the disagreement between the EU, which sought a strict regime, and the USA which was reluctant to adopt even a weak regime, it was no wonder that the latter was keen to ensure that as much flexibility as possible was achieved in the international regulation of biotechnology. It is therefore tenable to argue that negotiations on the Protocol were part of a political process that had broader and varying interests to protect.<sup>191</sup>

Adoption of the precautionary 'approach' rather than 'principle' in the Protocol seems to be part of the political compromise reached to avoid collapse of negotiations on the Protocol.<sup>192</sup> The precautionary principle was reluctantly accepted by the USA (which is not a party but used its observer status), on condition that it was framed as an approach rather than principle. It sought to ensure that the

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<sup>186</sup> Paradell-Trius L (n21):95.

<sup>187</sup> Trouwborst A, (n92):11-12.

<sup>188</sup> Birnie P *et al* (n86):155.

<sup>189</sup> Enright C 'Miami Group: United States' in Bail C, Falkner R and Marquard H *The Cartagena Protocol on Biosafety: Reconciling Trade in biotechnology with Environment and Trade* (2002):95-104 at 98.

<sup>190</sup> Pieterman R and Hanekamp J 'Pieterman R and Hanekamp J, 'The Cautious Society? An Essay on the Rise of the Precautionary Culture' ISBN 9076548099 available at [http://www.groenerekenkamer.nl/grkfiles/images/The\\_Cautious\\_Society\\_\\_HAN\\_.pdf](http://www.groenerekenkamer.nl/grkfiles/images/The_Cautious_Society__HAN_.pdf) accessed 2 March 2010.

<sup>191</sup> See the discussion in chapter four.

<sup>192</sup> See the discussion at (4.3.1).

precautionary principle did not attain the status of customary international law. The USA, was trying to do the improbable because custom formation does not depend on the formation of a treaty. Even if the Protocol was not to establish the principle, this does not prevent custom from establishing it outside the treaty.

Some scholars draw a distinction between approach and principle based on weak and strong versions respectively. They argue that weak versions are those in which, the taking of precaution is preceded by the balancing of benefits and the costs of taking action. Strong ones are those that would prohibit any action, resulting in significant or irreversible environmental harm regardless of the cost of doing so.<sup>193</sup> Still others argue that the precautionary approach is preferred as it seems to offer greater flexibility and could be less potentially restrictive than the 'principle'.<sup>194</sup> In contrast, other scholars take the view that the Protocol expresses 'the use of the precautionary principle with sufficient clarity'.<sup>195</sup> This assertion draws no distinction between 'approach' as used in the Protocol and 'principle' in general.

In 2004, the International Union for the Conservation of Nature (IUCN) asserted that only when the precautionary principle is stated in formulations such as 'inspire' a policy instrument or that decision-makers 'may have regard to' the principle or where the Principle is merely included in the preamble of an instrument, can the principle be 'ignored or overridden'.<sup>196</sup> This suggests that in practice, reference to the precautionary principle as an 'approach' does not prejudice the principle's application in decision-making.

Thus, the difference between 'principle' and 'approach' is a subject over which no consensus has been reached.<sup>197</sup> The distinction is regarded as semantic.<sup>198</sup> This thesis does not claim to offer a solution. Instead it argues that the international environmental law regime has neither sought to distinguish the terminologies nor imposed different obligations on states corresponding to each terminology. Thus,

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<sup>193</sup> Bell S and McGillivray D, *Environmental Law* (2006):77; Sunstein C, *Laws of Fear* (2005):18-19.

<sup>194</sup> Birnie P *et al* (n86) at 155.

<sup>195</sup> Egziabher T 'Like -Minded Group' in Bail *et al* *The Cartagena Protocol on Biosafety: Reconciling Trade in Biotechnology with Environment & Development* (2002): 115-123 at 122.

<sup>196</sup> Cooney R 'The Precautionary Principle in Biodiversity Conservation and Natural Resources Management' (2004):25 IUCN Policy and Global Change Series No 2 ISBN 2-8317-0810-9.

<sup>197</sup> Birnie P *et al* (n86):155.

<sup>198</sup> Foster C *Science and the Precautionary Principle in International Courts and Tribunals* (2011) 21.

consistent with the Protocol, the term precautionary approach is used in this thesis save where the context may dictate that the term 'principle' be used.

### **3.6 Conclusion**

This chapter has traced the origins and attributes of the precautionary approach. Founded on the concept of precaution, the approach was proactively enunciated in the domestic law of Germany primarily for conservation purposes. When uncertainty as to the existence of harm or potential harm culminates in a threat that requires action, application of the precautionary approach is called for in environmental governance.

New and increased risks to the environment attributable to climate change, ozone depletion, loss of or threats to loss of biodiversity and unknown but potentially harmful risks (such as those associated with GMOs), have made adoption of the approach in international environmental law imperative. Increasing adoption of the precautionary approach in various MEAs, the Protocol in particular, leaves no doubt as to its importance as a risk management tool.

However, the meaning, content and terminology of the precautionary approach remain contested, especially in the regulation of biotechnology largely because the approach is like a double edged 'sword'. It may be used for legitimate purposes, such as protection of the environment and humans from potential harm associated with GMOs. It may be used to restrict agricultural trade unnecessarily in ways that may offend the WTO regime. The following chapter therefore critically analyses the precautionary approach as enshrined in international environmental instruments regulating GMOs.

## Chapter Four

### THE PRECAUTIONARY APPROACH IN THE INTERNATIONAL REGULATION OF BIOTECHNOLOGY

'We need to be cautious until we have enough evidence that technology can be trusted'.<sup>1</sup>

#### 4.1 International regulation of biotechnology

International regulation of biotechnology has a long history essentially characterised by controversy. In the 1970s, genetic engineering emerged as a revolutionary invention in biotechnology that some observers believed, would radically transform industry and agriculture.<sup>2</sup> Soon after field trials in the 1980s and commercialisation of GMOs in the 1990s, genetic engineering was mired in controversy.<sup>3</sup> Adoption of the precautionary approach under Convention on Biological Diversity (CBD) and its Cartagena Protocol is indicative of the belief by the international community that the approach is a useful mechanism for regulation. It has increasingly been used as justification for international controls and significantly benefits humanity yet it could worsen other aspects of the environment or public health.<sup>4</sup>

Against this backdrop, this chapter discusses the precautionary approach as enshrined in the international biosafety regime, most notably the CBD and the Protocol. This is intended to shed light on the contentious issues that arise in the implementation of the approach in the selected countries. Being an issue of global concern, international regulation of biotechnology basically sought to prevent, minimise or alleviate potential transboundary damage arising from international trade in living modified organisms (LMOs). The thesis first examines the legal basis of state responsibility in respect of transboundary environmental damage.

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<sup>1</sup> Martin J *The Meaning of the 21<sup>st</sup> Century* (2001):393.

<sup>2</sup> Falkner R 'Introduction: The International politics of Genetically Modified Food' in Falkner R (ed) *The International Politics of Genetically Modified Food: Diplomacy, Trade and Law* (2007):1-11 at1.

<sup>3</sup> Ibid.

<sup>4</sup> Goklany I *The Precautionary Principle: A Critical Appraisal of Environmental Risk Assessment* (2001): 6-7.

## State Responsibility for Transboundary Environmental Damage

A state may be liable to another state for environmental damage arising from the use of its territory. Responsibility for such damage is traceable to customary international law set out in the *Trail Smelter Arbitration* and the *Corfu Channel* case.

The *Trail Smelter Arbitration*<sup>5</sup>, sought to settle the claims of the USA arising from damage caused domestically to crops, pasturelands, trees, agriculture and livestock from sulphur dioxide fumes emitted and carried by wind from the Smelting Plant of the Consolidated Mining and Smelting Company of Canada at Trail in British Columbia. Issues concerning fumigation and the resulting damage were submitted in 1928 to a Joint American – Canadian Commission set up in 1909. The Commission made recommendations that were not accepted by the two states. The matter was subsequently referred to an arbitral tribunal. In finding Canada liable the Tribunal in its final decision of 11 March 1941 concluded that:

[N]o state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties of persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.<sup>6</sup>

In the *Corfu Channel case*<sup>7</sup> United Kingdom filed a complaint against Albania concerning the safety of the Corfu Channel in the territorial waters of the latter. During the war; mines were planted in the Channel. Albania removed the mines, raising a presumption that the Channel was safe for ships. Thereafter two British war ships were hit and damaged by the mines.

The United Kingdom claimed that the mines had been laid with the complicity or knowledge of the Albanian government. While the Court found it impossible to prove who had laid the mines in question, Albania had kept a continuous and careful watch over the Channel raising an irresistible presumption that it was aware of the existence of such mines. Such knowledge gave rise to responsibility on the part of the Albanian government and as a result, the court held that 'it had been a duty of the Albanian government to notify the world in general of the existence of the minefield and to warn the approaching British naval units of their imminent danger'.

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<sup>5</sup> 9 I.L.Reports 315.

<sup>6</sup> Ibid at 317.

<sup>7</sup> 16 I.L.Reports 155.

The Court held that such knowledge created responsibility on the part of the Albanian government to 'warn other nations of the existence of such danger in its territorial waters. The Court further observed that the duty arose from 'elementary considerations of humanity' and moreover, it was the 'obligation of every state not to allow knowingly its territory to be used for acts contrary to the rights of other states'.<sup>8</sup>

These two cases illustrate the need for states to take responsibility for acts taking place in their territories which acts may cause damage to the land and peoples of other states. Such responsibility contributed to the development and adoption of the precautionary approach. It emphasizes the need to take precautionary measures to ensure that activities taking place within a states jurisdictional areas or the state's control do not result in environmental damage to other states and their environments.<sup>9</sup> By adopting the precautionary approach (as well as the requirement for notification) in regulating GMOs, the Protocol is a case in point where the international community has sought to prevent transboundary harm that may be associated with such products.

#### **4.2 The Precautionary Approach in the Rio Declaration and in the Convention on Biological Diversity**

The Rio Declaration<sup>10</sup> and the Convention on Biological Diversity (CBD)<sup>11</sup> were negotiated simultaneously at Rio in 1992. Principle 15 of the Declaration sought to enhance protection of the environment by providing for application of the precautionary approach '[w]here there are threats of serious or irreversible damage' and that 'lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation'. The approach was adopted with the hope that states would apply it widely according to their capabilities. The former was a soft law instrument and the latter hard law. This meant that states which were not parties to the CBD would in good faith embrace the approach as provided for under the Declaration by reason of their customary international law obligations. It also suggests that by embracing the approach through a non-binding

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<sup>8</sup> ICJ Reports (1949):294.

<sup>9</sup> Francioni F 'International Law for Biotechnology: Basic principles in Francioni F and Scovazzi T (eds) *Biotechnology and International Law* (2006):3-27 at 19.

<sup>10</sup> The Rio Declaration 31 *International Legal Materials* (1992):876.

<sup>11</sup> The Convention on Biological Diversity 31 *International Legal Materials* (1992):822. It was adopted in 1992 at Rio de Janeiro and entered into force 29 December 1993. Its current membership is 193.

instrument, the international community was keen to ensure that states embraced it within an environment of flexibility. Moreover, once states adopt the approach in domestic law, it binds such states in their international relations, in this case, with respect to GMOs. Since then, the precautionary approach of the Rio Declaration has become an invaluable source of the criterion for regulation in many international instruments such as the Protocol and domestic legislation in many countries.

The CBD is recognised as a landmark treaty in the conservation of biological diversity and sustainable use of biological resources.<sup>12</sup> It has three primary objectives: conservation of biological diversity; sustainable use of its components fair and equitable sharing of the benefits arising from the use of genetic resources. The third objective has three components: access to genetic resources, transfer of the relevant technologies and funding.<sup>13</sup>

The three objectives of the CBD seek to achieve a balance between conservation, sustainable use and sharing of benefits.<sup>14</sup> Further, it provides an overall sense of direction with a view of ensuring that balanced decisions are taken.<sup>15</sup> The issue of transfer of technologies was however, problematic since its meaning was to be developed fully, through state practice.<sup>16</sup> Such practice would, ultimately, lead to the development of customary international law that governs biotechnology. A protocol to the Convention was, in the circumstances, an appropriate avenue for creating obligations, compliance with which would provide the criteria and parameters of determining how and to what extent states should regulate biotechnology.

Consequently, the Convention created a framework and the parameters within which a protocol was to be adopted. Article 19(3) persuaded (rather than obligated) the parties to consider the need for and modalities of a protocol with a view to setting out appropriate procedures, especially those relating to advance informed agreement in the field of safe transfer, handling and use of living modified

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<sup>12</sup>Glowka L, Burhenne-Guilmin F and Synge H, *A Guide to the Convention on Biological Diversity* (1994):1.

<sup>13</sup> Article 1 Convention on Biological Diversity (11).

<sup>14</sup> Glowka L, Burhenne-Guilmin F and Synge H, (n12):15.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid at 96.

organisms.<sup>17</sup> In 1994 at Nassau, Bahamas, two committees were mandated to consider the need for and modalities of a protocol on biosafety. In May 1995, a panel of experts met in Cairo. This was followed by a meeting of an *ad hoc* group of biosafety experts in Madrid in July 1995. The latter recommended the establishment of a biosafety Protocol.<sup>18</sup> Thus, the Convention served three important roles relating to regulation of biotechnology.

First, it obligated parties to 'establish and maintain means to regulate manage or control' the risks associated with the use and release of LMOs resulting from biotechnology that could adversely affect biological diversity and human health.<sup>19</sup> The CBD further required parties to exchange information about the use and safety regulations of the country into which LMOs were to be introduced.<sup>20</sup> These provisions were intended to regulate LMOs in the absence of a Protocol and still bind parties to the CBD who are not parties to the Protocol.

Second, Art 19(3) of the CBD laid a roadmap for adoption of a biosafety Protocol. Further, it promoted the concept of Advance Informed Agreement (AIA). By so doing, the convention arguably sought to ensure the safe use of biotechnology. Thus, parties are required to establish or maintain means to regulate, manage or control the risks associated with the use and release of LMOs which are potentially harmful to the environment taking also into account human health.<sup>21</sup> In addition, Art 28 gives general power to parties to cooperate 'in the formulation and adoption of protocols' to the Convention. This implies that the Conference of the Parties (COP) may adopt protocols, should such protocols promote realisation of the Conventions objectives.

Third, having adopted and ratified the Convention, the parties were under obligation in international law not to act in a manner inconsistent with the object and purpose of the Convention, in compliance with the Vienna Convention on the Law of

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<sup>17</sup> Art.19(3) Convention on Biological Diversity (n11).

<sup>18</sup> Mackenzie R, Burhenne-Guilmin F, Kinderlerer J *et al* 'An Explanatory Guide to the Cartagena Protocol on Biosafety (2003): par 12 and 13 The World Conservation Union *Environmental Policy and Law Paper* No. 46 available at <http://www.cbd.int/doc/books/2003/B-01669.pdf> (accessed 10 July 2008).

<sup>19</sup> Article 8 (g) of the Convention on Biological Diversity (n11).

<sup>20</sup> *Ibid* article19 (4).

<sup>21</sup> *Ibid* Article 8 (g).

Treaties.<sup>22</sup> Adoption of the CBD set forth binding obligations which included the requirement that parties 'establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms...'.<sup>23</sup> Contrary conduct by parties would not only frustrate the object and purpose of the Convention, it would delay or otherwise hinder the effectiveness of the instrument. This provision obligates parties to the CBD but non-parties to the Protocol, to ensure safety in activities concerning LMOs. However, effectiveness of the CBD, and in turn the Protocol, is hampered by influential states such as the USA, which are large exporters of LMOs but have signed and not ratified the Convention.

The CBD currently has 193 parties including the European Union. This confirms the serious concern of the international community for biodiversity as well as human health and the need to conserve and protect biological biodiversity. Adoption of the Cartagena Protocol was specifically intended to address issues concerning the safe use of biotechnology.

### **4.3 The Cartagena Protocol on Biosafety**

The Protocol was signed in 2000 and entered into force on 11 September 2003. It has been ratified by 163 Parties including the selected countries. However major growers of GM crops, such as Canada and Argentina have ratified the Convention but are yet to sign and ratify the Protocol. In addition, the United States has not ratified the CBD and thus not eligible to become a party to the Protocol. The negotiations on the Protocol provide an in-depth understanding of the contentious nature of biotechnology.

#### **4.3.1 The Negotiations on the Protocol**

Issues of safety concerning GMOs were already a matter of international concern during the negotiation and adoption of the CBD. However, it was not until 1995 at the second conference of the Parties (COP) to the CBD at Jakarta, Indonesia, that the report of the experts was considered. Ultimately, an open-ended *ad hoc* Working Group on Biosafety (BSWG) was established and was mandated to draft a protocol

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<sup>22</sup> Article 18 of the Vienna Convention on the Law of Treaties 8 *International Legal Materials* (1969):679.

<sup>23</sup> Article 8(g) of the Convention on Biological Diversity (n11).

on biosafety.<sup>24</sup> The negotiations were acrimonious as disagreements arose over cross-cutting issues that included: the precautionary principle, socio-economic considerations, liability and redress, identification and labelling; risk assessment and risk management and trade.<sup>25</sup> Other major issues included the Advance Informed Agreement (AIA), treatment of non-parties, the scope of the Protocol and the relationship of the Protocol with other international treaties and in particular, the World Trade Organization (WTO) regime.<sup>26</sup>

The disagreements during the negotiations on the of the Protocol led to emergence of five negotiating groups that Burgiel identifies as (i) the Miami group comprising the major actual and potential exporters of LMOs - USA, Canada, Argentina, Chile, Australia and Uruguay. They sought a Protocol limited in scope and based on strict scientific criteria for risk assessment; (ii) The EU which sought a strict and comprehensive regime for regulation of biotechnology; (iii) The Like-Minded Group comprising most of the developing countries which sought a strict biosafety regime along the lines of the EU (iv) the Compromise Group consisting of Norway, New Zealand, Switzerland and Mexico which sought a middle ground and (v) the Central and Eastern European countries led by Russia and Hungary which sought a compromise but often supported the EU and Compromise Group.<sup>27</sup>

Other stakeholders including environmental non-governmental organisations (NGOs) such as Greenpeace, Consumer International and Friends of the Earth, supported a strict biosafety regime as they were worried that GMOs might cause unintended ecological damage.<sup>28</sup> In contrast to NGOs, industry groups such the Global Industry Coalition which represent an international group of biotechnology

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<sup>24</sup> La Vina A 'A Mandate for a Biosafety Protocol: The Jakarta Negotiations' in Bail C et al *The Cartagena Protocol on Biosafety: Reconciling Trade in Biotechnology with Environment and Development* (2002):34-43 at 41.

<sup>25</sup> Mackenzie R *et al* (n18):para 44.

<sup>26</sup> Pomerance R 'The Biosafety Protocol: Cartagena and Beyond' 8 *New York University Environmental Law Journal* (1999-2000):614-621 at 616; Chambers W, Kim J and Have C 'Institutional Interplay and the Governance of Biosafety' in Young O *Institutional Interplay: Biosafety and Trade* (2008)3-18 at 11; Smith F 'The Biosafety Protocol: The Real Losers Are Developing Countries' *National Legal Centre for Public Interest* 4(3) (2000) 1-41 at 9 ISBN 0-937299-46-4 available at <http://www.gesmw.com/gesmw/uppic/201093132127299.pdf> (accessed 14 March 2009).

<sup>27</sup> Burgiel S 'The Cartagena Protocol on Biosafety: Taking the Steps from Negotiation to Implementation' 11(1) *Review of European Community and International Environmental Law* (2002):53-61 at 55-56.

<sup>28</sup> Schweizer W 'The Negotiation of the Cartagena Protocol on Biosafety' 6 *Environmental Law* (1999-2000):577-602 at 590.

industries were opposed to a strict regime on the grounds that stringent restrictions on food would slow economic development yet hardly contribute to ecological protection.<sup>29</sup>

Emergence of these five groups had a profound impact on the negotiations. First, the negotiating groups had varying priorities and interests thereby making the negotiations an intricate process. There was disagreement on two fronts. The first one had two issues: the content of the intended agreement and whether there was a need for 'a legally binding [international] biosafety instrument at all.'<sup>30</sup> The second one was the stalemate that emerged over critical issues such as the scope of the Protocol, adoption of the precautionary approach, the AIA procedure and other issues gave rise to an imminent collapse of the negotiations at Cartagena. Moreover, the Miami Group insisted that they did not want to adopt an instrument that was not workable.<sup>31</sup> Third, this was a clear indication of the zeal with which proponents of biotechnology were keen to ensure that a weak international regime on regulation of biotechnology was achieved that largely served their interests. The Miami Group sought to achieve this goal by opposing inclusion of the precautionary approach in the text of the protocol.

In opposing inclusion of the precautionary principle, the Miami Group - the USA in particular - was worried that the principle would be used to justify arbitrary non-science-based trade restrictive measures.<sup>32</sup> The Group delegations were mainly from the ministries of Foreign Affairs and Trade.<sup>33</sup> It is no surprise therefore that the Group viewed the negotiations largely from a trade rather than an environmental perspective. With biotechnology companies on its side, the Group was keen to ensure that the Protocol did not impose burdensome restrictions on the bulk commodity trade.<sup>34</sup>

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<sup>29</sup> Schweizer W 'The Negotiation of the Cartagena Protocol on Biosafety' 6 *Environmental Law* (1999-2000):577-602 at 590.

<sup>30</sup> Mackenzie R and Sands P 'Prospects for International Environmental Law' in Bail C, Falkner R and Marquard H *The Cartagena Protocol on Biosafety: Reconciling Trade in Biotechnology with Environment & Development* (2002):457-466 at 461.

<sup>31</sup> Pomerance R (n26):616-617.

<sup>32</sup> Gupta A 'Governing Trade in Genetically Modified Organisms: The Cartagena Protocol on Biosafety' 42(4) *Environment* (2000):22-33 at 25.

<sup>33</sup> Bail C, Decaestecker J and Jorgensen M 'European Union' in Bail C *et al* (n30):166-185 at 167.

<sup>34</sup> Falkner R (n2):1-12 at 7.

In contrast, the EU officials were mainly from the environment, agriculture, economy and foreign affairs. While the EU spoke for its member states, delegations from the member states were all present. Coupled with the halting of approval for GMOs under Directive 90/220 (that was founded on precautionary decision-making) and other factors including increasing public pressure against such organisms, the EU had, through the Protocol, found an opportunity of including the precautionary principle firmly in a legally binding international instrument.<sup>35</sup>

Owing to increasing public protests against GMOs in Europe and the USA, the Miami Group had to make more concessions at Montreal to pave the way for the adoption of the Protocol.<sup>36</sup> By 2000 when the Protocol was adopted, the Group had exploited the scientific uncertainty debate to its advantage and this enabled it to weaken regulatory provisions in the Protocol.<sup>37</sup> Three examples illustrate how it achieved this goal. First, through the adoption of 'advance informed agreement' instead of the more commonly used 'prior informed consent', the latter being associated with hazardous substances such as waste and banned chemicals. Second, reference to 'genetically modified organisms' was replaced with 'living modified organisms' to deflect attention away from genetic modification. Third, the adoption of the precautionary approach which the Group viewed as one that gave flexibility instead of 'principle', which they saw as a strict mechanism for regulation.

These shifts in terminology did not mean that the GM controversy was resolved or that it posed lesser challenges, especially in the political and economic matrix of the debate. A classic example was Japan that was part of the Compromise Group. It had close import/export ties in corn, cotton, soybeans and canola with the USA and Canada, yet if it sided with the EU's preference for a precautionary principle, it would accelerate global momentum against biotechnology. The result was that though Japan was under pressure from the USA to support the new technology,<sup>38</sup> it finally supported the EU and the Like Minded Group.<sup>39</sup> The pressure put on Japan (by the United States) to reject a strict biosafety regime was

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<sup>35</sup> Bail C *et al* (n30) at 167.

<sup>36</sup> Schweizer W (n28) at 601-602.

<sup>37</sup> Falkner R (n2) at 6.

<sup>38</sup> Tiberghien Y 'The Battle for the Global Governance of Genetically Modified Organisms' (2006):1-49 at 7-8 available at <http://www.ceri-sciencespo.com/publica/etude/etude124.pdf> (accessed 14 February 2009).

<sup>39</sup> Schweizer W (n28) at 589.

reminiscent of the predicament developing states were to find themselves in as they sought to implement the Protocol in their jurisdictions.

Attempts to avoid collapse of the negotiations at Montreal and the need to attract ratifications to enable the Protocol to enter into force appear to have been among the factors that influenced the final adoption of the Protocol. It was finally adopted at Montreal with the hope that future negotiators would ensure that their decisions would promote its object and purpose.<sup>40</sup>

Issues of liability and redress that remained unresolved since the adoption of the Protocol have been addressed by adoption of the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, on 16 October 2010 at Nagoya, Japan.<sup>41</sup> The Supplementary Protocol's liability regime is based on fault.<sup>42</sup> It is yet to enter into force.

#### 4.3.2 The Objective of the Protocol

The objective of the Protocol is:

'In accordance with the precautionary approach contained in principle 15 of the Rio Declaration on Environment and Development, the objective of this Protocol is to contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements.'<sup>43</sup>

The objective serves two important purposes: first, it provides a point of reference or bench-mark for assessing activities undertaken under the treaty and second, implementation of the treaty as well as its further development must comply with the objective.<sup>44</sup> By specifically adopting the precautionary approach as the guiding

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<sup>40</sup> Muller B, 'Philippines' in Bail C *et al* (n30) 138-145 at 145.

<sup>41</sup> See 'World Community Adopts a New Treaty on Living Modified Organisms' Press Release 16 October 2010 available at [www.cbd.org](http://www.cbd.org) (accessed 17 October 2010). The Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety available at [www.cbd.org](http://www.cbd.org) (accessed 3 March 2011). It remains open for signature at the United Nations Headquarters in New York from 7 March 2011 to 6 March 2012 and shall enter into force upon ratification by 40 members of the Cartagena Protocol.

<sup>42</sup> Article 4 provides that 'a causal link shall be established between the damage and the living modified organism in question in accordance with domestic law'.

<sup>43</sup> Article 1 of the Cartagena Protocol 39 *International Legal Materials* (2000):1027.

<sup>44</sup> Mackenzie R *et al* (n18) at para 161.

criterion in relation to activities that ‘may have adverse effects...’, the Protocol extends protection to situations where adverse effects are certain and have been known and where the threats are probable.<sup>45</sup> It is interesting to note that the Protocol made the precautionary approach binding using the wording of a soft law instrument.

The Protocol was adopted primarily for the purpose of protecting the environment and human health from the potential harm arising from the use, handling and transboundary movement of LMOs.<sup>46</sup> Application of the precautionary approach, AIA, exchange of information and the taking into account socio-economic considerations are among the key mechanisms adopted by the Protocol to enable it to become effective. The thesis briefly examines the first three, while socio-economic considerations are dealt with in the next section.

### 4.3.3 The Precautionary Approach

The objective of the protocol already mentioned earlier<sup>47</sup> embodies the precautionary approach which forms the basis of regulation under the Protocol. Owing to the uncertainties in the meaning and purpose of the precautionary approach, states have taken into account their own capabilities and their economic and social priorities in deciding whether and to what extent they may apply precautionary measures.<sup>48</sup>

Some scholars including Birnie, Boyle and Redgwell argue that the purpose of the precautionary approach is to assist in ascertaining whether a risk is reasonably foreseeable and whether it requires a response. They further argue that issues such as how to control the risk and what level of risk is socially acceptable, are policy questions better answered by politicians and society as a whole rather than scientists or courts.<sup>49</sup> It means the content of international law instruments is informed by the extent to which states feel obliged to surrender part of their sovereign powers in compliance with the principle of cooperation but importantly, to promote environmental protection. This thesis argues that once states have ratified international instruments, it follows that the thresholds of regulation established

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<sup>45</sup> Ibid at para 168.

<sup>46</sup> Article 1 of the Cartagena Protocol on Biosafety 39 *International Legal Materials* (2000):1027.

<sup>47</sup> At (4.3.2).

<sup>48</sup> Birnie P, Boyle A and Redwell C *International Law and the Environment* (2009):163.

<sup>49</sup> Ibid at 161.

under such instruments are presumed to be the acceptable levels of risk for the parties.

By providing for the precautionary approach, the Protocol enables states to exercise a wide, but not unlimited discretion, including rejection of an LMO where scientific proof on safety is lacking, inadequate or uncertain. The value judgement of each member state becomes crucial in determining how and the extent to which the precautionary approach is implemented. Such judgement may however be subject to abuse and hence offend the objective of the Protocol and result in undesirable consequences including unnecessarily restricting trade.

#### **4.3.4 Advance Informed Agreement**

Advance informed agreement (AIA) (notification,<sup>50</sup> acknowledgement of receipt<sup>51</sup> and written consent),<sup>52</sup> is intended to ensure that the party of import makes an informed decision before importing an LMO during its first transboundary movement from the exporting party. An informed decision is arrived at after considering a risk assessment carried out in a scientifically sound manner. Risk assessment as provided for under Annex III has a detailed and complex scientific procedure, which invariably makes the whole process expensive for developing countries. Although the Protocol makes provision requiring the party of export to pay the costs of risk assessment if the party of import so requires,<sup>53</sup> such payments may prejudice the objectivity of the risk assessment.

Article 10(6) of the Protocol provides for the operative aspects of the precautionary approach by providing that:

‘[[I]ack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential effects of a living modified organism... shall not prevent that party from taking a decision, as appropriate... in order to avoid or minimize such potential effects’.

In essence, AIA is arguably a form of precaution which embodies the precautionary approach in varying degrees.

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<sup>50</sup> Article 8 of the Cartagena Protocol (n46).

<sup>51</sup> Ibid Article 9.

<sup>52</sup> Ibid Article 10.

<sup>53</sup> Ibid Article 15(3).

The AIA procedure does not apply to pharmaceuticals<sup>54</sup> or products intended for food, feed and processing (FFPs).<sup>55</sup> They are not for release into the environment and therefore fall outside the terms of the CBD. Food aid falls under FFPs and is consequently subject to the simplified procedure, which merely requires notification under the Protocol.<sup>56</sup> This gives flexibility to states to decide whether or not to accept them. Whether African countries should adopt biosafety legislation that makes it easier to import GMO food as food aid is thus largely a political question, which is closely related to the socio-economic considerations discussed at (4.3.7).

#### **4.3.5 Exchange of Information**

The exchange of information is critical to the functioning and success of the Protocol. The Biosafety Clearing House (BCH) was established with the intention to, (among other things) 'facilitate the exchange of scientific, technical, environmental and legal information on, and experience with, living modified organisms'.<sup>57</sup> The BCH is therefore a central portal through which information is received and disseminated to interested parties using the latest available technologies. The BCH could serve an important role yet; its success largely depends on the willingness of member states to provide information and there is no guarantee that the information supplied will be objective. Moreover, where such information exists, it is in the hands of government controlled institutions in recipient states and hence, the decision as to which information should be released, is political. Some states may lack institutional and financial capacities to enable them to acquire the necessary information.

Under the Protocol, a competent authority may also act as a focal point.<sup>58</sup> This role is critical particularly in relation to dissemination and exchange of information both with the Biosafety Clearing House (BCH) and among parties and non-parties. The BCH is mandated to 'facilitate the exchange of scientific, technical, environmental and legal information...' and 'to assist the parties to implement the Protocol...'<sup>59</sup> The nature and content of information relayed to the BCH is material in determining the transparency of the competent body of a country. For instance, it is

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<sup>54</sup> Article 5 of the Cartagena Protocol (n43 ).

<sup>55</sup> Ibid Article 11.

<sup>56</sup> Ibid Article 13.

<sup>57</sup> Ibid Article 20 (1) (a).

<sup>58</sup> Ibid Article 19 (1).

<sup>59</sup> Ibid Article 20 (1).

surprising that most of the parties in Africa (and other parties) have posted little or no information to the BCH. Biosafety legislation, regulations and the policies of many countries are hardly available on the BCH website.<sup>60</sup>

Absence of such information would imply that parties are not effectively complying with the Protocol and that the information is not easily available to other parties and stakeholders. The 'secrecy' with which some states deal with biosafety issues may account for failure to post the required information to the BCH. In Kenya for instance, the Biosafety Bill 2005 had been pending for long. It was not easily available to the public nor has it been available for scrutiny and there is no evidence that this may happen. Observers note that 'there has been so much secrecy that most stakeholders do not even know where they should go to get a copy of the Bill'.<sup>61</sup> Zambia has recently passed a Biosafety Act<sup>62</sup> yet it has not been posted to the BCH Portal. Only Cameroon and a few other African countries have made their biosafety laws or regulations available either on the BCH portal or other websites.

#### **4.3.6 Institutional Governance**

Article 19(1) requires each party to designate one or more competent national authorities that shall be 'responsible for performing the administrative functions' required by the Protocol and which shall be 'authorized to act on its behalf with respect to those functions'. In the light of these provisions, the effectiveness of the Protocol is premised on a functioning national framework and information exchange.<sup>63</sup>

Decision-making is one of the crucial functions of competent authorities. The structure and powers of such bodies; their independence; expertise and the adequacy of the personnel of such bodies and the fiscal as well as legal tools and mechanisms for regulation of biotechnology are among important aspects that account for the efficacy of such bodies. In practise, the balancing of competing interests arising from biotechnology is felt most at the level of decision- making. In

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<sup>60</sup> <http://bch.biodiv.org/laws/default.shtml> (accessed on 7 January 2009).

<sup>61</sup> 'Kenya accused of 'secrecy on GMO technology Bill', The East African, July 2-8 2007, available at [www.nationmedia.com/eastafrican/current/news/...](http://www.nationmedia.com/eastafrican/current/news/) (accessed on 10 July 2007).

<sup>62</sup> No 10 of 2007 Republic of Zambia.

<sup>63</sup> Mackenzie R, 'Towards the Future Implementation of the Biosafety Protocol' in 'Cartagena Protocol on Biosafety: from Negotiation to Implementation', (2003):15-16 at 15 Secretariat of the Convention on Biological Diversity (n13) available at [www.biodiv.org](http://www.biodiv.org) (accessed on 30 June 2007).

the absence of a robust and transparent institutional framework, implementation of the Protocol (which constitutes the very basis for success of the Protocol) will be weak and irrelevant both in regard to compliance with the Protocol and serving the domestic interest. The ability of competent bodies to exercise impartiality to establish and maintain transparency constitutes the 'acid test' for such bodies. Interference from the executive and in other cases corruption, are among the serious impediments to the proper functioning of competent bodies in African countries that have or are in the process of developing biosafety legislation.

#### **4.3.7 Socio-economic Considerations**

Socio-economic considerations are as varied as they are complex. The different ethical, cultural, economic and other dimensions (already discussed in chapter two) present a multiplicity of values and challenges that many countries grapple with in their efforts to develop biosafety legislation. The unending debate on the risks and benefits of biotechnology is a classic example. The complexity is attributable to many factors including failure by international and domestic regulatory regimes (in Africa and possibly in many other countries) to define what constitutes socio-economic considerations. Other issues that may explain the complexity include how to balance the competing interests associated with biotechnology and what criteria to use.

Establishing and maintaining a balance between protection of commercial interests and the need to conserve biodiversity creates a puzzle at the centre of socio-economic considerations in biosafety legislation. The puzzle takes many forms. These include the meaning and essence of socio-economic considerations and whether it is feasible to develop jurisprudence for socio-economic considerations for Africa in particular.

The meaning and essence of socio-economic considerations differ from one country (and region) to another depending on ecological and various human factors. These factors are viewed in terms of the actual and potential consequences of biotechnology.<sup>64</sup> They include the impact of biotechnology on the well being of the community, the farmers income and welfare, cultural practices, rural employment,

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<sup>64</sup> La Vina A and Fransen L 'Integrating socio-economic Considerations into Biosafety Decisions: The Challenge for Asia' (2004) International Development Research Centre (IDRC) for the IUCN-IDRC available at [http://pdf.wri.org/lavina\\_fransen\\_socioeconomics.pdf](http://pdf.wri.org/lavina_fransen_socioeconomics.pdf) (Accessed on 28 June 2007).

trade and competition, indigenous peoples, food security, ethics, and religion.<sup>65</sup> Other socio-economic considerations include population growth and poverty.<sup>66</sup>

While the list of socio-economic considerations can hardly be exhausted, the Protocol limits its application to the impact of LMOs on 'the conservation and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities'.<sup>67</sup> This suggests that the international biosafety regime is keen (on the face of it at least) to protect the interests of the people closest to the area where an LMO is to be introduced or transported. It is however incumbent upon governments to evaluate and determine their priorities in this context.

The actions of society usually impact on social realities, which in turn affect socio-economic considerations. Moreover, in real life, the benefits and risks associated with biotechnology take socio-economic forms though they are articulated for political purposes expressed by way of environmental and health issues.<sup>68</sup> This is a key point at which science, politics and the law collide. The collision is mainly attributable to divergences of opinion over the purpose of socio-economic considerations in relation to biotechnology. In South Africa for instance, the debate on whether GMO sugar should be released for commercial use has become a political issue rather than a scientific investigation as such a move could threaten the sector's local and export markets.<sup>69</sup>

Socio-economic considerations are intended to assist developing countries cope with societal changes that may occur as a result of the introduction of biotechnology.<sup>70</sup> They are a 'central driving force in the biotechnology debate'.<sup>71</sup>

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<sup>65</sup> La Vina A and Fransen L 'Integrating Socio-economic Considerations into Biosafety Decisions: The Challenge for Asia' (2004) International Development Research Centre (IDRC) for the IUCN-IDRC available at [http://pdf.wri.org/lavina\\_fransen\\_socioeconomics.pdf](http://pdf.wri.org/lavina_fransen_socioeconomics.pdf) (Accessed on 28 June 2007).

<sup>66</sup> DaSilva E, Baydoun E and Badran A, 'Biotechnology and the Developing world' 5 (1) *Journal of Biotechnology* (2002):64-92 at 64.

<sup>67</sup> Article 26 of the Cartagena Protocol (n46).

<sup>68</sup> Juma C, 'Biotechnology in a Globalizing world: The Coevolution of Technology and Social Institutions', (2005):265-272 at 268.

<sup>69</sup> 'African Agriculture', (African News Network), (2007) available at <http://africanagriculture.blogspot.com> (accessed on 1 July 2007).

<sup>70</sup> Smith F 'The Biosafety Protocol: The Real Losers Are Developing Countries' 4(3) *National Legal Centre for Public Interest* (2000):1-41 at ISBN 0-937299-46-4 available at <http://www.gesmw.com/gesmw/uppic/201093132127299.pdf> (accessed 14 March 2009).

<sup>71</sup> Juma C (n68).

Thus, they form an integral part of the Protocol.<sup>72</sup> Hence, they are material in propping up the nature and character of domestic legislation. It is therefore argued that the value and priority given to socio-economic considerations in domestic legislation provides a concrete basis for applying the precautionary approach.

Scholars such as Forsman argue that it is through the precautionary approach that decision-making can be based on non-scientific data. The principle legitimises the inclusion of non-scientific actors and elements in decision making.<sup>73</sup> This is particularly pertinent as risk assessment under the Protocol is to be carried out 'in a scientifically sound manner' and in accordance with Annex III of the Protocol.<sup>74</sup> Annex III makes provision for risk assessment on a case-by-case basis depending on the LMO concerned, its intended use and the likely receiving environment. Hence, risk assessment under the Protocol is concerned with scientifically proven impacts of an LMO on a particular environment.

The absence or insufficient consideration of the socio-economic aspects of an LMO in decision making seems to make the Protocol a protectionist tool serving the interests of the powerful proponents of LMOs. Unless states objectively balance the environmentalist perspective with scientific, economic, social, and cultural perspectives,<sup>75</sup> promulgating predictable and workable biosafety legislation in Africa could be difficult to achieve. Socio-economic considerations provide 'justification for parties to exercise sovereign rights to take measures that are more protective of their biodiversity as envisaged by Article 2(4) of the Protocol. Balancing of the socio-economic considerations as against other competing interests such as international trade has been, and still is, one of the main unresolved issues of the Protocol.<sup>76</sup>

The conflict over socio-economic considerations is clearly reflected in the Protocol. The differences in opinion among the negotiating parties resulted in the adoption of a compromise provision, which provides that: 'the parties...may take into

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<sup>72</sup> Article 26 of the Cartagena Protocol (n46).

<sup>73</sup> Forsman Z, 'Community Regulation of Genetically Modified Organisms: A Difficult Relationship between Law and Science' *10 (5) European Law Journal* (2004).

<sup>74</sup> Article 15 (1) of the Cartagena Protocol (n46).

<sup>75</sup> For an excellent discussion of these perspectives see, Bell S and McGillivray D, *Environmental Law* (2006):54-59.

<sup>76</sup> Jaffe G, 'Implementing the Cartagena Biosafety Protocol Through National Biosafety Regulatory Systems: An analysis of Key Unresolved Issues' *5 Journal of Public Affairs* (2005):299-311 at 299.

account... socio-economic consideration...' in decision-making.<sup>77</sup> The provision gives member states a qualified discretion when dealing with socio-economic considerations in decision-making. The decision to take into account socio-economic considerations must be consistent with the country's international obligations (such as in trade) and the socio-economic considerations to be taken into account are those arising from the impact of LMOs on biodiversity, especially its value to indigenous and local communities. In effect, the Protocol does not provide a comprehensive regime on socio-economic considerations. It has no provisions by whom, how and when an assessment of socio-economic considerations should be made.

Each country has its own value judgements relating to socio-economic concerns relating to the benefits and potential risks of biotechnology, among other things. Consequently, the question as to how to meaningfully integrate socio-economic considerations in biosafety legislation and hence, develop a jurisprudence, raises more questions than can be answered.

At a regional level, the non-binding African Model Law (AML) has two key provisions that relate to socio-economic considerations. The first is that a competent authority is required to ensure that 'no approval shall be given unless it is considered and determined' by that authority that the GMO or its product will not have adverse socio-economic impacts. Furthermore, the authority is to ensure that the GMO in question or its product will 'accord with the ethical values and concerns of communities and does not undermine community knowledge and technologies'.<sup>78</sup> The second relates to risk assessment and requires that 'no decision on any application to import, transit...' a GMO or its product, may be made without assessment of the risks to human health, biological diversity and the environment, 'including socio-economic conditions and cultural norms'.<sup>79</sup>

The African Union Biosafety Project aimed to help African countries comply with their obligations under the Cartagena Protocol mainly by promoting the African

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<sup>77</sup> Article 26 (1) of the Cartagena Protocol (n46).

<sup>78</sup> Article 6 of the African Model Law on Biosafety available at [http://www.africa-union.org/root/au/auc/departments/hrst/biosafety/AU\\_Biosafety\\_2b.htm](http://www.africa-union.org/root/au/auc/departments/hrst/biosafety/AU_Biosafety_2b.htm) (accessed 30 July 2010).

<sup>79</sup> Article 8 African Model Law (n78).

Model Law (AML) as a common framework for biosafety regulation in Africa.<sup>80</sup> The varying attitudes and approaches to regulation of biotechnology still remain a barrier to implementation of the AML. For example, in 2010, South Africa's farmers grew 13 million tonnes of maize which include a surplus of four million tonnes that cannot be exported to neighbouring countries such as Zimbabwe, Mozambique and Malawi (all of which suffer chronic food shortages) due to regional worries about GM crops.<sup>81</sup> The maize is likely to be exported to China as chicken feed.<sup>82</sup> Moreover, there may be sufficient food, and even a surplus, but the marketing methods do not favour the poor people in South Africa.<sup>83</sup>

#### **4.4 The Interplay between Biosafety and International Trade**

Issues concerning the regulation of biotechnology have never been more contentious than in the area of international trade. This is inevitable particularly because of the dilemma arising from the need on the one hand to regulate biotechnology to protect the environment and human health and on the other hand to promote and safeguard international trade in GMOs and its products.

##### **4.4.1 The WTO Regime**

The World Trade Organization (WTO)<sup>84</sup> is an organization created to implement the 1947 General Agreement on Tariffs and Trade (GATT). The WTO is based on binding rules (hard law) that are enforced through a well established international disputes settlement system.<sup>85</sup> The Cartagena Protocol was adopted when the World Trade Organisation (WTO) regime was already in force.

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<sup>80</sup> The project is a joint initiative of the African Union and the Germany Development Corporation - See 'The African Biosafety Project' available at <http://sciedev.net>.

<sup>81</sup> Marine Veith 'S. Africa Maize may feed Chinese Chickens' Agence France Press (AFP) Johannesburg 9 September 2010 available at [http://news.yahoo.com/s/afp/20100919/sc\\_afp/](http://news.yahoo.com/s/afp/20100919/sc_afp/) (accessed 15 February 2011).

<sup>82</sup> Ibid.

<sup>83</sup> This assertion was part of a discussion that formed part of the news broadcast by the South Africa Broadcasting Corporation (SABC) Television Channel Two in its English 7 am News Bulletin 15 October 2010.

<sup>84</sup> Concluded in 1994 at an April Ministerial in Marrakech and entered into force 1 January 1995.

<sup>85</sup> Pollock M and Shaffer G *When Cooperation Fails* (2009):145.

The underlying philosophy of the WTO is trade liberalisation for the purpose of eliminating protectionist and other barriers to trade,<sup>86</sup> in order to promote growth and development.<sup>87</sup> The organization seeks to ensure that it provides a mechanism for governments to reduce their own trade barriers.<sup>88</sup> Its main task is to facilitate the negotiation, monitoring and enforcement of international trade liberalization.<sup>89</sup> The WTO facilitates the implementation and operation of Multilateral Trade Agreements, provides a forum for negotiations, administers the dispute settlement understanding (DSU) and the surveillance of Multilateral of Trade Policies. It is also charged with responsibility to cooperate with the World Bank and the International Monetary Fund (IMF) 'to achieve greater coherence in global economic policy-making'.<sup>90</sup> Being a regime established independently of the United Nations, the WTO is undoubtedly the single most powerful organization at the centre of the international trade globally. By 2006 it accounted for 97% of international trade.<sup>91</sup>

These roles also confirm that the WTO is not only an agent of globalization but establishes an essentially capitalist-oriented and capitalist-owned regime. Historically, capitalism accounts for most of the current environmental degradation. In effect, the raging debate on how to establish and maintain a meaningful balance between regulation of biotechnology and protection of the environment and humans is intricately linked to the issue as to which takes precedence between human health wealth.

The issue concerning human health and wealth raises more questions than answers. In so far as regulation of biotechnology is concerned, four examples may suffice to illustrate the intricacy. First, during the negotiations on the Protocol, the US Secretary for Agriculture said that 'we want to make sure that whatever is agreed in Montreal is complimentary to WTO procedures and rules. We would not want to see anything that is in conflict'.<sup>92</sup> Second, the vehement opposition by the Miami Group to the inclusion of provisions concerning the precautionary principle during the

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<sup>86</sup> Lester S and Mercurio B with Davies A and Leiter K *World Trade Law: Text, Materials and Commentary* (2008):45.

<sup>87</sup> *Ibid* at 20-21.

<sup>88</sup> Hoekman B and Mavroidis P *The World Trade Organization: Law Economics and Politics* (2007):1.

<sup>89</sup> Pollock M and Shaffer G (n85):145.

<sup>90</sup> Hoekman B and Mavroidis P (n88):20.

<sup>91</sup> Carter N *The Politics of the Environment* (2007):278.

<sup>92</sup> Cottier T 'Implications for Trade Law and Policy: Towards Convergence and Integration' in Bail C, Falkner R and Marquard H (n30) 467-481 at 469 footnote no. 2.

negotiations on the Protocol clearly presented the dilemma that complicated international attempts to regulate GMOs.

Third the varying attitudes regarding the precautionary approach in the domestic biosafety legislation of the selected countries is a manifestation of the continuing dilemma as to which takes precedence: protection of the environment and human health or international trade in GMOs. Four, opponents of the WTO regime (such as environmentalists including Greenpeace<sup>93</sup>) take the view that the international trade rules it governs are prejudiced against environmental interests.<sup>94</sup> It appears that powerful states such as the United States were keen to ensure that the WTO regime prevailed over the Cartagena Biosafety regime, while the EU and most developing countries sought a Protocol that was independent of the WTO regime.

#### **4.4.2 The Clash between WTO and the Protocol**

The dilemma between international trade and regulation of biotechnology partly derives from the nature of the regimes that govern these competing imperatives. Taking into account the legitimate nature of the two imperatives: protection of the environment and eliminating economic protectionism by States,<sup>95</sup> the clash between the Protocol and the WTO regime is inevitable. The WTO regime is therefore a symbol of globalisation, free trade and corporate interests<sup>96</sup>. It operates within an environment where the world has become increasingly interdependent. This has resulted in great wealth as goods are produced where their costs are lowest, consumers have more choices, institutions of production are disciplined through competition, and producers may realise the advantages of economies of scale.<sup>97</sup>

The core mandate of WTO revolves around trade and trade liberalisation with a view to 'reducing discrimination between national and foreign goods and services, and between foreign suppliers of similar goods'.<sup>98</sup> These interests are manifested in many areas including trade in agriculture (that encompasses biotech foods and

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<sup>93</sup> The information in brackets was inserted by this researcher.

<sup>94</sup> Carter T (n91) at 277.

<sup>95</sup> Weiss E and Jackson J 'The Framework for Environment and Trade' in Weiss E and Jackson J *Reconciling Environment and Trade* (2008):1-37 at 27.

<sup>96</sup> Carter T (n91) at 280.

<sup>97</sup> Jackson J *The World Trade System: Law and Policy of International Economic Relations* (1997):6.

<sup>98</sup> Hoekman B and Mavroidis P (n88) at 118.

related products) where the WTO is believed to have achieved a realistic expectation for trade-rule discipline.<sup>99</sup> By promoting and safeguarding trade interests of states and other stakeholders, WTO (in theory at least) arguably seeks to improve the economies of states. Improved economies may contribute to improved lives, reduce food insecurity, starvation and other development barriers.

In contrast, the Protocol seeks to reconcile protection of biological diversity on one hand and international trade in LMOs on the other. By adopting the precautionary approach, the Protocol introduced a mechanism that proponents of GMOs (such as the Miami Group) not only resisted during negotiations but continually seek to downplay. They view it as a tool that may be used to restrict trade unnecessarily. In effect, the Protocol introduced protective regulation which would restrict markets so that the demands for market creation and market restriction were pointing in opposite directions.<sup>100</sup> Thus, the challenge is:

‘to distinguish between those environmental measures that are needed to protect the environment and those that are a disguised restriction on trade, to determine whether there are alternative environmental protection measures that can protect the environment...effectively but are less trade restrictive, and to determine when obligations in trade law may have the effect of forcing countries to degrade the environment against their will, sometimes irreversibly.’<sup>101</sup>

This is possibly why the proponents of GMOs resisted adoption of the precautionary principle in the negotiations on the Protocol.

The WTO is a formal regime that is well established. In contrast, international environmental law instruments are dispersed, making it imperative that their effectiveness be measured in terms of their compatibility with the trade regime and not vice versa.<sup>102</sup> However GATT did not limit the general power of states to restrict trade in GMOs. As a result member states were at liberty to restrict market access to GMOs of both foreign and domestic origin, consistent with the principle of national treatment.<sup>103</sup> However adoption in 1994 of the Application of Sanitary and

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<sup>99</sup> Jackson J (n97) at 2.

<sup>100</sup> Oberthur S and Gehring T 'Institutional Interaction in Global Environmental Governance: The Case of the Cartagena Protocol and the World Trade Organization' 6 (2) *Global Environmental Politics* (2006):1-31 at 12.

<sup>101</sup> Weiss E and Jackson J (n95):27-28.

<sup>102</sup> Ibid at 12.

<sup>103</sup> Oberthur S and Gehring T (n100) at 12.

Phytosanitary Measures (SPS Agreement)<sup>104</sup> changed this situation and made import restrictions subject to a number of requirements<sup>105</sup> discussed below.

#### 4.4.3 The SPS Agreement

The SPS Agreement embodies the sovereign right of states to 'take sanitary and phytosanitary measures necessary for the protection of human, animal or plant life or health' provided that such measures are not inconsistent with the provisions of the SPS Agreement.<sup>106</sup> By restricting consistency of national SPS measures to the SPS Agreement, the WTO regime sought to ensure that states are bound by the requirements provided for under the SPS Agreement. Hence, the critical issues revolve on the key requirements of the SPS Agreement that are relevant to GMOs and how such requirements impact on the Protocol. Three examples will suffice.

First, Article 2(3) of the SPS Agreement obligates parties to ensure that the SPS measures taken by them 'do not arbitrarily or unjustifiably discriminate between Members where identical or similar conditions prevail...' and that such shall not be applied 'in a manner which would constitute a disguised restriction on international trade'. The issue of measures that constitute a disguised restriction on trade raises several other questions such as what criteria are applicable in determining measures that do and measures that do not constitute a disguise. In addressing this issue, Art 5(5) requires members to 'avoid arbitrary or unjustifiable distinctions in the levels it considers to be appropriate in different situations...'

Second, in order to minimise ambiguities and in furtherance of the WTO mandate, Art. 2(2) of the SPS Agreement requires Members to ensure two things: any SPS measures are applied only to the extent necessary to protect human, animal or plant life or health; measures are based on scientific principles and a measure is not maintained without sufficient scientific evidence, save in accordance with the provisions of Art 5(7) that provides for provisional SPS measures where the relevant scientific evidence is insufficient. The requirement to take into account

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<sup>104</sup> The SPS Agreement available at [http://www.wto.org/english/tratop\\_e/sps\\_e/spsagr\\_e.htm](http://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm) (accessed 12 March 2009). Also reproduced in *The Legal texts: the Results of the Uruguay Round of Multilateral Trade Negotiations* (1999 WTO) Cambridge University Press 59-72.

<sup>105</sup> Oberthur S and Gehring T (n100) at 12.

<sup>106</sup> Article 2 (1) of the SPS Agreement (n104).

scientific principles, is closely linked with the provisions of Art 5 (2), which requires members to take into account available scientific evidence in assessing risks.

In order to harmonize SPS measures among members, Art. 3(1) of the SPS Agreement requires them to adopt international standards, guidelines or recommendations where they exist. By empowering Members to adopt measures with higher thresholds,<sup>107</sup> the SPS Agreement made international standards, guidelines and regulations minimum criteria for risk assessment. The standards, guidelines and regulations recognised by the Agreement are those established by the Codex Alimentarius Commission in respect to food safety, the International Office of Epizootics in respect to animal health, and the International Plant Protection Convention in respect to plant health.<sup>108</sup>

By adopting scientific criteria as the basis of risk assessment, the SPS Agreement sought to ensure that measures to protect human, animal and plant health were not used as a disguised barrier to trade.<sup>109</sup> Even when scientific evidence was insufficient, in which case the measures founded on the precautionary approach should be applied, the Agreement implies application rather than making specific provision for the precautionary approach. The effect is that the Agreement provides for the taking of provisional measures pending the carrying out of 'a more objective assessment of risk and reviewing the SPS measures 'within a reasonable period of time'.<sup>110</sup>

While both instruments seem to have some commonality because of embracing scientific criteria for protection, human health and biological diversity, potential conflicts such as those concerning food safety bring to the core the high stakes by reason of policy concerns of both regimes and also for the development of international law.<sup>111</sup> Such differences have not been profound than in aspects concerning the adoption of and implementation of the precautionary approach. For example, during the Uruguay Round negotiations that culminated in conclusion of the SPS Agreement, the European Community (now the EU) sought to incorporate

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<sup>107</sup> Article 3(3) of the SPS Agreement (n104).

<sup>108</sup> Section 3 of Annex A of the SPS Agreement (n104).

<sup>109</sup> Winham G 'International Regime Conflict in Trade and Environment: the Biosafety Protocol and the WTO' 2(2) *World Trade Review* (2003):131- 155 at 137.

<sup>110</sup> Article 5 (7) of the SPS Agreement (n104).

<sup>111</sup> Winham G (n109) at 134.

the precautionary principle but due to pressure from the USA, the EU agreed to subordinate the principle to the scientific risk assessment criterion.<sup>112</sup>

In 1996 when the EU imposed a beef-hormones ban on US meat imports culminating in the *Beef Hormones Case*,<sup>113</sup> the WTO Appellate Body found that the EU had failed to base the ban on a scientific risk assessment in contravention of the requirements of Art 5(1) of the SPS Agreement. It rejected the EU's claim that the ban was adopted to protect human health.<sup>114</sup> The Appellate Body found that the precautionary principle upon which the EU relied in support of the ban could not override the requirement of a scientific risk assessment.<sup>115</sup> The thesis argues that risk assessment under the Protocol is inherently precautionary. By adopting the precautionary approach, the Protocol places emphasis on implementation of such measures in decision-making and also creates a binding obligation in international law.

#### **4.5 African Regional Approaches to the Regulation of GMOs**

GMO activities and the associated dilemma are issues that African countries are grappling with for three main reasons. First, GM food as well as the debate concerning their potential harm and alleged benefits originated in the developed world. However, hardly any country or region is an 'island' with respect to issues that concern protection of the environment and human health, not least—African countries with a rich biodiversity to safeguard and a high undernourished population.

Second, African countries have agricultural trade and related interests between themselves but most notably with developed countries. Third, economic vulnerability and lack of political capacity portrays some African countries as victims of proponents that seek to test and develop GM products which have largely been rejected in the North.<sup>116</sup> Such proponents also want markets for such food. Many

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<sup>112</sup> Winham G (n109) at 134-135.

<sup>113</sup> WTO Appellate Body Report on EC- Measures Concerning Meat and Meat Products Hormones WT/DS26/AB/R;WT/DS48/AB/R (Jan 16 1998) available at [www.wto.org](http://www.wto.org) (accessed 15 June 2009).

<sup>114</sup> Pollock M and Shaffer G (n85) at 151.

<sup>115</sup> *European Communities – Measures Concerning meat and meat Products (Hormones)* (n113).

<sup>116</sup> Newell P 'Corporate Power and "Bound Autonomy" in the Global Politics of Biotechnology' in Falkner R (ed) *The International Politics of Genetically Modified Food* (2007):67-84 at 68.

African countries have the potential to be the testing grounds and also provide markets but safety remains a major concern.<sup>117</sup>

Introduction of genetically modified (GM) foods into Africa without proper understanding of and sufficient information concerning such food would place the continent in a vulnerable position in respect of the potential harm associated with such food. Lack of resources, infrastructure<sup>118</sup> and regulatory regimes<sup>119</sup> worsens the situation. Urgent action is needed. Thus, as discussed earlier, the Like-Minded Group, to which most developing countries belonged during the negotiations on the of the Protocol, sought a strict international biosafety regime.<sup>120</sup> The regime would embrace the precautionary approach, take socio-economic considerations into account in decision-making and would involve a consideration of other international trade agreements.<sup>121</sup>

In 1999, due to the contentious nature of the negotiations, African parties to the CBD members of the Organization of African Unity (now the African Union – AU) began a process that would lead to the development of the African Model Law on Safety and Biotechnology (AML).<sup>122</sup> In 2000 the negotiations stalled, thereby confirming the scepticism of African countries that no Protocol would be adopted. Nonetheless, this provided further impetus towards the adoption of the AML. Arguably, the AML was to become a tool that would guide AU member states in developing holistic biosafety regimes and address inadequacies in the Protocol. In July 2001, in Lusaka, Zambia, the Council of Ministers of the AU endorsed a non-binding AML and urged member states to use it as a benchmark for enacting domestic biosafety legislation.<sup>123</sup>

In its preamble, the AML recognises that biotechnology promises to improve human well-being yet 'its potential adverse effects on human health, biological diversity and in general the environment are causing growing public concern'. Key

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<sup>117</sup> Egziabher T 'Like-Minded Group' in Bail C *et al* (n30):115-13 at 116.

<sup>118</sup> Smith F (n70).

<sup>119</sup> Makinde D, Mumba L and Ambali A 'Status of Biotechnology in Africa: Challenges and Opportunities' *Asian Biotechnology and Development Review* 11:3 (2009) 1-10 at 1.

<sup>120</sup> Smith F (n70).

<sup>121</sup> *Ibid*.

<sup>122</sup> See the African Model Law on Biosafety (78).

<sup>123</sup> Mayet M 'Biosafety in Africa: A Complex Web of Initiatives' (2005) available at <http://www.biosafetyafrica.org.za> (accessed 18 September 2009).

features of the AML include a broader scope than the Protocol that covers all stages from developing to commercialising GMOs.<sup>124</sup> Others include the precautionary approach,<sup>125</sup> the polluter pays principle,<sup>126</sup> advance informed agreement,<sup>127</sup> a mandatory requirement that in decision-making the Competent Authority takes into account the views and concerns expressed by the public,<sup>128</sup> strict liability.<sup>129</sup> It also provides for risk assessment that covers human health, biological diversity, the environment in general including socio-economic and cultural considerations.<sup>130</sup>

Since 2003, the AU has been working with the German Technical Cooperation (GTZ, representing the German government) to come up with projects that would facilitate implementation of the Protocol and the AML.<sup>131</sup> One of the projects is the drafting of the revised 2008 AML that is awaiting comments from governments and other stakeholders before it is endorsed by the AU.<sup>132</sup>

The revised AML draft takes into account the general trends in the international arena and also among African countries that have adopted biosafety legislation.<sup>133</sup> In contrast to the AML which has no objective, the revised draft has a two-pronged objective. It seeks to contribute to ensuring an adequate level of safety of biological diversity, human and animal health, social-economic conditions and ethical values in respect of GMOs resulting from biotechnology.<sup>134</sup> Further, it is intended to enable parties to the Protocol to implement its provisions.<sup>135</sup> The revised draft has more elaborate provisions on public participation,<sup>136</sup> risk assessment<sup>137</sup> and risk management.<sup>138</sup> Liability has been extended to the provider, supplier or

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<sup>124</sup> Article 2 of the African Model Law (n78).

<sup>125</sup> Ibid Article 6.

<sup>126</sup> Ibid Article 9.

<sup>127</sup> Ibid Article 10.

<sup>128</sup> Article 5 African Model Law (n78).

<sup>129</sup> Ibid Article 14.

<sup>130</sup> Ibid Article 8.

<sup>131</sup> Meyer H and Muller A 'Support for the African Union on Issues of Biosafety' (2008) available at [www.gtz/biodiversity](http://www.gtz/biodiversity) (accessed 20 September 2009).

<sup>132</sup> Ibid.

<sup>133</sup> See the African Model law on Biosafety (n78).

<sup>134</sup> Article 1(a) Revised African Model Law (Draft 2008) available at [http://www.africa-union.org/root/au/auc/departments/hrst/biosafety/AU\\_Biosafety\\_2b.htm](http://www.africa-union.org/root/au/auc/departments/hrst/biosafety/AU_Biosafety_2b.htm) (accessed 30 July 2010).

<sup>135</sup> Ibid Article 1(b).

<sup>136</sup> Ibid article 7. Public participation extends to the holding of public hearings.

<sup>137</sup> Ibid article 10.

<sup>138</sup> Ibid article 11.

developer, in addition to the applicant.<sup>139</sup> Under the revised draft, liability is fault based (ie requiring proof of negligence) as opposed to the strict liability<sup>140</sup> (which does not require proof) under the AML.

At the 12<sup>th</sup> Session of the African Ministerial Conference on the Environment in June 2008, the Ministers endorsed revising the AML. They urged the AU Commission to promote issues of biosafety in a manner that would reflect African common positions regarding biotechnology.<sup>141</sup> The project also established a biosafety unit within the AU Commission at Addis Ababa with the aim of integrating biosafety issues into the mainstream political and institutional structures of the AU.<sup>142</sup> The AU has been working closely on matters of biosafety with the New Partnership for Africa's Development (NEPAD), which was established in 2001. NEPAD aims to place the continent within an appropriate context in the globalised market economy.

In 2004 the AU and NEPAD established a High-level African Panel on Biotechnology (APB) with a mandate to advise the continent on scientific, policy and legal issues concerning the development, commercialisation and use of biotechnology.<sup>143</sup> The APB seeks to promote open multi-stakeholder dialogue on the various issues associated with biotechnology.<sup>144</sup> In 2007, it published a Report *Freedom to Innovate*<sup>145</sup> that examines the role of biotechnology in the transformation of African economies. Taking into account lack of or inadequate legal frameworks on the continent, urgent action led by Africans was needed.<sup>146</sup> In 2005, through NEPAD's office of Science and Technology (with the support the Bill and Melinda Gates Foundation and in collaboration with Michigan University), the AU established Networks of Expertise in Biosciences. It is a planning and coordinating agency mandated to provide government regulators with access to the most up-to-date

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<sup>139</sup> Ibid Article 17.

<sup>140</sup> As enunciated by the House of Lords in *Ryland v Fletcher* L.R 3 H. L 330 (1868).

<sup>141</sup> See Introductory note African Model Law on Biosafety (n78).

<sup>142</sup> Meyer H and Muller A (n131).

<sup>143</sup> See 'Support to the AU in the Matters of Biosafety: A Project within the Context of the AU-German Cooperation' available at [http://www.africa-union.org/root/au/auc/departments/hrst/biosafety/AU\\_Biosafety\\_2b...](http://www.africa-union.org/root/au/auc/departments/hrst/biosafety/AU_Biosafety_2b...) (accessed 10 June 2009).

<sup>144</sup> Makinde D *et al* (n119) at 2.

<sup>145</sup> Available at [www.nepadst.org](http://www.nepadst.org) (accessed 8 December 2009).

<sup>146</sup> Makinde D *et al* (n119) at 8.

training and science based-information to regulate biotechnology.<sup>147</sup> Its main goal is to ensure that:

‘its societies have the capacity to assess if, and when and how biotechnology products may be judged to pose no safety risks to the environment and human health; the ability to regulate these ...products using the latest science and applying the highest standards of global practice’<sup>148</sup>

One of ABNE’s centres is the West African Biosciences Network (WABNet) based in Senegal which specialises in research on agricultural biotechnology.<sup>149</sup>

ABNE has embarked on a five-year work plan from July 2009 to June 2014 for the purpose of building functional biosafety systems in Africa through empowering regulators with science-based information.<sup>150</sup> In addition, the International Centre for Genetic Engineering and Biotechnology (ICGEB) has been mandated by the AU and NEPAD (with funding from Bill and Melinda Gates foundation), to strengthen and expand biosafety systems in SSA. Its regional Centre in Africa is in Cape Town.<sup>151</sup> The AU working with NEPAD has developed an African Strategy on Biosafety that seeks to harmonise laws and procedures for a Pan-African biosafety system.<sup>152</sup> The Regional Economic Communities (RECs) have been earmarked as the implementing arm of the Strategy.<sup>153</sup>

## **RECs and Prospects for Harmonisation**

Harmonisation seeks to ensure that the African continent reaches a consensus on a common approach to the development of biotechnology. Its benefits include capacity

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<sup>147</sup> See ‘NEPAD Biosafety Network Approves 2010 Work Plan’ *NEPAD Today* (10 March 2010) Economic Commission for Africa available at [nepad@unesco.org](mailto:nepad@unesco.org) (accessed 22 November 2010).

<sup>148</sup> *Ibid.*

<sup>149</sup> Makinde D *et al* (n119) at 5-8. Other centres of excellence are North African Biosciences (NABNet) - bio-pharmaceuticals, based in Egypt; Southern Africa Network for Biosciences (SANBio)-health biotechnology, based in South Africa; and Biosciences East and Central Africa (BecNet) animal health and husbandry, based in Kenya.

<sup>150</sup> See ‘African Biosafety Network of Expertise (ABNE) Phase II: Implementation’ available at [www.nepadbiosafety.net/...](http://www.nepadbiosafety.net/) accessed 7 February 2010.

<sup>151</sup> See ‘ICGEB Receives Grant from the Bill and Melinda Gates Foundation’ available at <http://www.icgeb.org> accessed 6 November 2010.

<sup>152</sup> Swanby H ‘The Revised African Model Law and the African Biosafety Strategy’ (2009) 1-12 at 6 African Centre for Biosafety briefing paper No 9 of 2009 available at [www.biosafetyafrica.net](http://www.biosafetyafrica.net) (accessed 2 December 2009).

<sup>153</sup> *Ibid* at 5.

building support through designated regional centres of excellence, promoting synergised regulatory approval procedures, mitigating against potential impacts of GMOs on trade, access to emergency food and improving information sharing.<sup>154</sup> It may enable African states to become a formidable force in international negotiations concerning biosafety. A common stand may enable individual states to engage realistically amongst themselves in matters that require regional action.

There are disagreements among AU members concerning acceptable thresholds of regulation. However, most are in favour of harmonisation in certain technical areas such as detection labs and common border procedures.<sup>155</sup> In this way, harmonisation will not interfere with the individual countries decision-making, public participation and case-by-case risk assessment.<sup>156</sup> The reverse is that harmonisation may be used to create a unified regional GMO approval system that would expedite introduction of GM food into the continent.<sup>157</sup>

Further, there is still considerable disagreement among states and across regions regarding the likelihood of adverse effects and the scientific competence to assess and address them adequately.<sup>158</sup> Even in such an assessment, objectivity would remain a thorny issue especially because of the dominance by scientists (many of whom have vested interests ranging from research, development and commercialisation of GMOs to the development of the relevant policies and regulatory regimes). The other factor is that the transatlantic regulatory divide between the proponents and opponents of GMOs has significant influence on the development of biosafety regimes in Africa.<sup>159</sup> The ensuing differences in cross-border biosafety policies (and law, where applicable) may hamper trade among countries in Africa.<sup>160</sup>

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<sup>154</sup> Karembu M, Wafula D and Waithaka M 'Status of Biotechnology Policies and Biosafety Legislation in the COMESA Region' available at [www.isaaa.org](http://www.isaaa.org) (accessed 12 March 2010).

<sup>155</sup> Swanby H (n152) at 5.

<sup>156</sup> Ibid.

<sup>157</sup> Moola S and Munnik V 'GMOs in Africa: Food and Agriculture Status Report (2007) African Biosafety Centre available at [www.biosafetyafrica.net](http://www.biosafetyafrica.net) (accessed 8 January 2009).

<sup>158</sup> Mugwanga J 'Alone or Together? Can Cross-national Convergence of Biosafety Systems Contribute to Food Security in SSA?' *22 Journal of International Development* (2010):352-366 at 353.

<sup>159</sup> Ibid at 353.

<sup>160</sup> Wafula D 'Harmonising Biosafety Regulations within Africa' (2007) available at <http://www.sciedev.net/en/agriculture-and-environment/opinions/harmonising-biosafety...> (accessed 30 May 2009).

At the sub-regional level efforts to harmonise the regulation of biotechnology in Sub-Saharan Africa are slow with few individual countries enacting biosafety laws. As stated in chapter one, only a few countries in Sub-Saharan Africa that include South Africa, Zambia, Burkina Faso, Kenya, Namibia, and Cameroon have enacted such laws. Others such as Botswana have adopted a 'no hurry attitude'.<sup>161</sup>

The continent's largest trading bloc, the Common Market for Eastern and Southern Africa (COMESA), has endorsed a Regional Approach to Biotechnology and Biosafety Policy in Eastern and Southern Africa (RABESA).<sup>162</sup> RABESA seeks to use the regional centres of excellence to access and disseminate technical information and also address issues that arise from trade and access to emergency food aid that concern GMOs.<sup>163</sup>

Within the SADC, the Food, Agriculture and Natural Resources (FANR) Ministers have established the South African Advisory Committee on Biotechnology and Biosafety (SABBAC).<sup>164</sup> The Committee's mandate is to develop guidelines that would assist SADC member states to develop their capacity to test, detect and monitor GMOs and also safeguard such member states against potential risks associated with GMOs.<sup>165</sup> The Southern Africa Regional Biosafety programme (SARB) in partnership with SADC and USAID, also provides technical training in biosafety regulatory implementation. SARB is a unit of USAID's funded Agricultural Biotechnology Support Project (ABSP) whose main goal is to facilitate commercialisation of GM crops in the developing countries and countries with economies in transition.<sup>166</sup> The different social, economic, technological and political forces at play in the region as regarding GMOs are still a barrier in attempts towards harmonisation.<sup>167</sup> The leading role of South Africa within the political and other structures of SADC, is likely to influence the direction harmonisation may take.

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<sup>161</sup> Mugwanga J 'Collaboration in Biotechnology Governance: Why Should African Countries Worry About Those Among Them That Are Technologically Weak?' 8(3) *Journal of Technology Management and Sustainable Development* (2009) 265-279 at 270.

<sup>162</sup> Wafula D (n160).

<sup>163</sup> Ibid.

<sup>164</sup> Swanby H (n152) at 6.

<sup>165</sup> Ibid.

<sup>166</sup> See 'Agricultural biotechnology Support Project (ABSP) Impact Report July 1 1999 – July 1 2000' available at [http://pdf.usaid.gov/pdf\\_docs/PDABS538.pdf](http://pdf.usaid.gov/pdf_docs/PDABS538.pdf) (accessed 13 April 2009).

<sup>167</sup> Mugwanga J (n161) at 273.

In Eastern Africa, the East African Community (EAC)'s Council of Ministers have established a technical Committee of Experts to address biosafety issues and draft a regional policy on GMOs.<sup>168</sup> EAC has also prepared other related documentation including harmonised Sanitary and Phytosanitary Measures.<sup>169</sup> Other initiatives that cover East and Central Africa are those that are partly funded by USAID. These include the Program for Biosafety Systems (PBS), the International Food Policy Research Institute (IFPRI) and the International Service for National Agricultural Research (ISNAR).<sup>170</sup> USAID also funds the Association to Strengthen Agricultural Research in East and Central Africa (ASARECA) which facilitates collaborative research between countries in Africa that are associated with ASARECA, US public, private sectors and international agricultural research centres.<sup>171</sup> Most of these organisations have significant representation in Kenya which is viewed by most stakeholders as the gateway to the introduction of GMOs in other countries in the region.

The Community of West Africa (ECOWAS) is one of the most proactive RECs on matters of biosafety, with the support of USAID especially in relation to cotton and food aid.<sup>172</sup> A key player in the region, the Forum for Agricultural Research in Africa (FARA), may significantly promote the interests of the biotechnology industry by reason of being a network of African agricultural institutions and a partner of the World Bank.<sup>173</sup> FARA leads the regional centre of excellence and it is the lead body for agricultural research within the larger African Agriculture Development.<sup>174</sup> It also works closely with the Comprehensive Agriculture Development Programme (CAADP) of NEPAD, which aims to enhance agricultural research and development for the purpose of promoting new technologies.<sup>175</sup>

### **Harmonisation: in Which Direction?**

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<sup>168</sup> See Sengooba T, Cohen J and Zawedde B (eds) 'Regulatory Cooperation, Using Information, Regional Policies, and National Expertise' (2005):28 Proceedings of an East Africa Biosafety Policy Roundtable April 18-20 2005 Entebbe, Uganda available at <http://www.biovisioneastafrica.com/publications...> (accessed 27 June 2009).

<sup>169</sup> Ibid at 28.

<sup>170</sup> Moola S and Munnik V (n157).

<sup>171</sup> Ibid.

<sup>172</sup> Swanby H (152) at 6.

<sup>173</sup> Ibid.

<sup>174</sup> Ibid.

<sup>175</sup> Ibid.

The initiative of the AU in seeking to revise the AML is an indication of the willingness by its member states to take a more realistic approach in relation to biotechnology. Moreover, since its adoption, member states such as Kenya and Namibia have developed biosafety legislation but none of them replicated the AML in their biosafety regimes.<sup>176</sup> Zambia did. Even the current Ugandan Bill has little or no resemblance to the AML.<sup>177</sup> It has no provisions on the precautionary approach, suggesting that the forces against adoption of the principle in Africa are stronger than the AU can handle.

While the revised AML draft has elaborate provisions in areas that include public participation, the change of liability from strict to fault, lacks objectivity as consumers are not responsible for innovation. This change of attitude suggests that the AU is trying to align its approach on biosafety with practical reality based on the developments in biosafety legislation in some of the member states to the AU. For example, neither South Africa, nor Kenya or Namibia has embraced strict liability in their biosafety legislation. In addition, the recently adopted Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety<sup>178</sup> is based on fault as opposed to strict liability.<sup>179</sup>

The AU is establishing common initiatives that may benefit member states that are keen to develop workable biosafety regimes. In addition, by working closely with NEPAD, which is perceived by many as being largely pro-GMOs, the AU is demonstrating a gradual shift from its strict stand in the regulation of biotechnology. Further and as discussed in chapter seven, the United Nations Development Programme (UNEP) is helping a number of countries in Africa to develop biosafety regimes through the Global Environmental Facility (GEF), both of which promote GMOs.

These concerted efforts however tend to tilt towards promotion of GMOs at regional and national levels. Initiatives to incorporate biosafety issues into mainstream political and economic structures of the AU are desirable. However, the

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<sup>176</sup> See the discussion in chapter seven.

<sup>177</sup> Mayet M 'Comments on the National Biotechnology Safety Bill of Uganda' (2009) available at [www.biosafetyafrica.org.za](http://www.biosafetyafrica.org.za) (accessed 2 August 2010).

<sup>178</sup> Adopted on 16 October 2010 at Nagoya Japan

<sup>179</sup> Article 4 of the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress (n41).

ongoing (legitimate) funding by the various proponents of biotechnology seems to indicate that promotion of GMOs is on the increase in the continent. Should this trend continue, and taking into account the current food crisis in a number of countries, including Kenya, regulation will tend to take promotional rather than strict approaches. The trend is introducing elements of flexibility, an essential attribute of credible biosafety legislation.

The extent to which the AU/NEPAD and the UNEP/GEF initiatives may succeed depends on a number of factors, which include the tension among member states' commitments to the goals of the RECs.<sup>180</sup> The tension has resulted in political mistrust among such members.<sup>181</sup> The willingness of states to play an active role in the harmonisation initiatives is another. To be workable, the anticipated harmonised regime should embrace the precautionary approach.

#### **4.6 Conclusion**

The adoption of the Protocol remains a milestone in the global regulation of GMOs. This discussion of the controversy that erupted when the Protocol was being negotiated, has shed some light on the challenges that African countries face in seeking to attain a harmonised regional biosafety regime. It highlighted the African countries' lack of capacity to and the conflicting attitudes towards GMOs and in particular on the precautionary approach.

By embracing the precautionary approach, the AML adopted a holistic approach in the regulation of biotechnology. Efforts to revise it and the emphasis the AU has placed on RECs in relation to the regulation of GMOs are part of the initiatives intended to promote harmonisation in their regulation. However, the Protocol and the AML's adoption of the precautionary approach may be of little use, unless the approach is meaningfully incorporated in the legislation of the selected countries. This assertion is tested in the next chapter.

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<sup>180</sup> Oppong R 'Redefining the Relations between the African Union and Regional Economic Communities in Africa' *Monitoring Regional Integration in Southern Africa Yearbook* (2009) 5-25 at 13.

<sup>181</sup> *Ibid* at 18.

## Chapter Five

### THE INCORPORATION OF INTERNATIONAL LAW ON BIOTECHNOLOGY IN THE SELECTED COUNTRIES

'The policy of being too cautious is the greatest risk of all'<sup>1</sup>  
Jawaharlal Nehru, Indian politician (1889-1964)

#### 5.1 Incorporation of international law in General

Treaties enable states to resolve barriers on cooperation, agree to a specified course of conduct and to obtain commitments on what states are willing to do in future.<sup>2</sup>

According to the *pacta sunt servanda* principle, a state is obliged to give effect to the international treaties in its municipal law, where those agreements provide that 'effect' must be given to their provisions. Hence, a state cannot invoke the provisions of its internal law as justification for failure to perform. Compliance with international law instruments can thus be determined by looking at the status of international treaties in domestic law, in other words, their incorporation into municipal law and enforcement by domestic courts.<sup>3</sup> This Chapter therefore discusses the incorporation, in selected countries, of the Cartagena Protocol (the Protocol) which provides for the precautionary approach.

Determining what amounts to effective implementation is often difficult for two main reasons. First, over-protection of biodiversity may result in hunger and economic losses while under-protection threatens global resources and society in inequitable and destructive ways.<sup>4</sup> Thus, as Jawaharlal Nehru observed, 'the policy of being too cautious is the greatest risk of all'.<sup>5</sup> An effective balance is called for between safety against potential harm of GMOs and the legitimate expectations of

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<sup>1</sup> Available at [http://www.quotationpage.com/quotes/Jawaharlal\\_Nehru/](http://www.quotationpage.com/quotes/Jawaharlal_Nehru/) (accessed 26 December 2008). As discussed in chapter three, a too cautious approach would offend the concept of proportionality.

<sup>2</sup> Guzman A *How International Law Works* (2008):121.

<sup>3</sup> Nhenga T 'Application of the International Prohibition on Child Labour in an African Context: Lesotho, Zimbabwe and South Africa' (2009) 53. A PhD thesis a copy of which is in file with this researcher.

<sup>4</sup> Raffensperger C and deFur L, 'Implementing the Precautionary Principle: Rigorous Science and Solid Ethics' *5(5) Human and Ecological Risk Assessment* (1999):933-941 at 934.

<sup>5</sup> (n1).

the farmers for possible increased food production. The test might as well be, as in the case of pollution, not how much to allow but how much may be prevented.<sup>6</sup>

Secondly, in order for the Protocol and the resultant domestic biosafety legislation to be relevant, such legislation should recognise and objectively balance the needs and priorities of the stakeholders. However, it would be unrealistic to contend that more protective action includes a desire to achieve zero risk. Owing to ecological complexities and inherent uncertainty in scientific innovations, achieving zero risk is an impossible task, hence the need for risk assessment and risk management. It is against this backdrop that the importance of the incorporation as well supplementation of the Protocol is to be analysed.

The Protocol regime can hardly achieve its objective of ensuring safe transfer, handling and use of living modified organisms (LMOs), in the absence of meaningful implementation by parties. Moreover, success of the Protocol is largely dependent upon a system of functional national biosafety frameworks.<sup>7</sup> Such a goal may be achieved in one of the two ways implementation of the Protocol in existing domestic law or adoption of domestic biosafety legislation where there is none. This might not achieve the goals of the Protocol. It would depend on its content.

Incorporation of the Protocol serves four main purposes.

First, the manner and extent to which the selected countries have purported to adopt the Protocol, is material in assessing compliance with their obligations both under the Protocol and under customary international law. Arguably therefore, it is through such manner and extent that the real intentions of the individual parties may be revealed.

Incorporation of international instruments is done with a view to fulfilling treaty and invariably, customary international law obligations of states. Thus incorporation of the Protocol is obligatory, and this applies to its provision such as its objective, which is founded on the precautionary approach.

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<sup>6</sup> Lash J 'Integrating Science, Values, and Democracy Through Comparative Risk Assessment' in Finkel A and Golding D (eds) *Worst Things First: The Debate Over Risk-Based National Environmental Priorities* (1994) 69-86 at 70.

<sup>7</sup> Mackenzie R 'Cartagena Protocol on Biosafety: From negotiation to Implementation' available at [www.biodiv.org](http://www.biodiv.org) (accessed 13 January 2010).

When parties incorporate the Protocol or provisions of it into domestic law, One such provision is the objective that is founded on the precautionary approach.<sup>8</sup> Therefore, adoption of the precautionary approach in domestic biosafety legislation is not merely a treaty obligation but also one under customary international law.

In *Trail Smelter*<sup>9</sup> the Tribunal held that ‘...no state has the right to use or permit the use of its territory in such a manner as to cause injury... to the territory of another...’<sup>10</sup> Thus, the Tribunal laid down two important principles: states have a duty to prevent trans-boundary harm and that they have an obligation to pay compensation for harm resulting from breach of such duty.<sup>11</sup> It is widely believed the rule enunciated in *Trail Smelter* formed the basis of international regimes on pollution law.

Being a guiding criterion for the regulation of biotechnology under Art 8(g) of the Convention on Biological Diversity (CBD) and under the Protocol, embracing the precautionary approach must be seen as an essential component of the performance of treaties (in good faith) as envisaged by article 26 of the Vienna Convention. Analysts take the view that such performance is to be by organs of state thereby putting a states’ rights and obligations into effect with a view to promoting the treaty’s object and purpose which object and purpose encompass a ‘treaty’s aims, its nature and its end’.<sup>12</sup> Thus, domestic implementation of the Protocol by parties is obligatory. The content of the obligation derives from the content of the Protocol.

Compliance with treaties is governed by recognised and settled rules of international law. For example, the principle of *pacta sunt servanda* (treaties must be kept) is a rule that has been recognised and applied since time immemorial.<sup>13</sup> To date, no case is known of a tribunal which has repudiated the rule or questioned its validity.<sup>14</sup> Art. 26 of the Vienna Convention on the Law of Treaties<sup>15</sup> provides thus

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<sup>8</sup> Article 2(1) of the Cartagena Protocol 39 *International Legal Materials* (2000):1027.

<sup>9</sup> *Trail Smelter* (United States v Canada) 3 *R.I.A.A* (16 April 1938 and 11 March 1941):1905-1982.

<sup>10</sup> *Ibid* at 1965.

<sup>11</sup> Wood S in his review of Bratspies R and Miller R (eds) *Transboundary Harm in International Law: Lessons from Trail Smelter Arbitration* (2006) published in *Osgoode 45(3) Hall Law Journal* (2007): 637-645 at 638.

<sup>12</sup> Villiger M *Commentary on the 1969 Vienna Convention on the Law of Treaties* (2009):366, 427.

<sup>13</sup> *Ibid* 363 and 365.

<sup>14</sup> *Ibid* 363.

'[e]very treaty in force is binding upon the parties to it and must be performed by them in good faith'. The principle applies without exception to 'every treaty' including its annexes and appendices; it is applicable during the treaty's lifetime including entry into force, application and termination; it is seen today as the cornerstone of international relations<sup>16</sup> It worth to noting that the United States of America (USA) is a major exporter of GMOs yet it is not a party to many global environmental treaties, a factor that negatively impacts on effectiveness of instruments such as the CBD and the Protocol.

Good faith itself lacks normative quality but it requires parties to act 'honestly, fairly and reasonably' while the principle of *pacta sunt servanda* determines and provides authoritative criteria for the conduct of the parties.<sup>17</sup> However, art. 26 'is forcefully, yet elegantly' drafted with no exceptions or conditions that would make it contentious as to place its validity in question'.<sup>18</sup> If each of the selected countries were to act honestly, fairly and reasonably, consistent with the principle of *Pacta sunt servanda*, domestication of the precautionary approach, at least as provided for by the Protocol, would not be problematic.

Further, it would be almost impossible to assess the extent to which domestic legislation enables a state's compliance with its international obligations.<sup>19</sup> Ultimately what matters is how national measures are executed in practice.<sup>20</sup> In this sense, ratification of an international instrument such as the Protocol, triggers and perhaps necessitates domestic legal action in an attempt to comply with the instrument in question.<sup>21</sup> Such action may turn out to be cumbersome to stakeholders and even the political leadership.<sup>22</sup> For example, art 1 of the Protocol adopts the precautionary approach thereby establishing criterion for the regulation of biotechnology. Whether,

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<sup>15</sup> The 1969 Vienna Convention on the Law of Treaties available at [http://untreaty.un.org/ilc/texts/instruments/english/conventions/1\\_1\\_1969.pdf](http://untreaty.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf) (accessed 13 January 2009). The Convention was adopted on 23 May 1969 and entered into force on 27 January 1980.

<sup>16</sup> Villiger M (n12) at 363 and 365.

<sup>17</sup> Ibid at 365.

<sup>18</sup> Ibid at 368.

<sup>19</sup> Manzella D and Vapnek J 'Development of Analytical Tool to Assess National Biosecurity Legislation' (2007):91 ISBN 978-92-5- 105871-8 FAO.

<sup>20</sup> Ibid.

<sup>21</sup> Guzman A (n2) at 205.

<sup>22</sup> Ibid.

and the extent to which a member state complies with such criteria can only be determined by analysing the relevant domestic legislation.

While it is invariably difficult to determine the criteria to use in determining what system is workable and which one is not, art. 2(4) of the Protocol recognises the sovereign right of member states to take action that is more protective of their biological diversity. Of necessity, this implies that the precautionary approach embraced in art. 2 (1) of the Protocol, constitutes minimum criterion for regulation of biotechnology. As a consequence, a Party's biosafety regime that lacks provisions on the precautionary approach falls short of the Protocol's thresholds for the regulation of biotechnology.

The obligation to take appropriate legal, administrative and other measures is intended to ensure that states are able to regulate trans-boundary movement of LMOs consistent with the objective and spirit of the Protocol. In the absence of such measures, the Protocol would be ineffective. Hence, domestication of the Protocol is an important step towards complying with obligations of Parties. It is proof by member states of their practical commitment to be bound by, and their willingness to ensure viability of the Protocol.

Second, in the process of domesticating international environmental law instruments, states adopt domestic law in furtherance of their domestic agenda and policies. States develop their own biosafety regimes and in the process or as a consequence, seek to comply with international environmental law regimes on the subject. Zambia and Kenya present examples where biosafety legislation was adopted simultaneously seeking to comply with the two countries' treaty obligations and, at the same time, addressing local demands for such legislation.<sup>23</sup>

Third, the manner and extent to which the selected countries adopt the precautionary approach in their domestic legislation is material in assessing compliance or variance with the Protocol in respect to minimum criteria for regulation

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<sup>23</sup> Both the Biosafety Act No 10 of 2007 of Zambia and the Biosafety Act No 2 of 2009 of Kenya are new laws that were adopted four and six years respectively after the Protocol had entered into force.

of biotechnology. This researcher takes the view that it is mainly<sup>24</sup> through adoption of biosafety legislation that the precautionary approach may find its way into the decision-making process. The various approaches of adopting international law are discussed at (5:2) below.

Adopting the precautionary approach in domestic law or in any other implied manner means 'something rather than nothing'.<sup>25</sup> Such adoption will most likely influence scientists when they give advice on policy as they will be aware that government is guided by the approach in decision-making as is the case in the UK.<sup>26</sup> In such cases, adoption of and the importance given to the precautionary approach in domestic biosafety law becomes critical. While scientists play legitimate roles in the development of policy and ultimately law, those with vested interests could influence decision-making in the regulation of biotechnology.

International law instruments, except in monist jurisdictions, can hardly bind persons in a state unless such instruments have the force of law. Such law derives from domestic legislation. In addition, it is only through domestic implementation that the attitude and priorities of states regarding the issues at hand may be known.

Fourth, varying approaches to domestic implementation of a treaty, or sections of it, provide indicators of the seriousness and commitment (or lack of both) of such states towards the treaty in question. The manner and extent to which states comply with their treaty obligations has an impact on the reputation of such a state in its international relations. The idea is that states build or damage their reputation depending on whether or not they are willing to comply with their treaty obligations.<sup>27</sup> A good reputation materially enhances the credibility of promises, thereby making cooperation less cumbersome and expensive. Loss of or a bad reputation may lead

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<sup>24</sup> In some cases, domestic courts may infer application of the precautionary approach so as not to embarrass the country in international fora or in jurisdictions which adopt the monist approach in the application of international law.

<sup>25</sup> The phrase 'something rather than nothing' was adapted from the Minority Opinion in *Iran -US Claims Arbitration 21 International Legal Materials* (1981):78 at 89.

<sup>26</sup> Haig 'The introduction of the Precautionary Principle in the UK' in O'Riordan and Cameron *Interpreting the Precautionary Principle* (1994):242.

<sup>27</sup> Guzman A (n2) at 33.

to isolation by other states,<sup>28</sup> thereby making such states treat future promises of the isolated state with some degree of suspicion.<sup>29</sup>

In both cases, it may be argued that the building of or loss of reputation in relation to one treaty may not necessarily be transferable to other treaties. In this sense, reputation is relative and may, to some extent, depend on the interests a state seeks to safeguard in a treaty-by-treaty approach. Such interests may not be disclosed openly yet they may be manifested in the attitudes of a state during negotiations prior to adoption. For instance during negotiations prior to adoption of the Protocol, the Miami Group<sup>30</sup> was opposed to the precautionary principle fearing it would arguably be used as a political tool to unnecessarily restrict trade in LMOs. It may also depend on how much power, and hence influence, a state wields internationally. For example, reluctance of a powerful state such as the USA to ratify the CBD and the UNFCCC is an indication of lack of seriousness and commitment regarding Multilateral Environmental Agreements (MEAs) on its part. This may be a setback to international cooperation in environmental issues.

More often than not in international treaties, rhetoric is easier to achieve than action. Thus, it is often through domestication that states may be categorised as being in support of, or in opposition to a treaty. Opposition may, in some cases, be manifested by *silent* opposition. This may arise in situations where a party implements a treaty half-heartedly ie in a manner that does not fully satisfy the intent and spirit of the treaty. In such circumstances, *silent* opposition may be a reflection of the opposing views such a party had during negotiations on the treaty. Supporters of GMOs resisted the introduction of the precautionary principle into the text during negotiations on the Protocol. Finally the Protocol embraced it in the form of the precautionary approach. This arguably resulted from a compromise, which cannot be taken as proof of a changed attitude on the part of such supporters. Hence, attempts to implement the Protocol selectively by neglecting to embrace the principle, may be regarded as proof of *silent* opposition.

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<sup>28</sup> Guzman A (n2) at 33.

<sup>29</sup> Ibid at 38.

<sup>30</sup> See the discussion at (4.3.1).

Opposition to the precautionary approach by African countries is paradoxical because it was through agitation by developing countries that international regulation of biotechnology came to the fore.<sup>31</sup> Hence it is through domestication of the Protocol that changes in attitude towards the precautionary approach, and GMO activities in general in the selected countries may be assessed. The varying approaches regarding implementation of the principle constitute a basis for establishing—at least in part—the reality concerning the manner and extent to which the selected countries have sought to regulate GMOs. It is therefore necessary to analyse the modes they have adopted in domesticating international law

## 5.2 Mechanisms for Domesticating International Law

Pertinent questions include how and when an international instrument such as the Protocol becomes part of domestic law.<sup>32</sup> Also, whether and for what purposes may provisions (such as the precautionary approach) in treaties may be invoked in domestic courts.<sup>33</sup> These issues are material in placing domestic implementation of the Protocol in its appropriate context in domestic law.

Courts in various jurisdictions differ in their interpretation of treaties with the effect that a treaty may be applied differently in different countries.<sup>34</sup> For example, and in contrast to the other three selected countries, South Africa recently amended its GMO Act<sup>35</sup> and adopted the Protocol as an annexure to the Act.

Domestic implementation of international law is centred on the relationship between international law and municipal law. Whether a treaty is to be transformed, as in the case of Germany and Italy or whether treaties apply directly in domestic law such as in France and USA or whether application of a treaty depends on the process of transformation as in the United Kingdom<sup>36</sup> differs from one jurisdiction to the other. Thus, the relationship between monist and dualist theories on incorporating international instruments into domestic legislation remains a

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<sup>31</sup> See the discussion in chapter one.

<sup>32</sup> Jacobs F 'Introduction' in Jacobs F and Roberts S (eds) *The Effect of Treaties in Domestic Law* (1987):xxiii

<sup>33</sup> *Ibid.*

<sup>34</sup> *Ibid.*

<sup>35</sup> Act No 15 of 1997 Republic of South Africa.

<sup>36</sup> Jacobs F et al 'Introduction' in Jacobs F and Roberts S (eds) *The Effect of Treaties in Domestic Law* (1987):xxiii.

contentious jurisprudential issue for many states. These modes of dealing with international law in the domestic system become critical in assessing the manner and extent to which member states satisfy the objectives of, and their obligations under international instruments such as the Protocol.

Exercise of authority derives from one of the two ways: adoption or monism whereby the legislature provides for normative provisions that declare international law as forming part of domestic law (as in the Constitution of the USA), and transformation or dualism, whereby legislation is passed that embodies applicable rules of international law.<sup>37</sup> The two approaches are discussed below in a little more detail.

### 5.2.1 Monist Approach

Under monism, it is trite law that an incorporating statute has no legislative content by itself. It confirms or complements the treaty into domestic law regime without altering the treaty's international or structural nature.<sup>38</sup> Monists such as Kelsen maintain that international law and national law are not parts of one normative system as they invariably contradict each other yet simultaneously retaining validity.<sup>39</sup> Monists however emphasise supremacy of international law over domestic law.<sup>40</sup> Thus, in the event of a conflict between the two, international law prevails.

Further, international concerns such as terrorism and pollution that threaten humanity have their roots in states, which are unable to resolve such problems, thus creating new global challenges.<sup>41</sup> In order to offer an effective response to these new challenges, the international legal system should be able to influence domestic policies of states and harness national institutions with a view to achieving global goals.<sup>42</sup> In such circumstances, monists believe that international law should be

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<sup>37</sup> Dugard J *International Law a South African Perspective* (2005):47.

<sup>38</sup> Pescatore J 'Conclusion' in Jacobs F and Roberts S (n32) at 282.

<sup>39</sup> Kelsen H *Principles of International Law* (7<sup>th</sup> ed 2007):419.

<sup>40</sup> MacLean R *Public International Law* (1997):27.

<sup>41</sup> Slaughter M and Burke-White W 'The Future of International Law in Domestic (or the European way of Law) in Nijman J and Nollkaemper A (eds) *New perspectives on the Divide Between National and International Law* (2007):111.

<sup>42</sup> *Ibid.*

applied in municipal courts without any act of adoption by the courts or transformation by the legislature.<sup>43</sup>

Russia<sup>44</sup>, Switzerland,<sup>45</sup> Belgium, France, Netherlands,<sup>46</sup> are among the countries that adopt the monist approach thereby recognising the supremacy of international law over domestic law in the event of a conflict. In such jurisdictions, a treaty which is binding on a state becomes part of the law of the state without any act of incorporation or transformation.<sup>47</sup> Having signed yet being reluctant to ratify the CBD, the USA is not a party to the Protocol and is not bound by it. It is under no treaty obligation to adopt the precautionary approach in its regulation of biotechnology. As a result, it is not surprising that, especially using its agencies,<sup>48</sup> it appears to influence some African countries to shun the precautionary approach in their biosafety legislation.<sup>49</sup>

In Namibia, Art. 144 of the Constitution requires that unless otherwise provided by it or by an Act of Parliament, 'the general rules of public international law and international agreements binding upon Namibia under this Constitution shall form part of the law of Namibia'.<sup>50</sup> This means that public international law is essentially part of the law of Namibia and it does not require transformation by subsequent act of the legislature to become so.<sup>51</sup> By implication, international law is integrated into domestic law.<sup>52</sup> Since the integration is effected by the Constitution, international law must therefore be in conformity with the Constitution if it is to be applied in domestically.<sup>53</sup> This leads to an irresistible inference that the Constitution of Namibia

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<sup>43</sup> Dugard J (n37) at 47.

<sup>44</sup> Article 15(4) of the Russian Constitution states thus 'Generally recognised principles and norms of international law and international treaties of the Russian Federation shall be an integral part of its legal system. If other rules have been established by an international treaty of the Russian Federation than provided for by a law, the rules of the international treaty shall prevail'. Reproduced in Hollis, Blakesale (eds) *National Treaty Law and Practice* (2005):539.

<sup>45</sup> See Aust A *Modern Treaty Law and Practice* (2008):187.

<sup>46</sup> Jacobs F (n32) at vviv.

<sup>47</sup> Ibid at xxiv.

<sup>48</sup> Including, the United States Agency for International Development (USAID).

<sup>49</sup> See the discussion in chapter seven.

<sup>50</sup> The Constitution (1990) Republic of Namibia.

<sup>51</sup> Gerhard E 'The Namibian Constitution and the Application of International Law' *15 South Africa Year of International Law* (1989-1990):81-110 at 94.

<sup>52</sup> Ruppel O 'International Environmental Law Reform A Namibian Perspective' in Ruppel O and Schlichting K (eds) *Environmental Law and Policy in Namibia* (2011):33-78 at 33.

<sup>53</sup> Gerhard E (n51) at 94.

is international-law-friendly.<sup>54</sup> The friendliness creates an environment that may enable the courts to deal with a conflict between international law and municipal law in favour of the former.<sup>55</sup> Substantively therefore, Namibia has adopted a monist approach to international law.

### 5.2.2 Dualist Approach

The dualist doctrine on the other hand recognises international law and national law as distinct legal systems that regulate different subject-matter. The former governs relations between sovereign states and the latter governs relations of citizens with each other and with the state.<sup>56</sup> In Germany and Italy, a treaty has to be transformed into domestic law by a legislative act in order to have effect while in Denmark and United Kingdom, the process of transformation determines the effectiveness of a treaty.<sup>57</sup>

South Africa, Kenya and Zambia essentially adopt the dualist approach in relation to treaties and rules of customary international law. The Constitution of South Africa provides that:

Any international agreement becomes law in the Republic when it is enacted into law by the national legislation; but a self – executing provision of an agreement that has been approved by Parliament is law in the Republic unless it is inconsistent with the Constitution or an Act of Parliament.<sup>58</sup>

Thus, in attempts to make the GMO Act compliant with the Protocol, the GMO Amendment Act 23 of 2006 was enacted. The Constitution however recognises '[c]ustomary international law as law in South Africa unless it is inconsistent with the Constitution or an Act of Parliament'.<sup>59</sup>

In Kenya, Art. 2(1) recognises the Constitution as the 'supreme law of the Republic'.<sup>60</sup> It provides that 'the general rules of international law shall form part of

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<sup>54</sup> Devine D 'The Relationship Between International Law and Municipal Law in Light of the Interim South African Constitution' *14 International Law and Comparative Law Quarterly* (1995):1-18 at 17.

<sup>55</sup> Ibid.

<sup>56</sup> Brownlie I *Principles of International Law* (2008):31-32.

<sup>57</sup> Jacobs F(32) at xxv.

<sup>58</sup> Section 231(4) of the Constitution (1996) Republic of South Africa.

<sup>59</sup> Ibid section 232.

<sup>60</sup> Section 2(1) of the Constitution (2010) Republic of Kenya Gazette Notice Supplement 27 October 2010.

the law of Kenya'.<sup>61</sup> Further, '[a]ny treaty or convention ratified by Kenya shall form part of the law of Kenya under this Constitution'.<sup>62</sup> In both cases, the substantive approach would appear to be monist but the procedure by which the general rules of international law and treaties become part of Kenyan law is dualist as they must comply with the provisions of article 2(5) and 2(6) of the Constitution. Thus, in restating its position regarding international human rights instruments, the Minister for Justice<sup>63</sup> in response to human rights activists' enquiries, asserted that '[w]e are a signatory and must comply, but within our Constitution'<sup>64</sup>

Zambia has no substantive provisions concerning application of international law in the domestic sphere. Invariably the government is compelled to explain its position regarding international law. For example, in 2008 while engaging with human right bodies, the government stated that ' [i]t is worth noting that international law instruments are not self-executing and require legislative implementation to be effective in Zambia as law'.<sup>65</sup> However, the country has dedicated part III of its Constitution to fundamental rights and freedoms. These include the right to life,<sup>66</sup> personal liberty,<sup>67</sup> and prohibition of inhuman treatment<sup>68</sup>, all of which are a reflection of the relevant international instruments. In addition, under s.14 (1) of the Constitution, existing rights and obligations under conventions, treaties and agreements remain binding and exercisable. Also, Art. 78 vests all legislative power in Parliament. These factors strongly suggest that only statutes enacted by Parliament form part of the law of the country. It would therefore be correct to assert that Zambia has seemingly adopted a dualist approach.

Transformation grants flexibility which enables states to adjust to their local needs and circumstances. In the process however, they may or may not sufficiently comply with the relevant rules of international law. The manner and extent to which

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<sup>61</sup> Ibid Section 2(5) Constitution of Kenya (n60).

<sup>62</sup> Ibid section 2(6).

<sup>63</sup> Hon. Mutula Kilonzo.

<sup>64</sup> See 'State Agrees to Impalement Alston Report' available at [www.eastdard.net](http://www.eastdard.net) (accessed 10 June 2009).

<sup>65</sup> Quoted in Killander M (ed) *International Law and Domestic Human Rights Litigation in Africa* (2010):73 Pretoria University Law Press Pretoria.

<sup>66</sup> Article 11 (a) of the Constitution Act No 1 of 1991 Republic of Zambia.

<sup>67</sup> Ibid article 13.

<sup>68</sup> Ibid article 16.

such domestic legislation may be consistent or at variance with international law invariably becomes a matter for courts and academics to assess.

In both monist and dualist approaches, the fundamental principle is that the internal application of treaties (and international law for that matter) is governed by domestic constitutional law.<sup>69</sup> Compliance with normative provisions will determine whether and the extent to which a treaty may be applicable in domestic law. Thus, neither the two systems has the power to create or change rules of the other, meaning that when municipal law makes provision for application of international law in whole or in part, this is viewed as an exercise of authority in municipal law and in the event of a conflict, dualists view municipal law as supreme<sup>70</sup>

### 5.2.3 The Harmonisation Approach

Difficulties in integrating the monist and dualist approaches have led to an emerging theory of harmonisation. It seeks to empower judges to apply their own jurisdictional rules the effect of which is to apply customary international law as part of common law, yet allow statutory and acts of state to prevail over international law in the event of a conflict between the two legal systems.<sup>71</sup>

As Dugard argues, difficulties concerning international law are mainly attributable to the variance of its sources and the objectives it seeks to achieve - all of which are too complex to permit an acceptable rationale of its nature and purpose. He further argues (as noted at 3.2) that rules and principles of law provide the 'flesh, blood, organs and bones of international law'.<sup>72</sup> Scholars can only study parts of this body as the mind of international law is difficult to understand.<sup>73</sup> In the area of international environmental law, globalization and emergence of new transnational threats (such as climate change, loss of biodiversity and pollution) have drastically changed the nature of governance and the purposes of international law.<sup>74</sup>

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<sup>69</sup> Jacobs F (n32) at xxiv.

<sup>70</sup> Brownlie I (n56) at 32.

<sup>71</sup> Dugard J (n37) at 47-48.

<sup>72</sup> Ibid at 15.

<sup>73</sup> Ibid.

<sup>74</sup> Slaughter and Burke-White (n41) at 111.

Harmonisation is likely to be more useful in international environmental law which is facing new challenges. In order to address the current anthropogenic environmental crises, the international environmental law regime calls for re-thinking particularly on how to translate theory into reality in its emerging jurisprudence. The divide between monist and dualist approaches to domestic implementation appears to be departing from reality from the perspective of advancements in technology, increasing globalization and the need for international cooperation to combat, alleviate or minimise environmental threats.

Multilateral Environmental Agreements (MEAs) tend to establish either minimum thresholds or general principles (or both) that bind states. However, effectiveness of such MEAs largely depends on the willingness of states to comply with their obligations within their jurisdictions. For example, art. (2) (2) of the Protocol, requires Parties to ensure that dealings in LMOs are undertaken in a manner that prevents or reduces the risks to biological diversity and human health. This is a general obligation which merely identifies the need to balance trade and conservation of biological diversity as well as human health, in dealing with LMOs. This researcher argues that in the absence of substantive provisions on the precautionary approach, achieving such a balance is almost impossible.

Further, the right of states to exercise and safeguard their sovereignty is a matter MEAs usually recognise. As a result states enjoy flexibility in the manner (and extent) to which they domesticate such instruments. For example, art 2(4) of the Protocol recognises the sovereign right of states to take measures that are more protective of their biological diversity. Exercise of discretion under Art 2(4) should be understood to mean that such protective measures should override scientific risk assessment thresholds imposed by Art. 15 and Annex III of the Protocol. The thesis argues that public participation is like a mirror which seeks to ensure both participation and transparency. It is not intended to override scientific risk assessment under the Protocol.

Further, Art.2(4) of the Protocol allows member states to take into account their peculiar interests and priorities in supplementing the domestication of the Protocol. In exercising this form of flexibility, one may validly argue that the international biosafety regime sets minimum criteria but the more difficult part is left

for national laws. The best example is the recently concluded Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety,<sup>75</sup> which provides that ‘Parties may use criteria set out in their domestic law to address damage that occurs within the limits of the national jurisdictions of Parties’.<sup>76</sup> It establishes a fault based liability regime, according to which ‘[a] causal link shall be established between the damage and the living organism in question in accordance with domestic law’.<sup>77</sup>

In addition, there is a need to embody environmental rights in many constitutions worldwide.<sup>78</sup> Countries have, in general, realised the need to strengthen environmental protection by creating rights and obligations for government and individuals. Such rights may evolve in the future from soft law instruments such as the 1972 Stockholm Declaration<sup>79</sup> and 1992 Rio Declaration<sup>80</sup> yet they complement the effectiveness of MEAs in such countries. Even so, ratification of international instruments is one thing and effective implementation is another.

In essence, monist and dualist approaches are applicable to what Jouannet refers to as classical international law.<sup>81</sup> With the development of IEL regime however, the distinctiveness of monist and dualist theories may soon disappear as states seem keen to develop functional domestic regimes rather than rely on traditional theories. Ultimately, the harmonisation theory seems to be gaining both recognition and applicability.

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<sup>75</sup> Adopted at Nagoya Japan on 16 October 2010. It is yet to enter into force.

<sup>76</sup> Article 3 (6) of the Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety.

<sup>77</sup> Ibid article 4.

<sup>78</sup> Generally see May J ‘Constituting Fundamental Environmental Rights Worldwide’ 23 *Pace Environmental Law Review* (2005-2006) 113-182.

<sup>79</sup> For example, Principle 1 of the Declaration partly provides that ‘[m]an has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well being ...’ The Stockholm Declaration is available at <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97> (accessed 20 March 2010).

<sup>80</sup> For instance, Principle 1 provides that ‘[h]uman beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature’.

<sup>81</sup> Jouannet E ‘Universalism and Imperialism: The true-False Paradox of International Law?’ 18 (3) *The European Journal of International Law* (2007):379-407 at 380, where she asserts that classic international law that developed during the 16<sup>th</sup> and 17<sup>th</sup> centuries was a product of European legal culture.

### **5.3 The Extent of Incorporation of the Protocol (with reference to the Precautionary Approach) by the Selected Countries**

The mechanisms for implementing international obligations in domestic law have just been discussed above. Whatever mechanisms the selected countries engage to domesticate their international obligations, the extent and the success of such domestication by each of them will now be examined, with particular reference to obligations to implement the precautionary approach flowing from the Protocol. Since the precautionary approach forms an essential part of the Protocol and sustainable development in general, it should be incorporated in domestic legislation.<sup>82</sup> The extent to which this has been realised is assessed.

The development of biosafety legislation in the selected countries falls into two categories. In the first category South Africa enacted the GMO Act in 1997. The Act became operational in 1999. It was amended in 2006 in an attempt to comply with international instruments such as the Protocol. The other three countries (Kenya, Zambia and Namibia) fall in the second category of countries that enacted biosafety legislation after the Protocol entered into force. Namibia enacted its Biosafety Act in 2006, Zambia in 2007 and Kenya in 2009.

#### **5.3.1 South Africa**

No sooner had genetic engineering had become possible in the 1970s than scientists in South Africa thought of creating an organisation that would deal with issues relevant to biotechnology.<sup>83</sup> In 1978 the South African Committee for Genetic Experimentation (SAGENE) was created - under the auspices of the Council for Scientific and Industrial Research (CSIR) – to deal with contained experiments associated with genetic engineering (GE), approval of projects, training courses and laboratory standards.<sup>84</sup> In 1989 A US seed company Delta and Pine (D&PL) sought

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<sup>82</sup> Barton C 'The Status of the Precautionary Principle in Australia: Its Emergence in Legislation and a Common Law Doctrine' 22 *Harvard Environmental Law Review* (1998):509-558 at 509.

<sup>83</sup> Morris J 'Biosafety Regulations in South Africa' 3(3) *African Crop Science Journal* (1995):303-307 at 304.

<sup>84</sup> *Ibid.*

approval to carry out experiments on genetic modification (GM) seeds to be sold in the USA.<sup>85</sup>

In 1994 the government expanded the scope of SAGENE to include the release of GMOs into the environment<sup>86</sup>. Research and field testing of GMOs was at that time regulated by the 1983 Agricultural Pests Act and SAGENE served as the advisory body.<sup>87</sup> In 1997 the Genetically Modified Organisms Act (hereinafter the GMO Act) was enacted and became operational on 1 December 1999.

The GMO Act establishes the Executive Council for Genetically Modified Organisms which performs functions that include advising the Minister on all aspects concerning GMO activities.<sup>88</sup> Importantly, the Council is the decision-making body in respect of GMO activities.<sup>89</sup> The Act provides for various mechanisms including advance informed agreement,<sup>90</sup> public input,<sup>91</sup> risk assessment,<sup>92</sup> risk management, socio-economic considerations<sup>93</sup> and monitoring.<sup>94</sup> It applies to 'the development, production, release, use and application of genetically modified organisms'.<sup>95</sup>

In its preambular paragraph, the Act seeks 'to provide for an adequate level of protection during all activities involving genetically modified organisms that may have adverse impact on the conservation and sustainable use of biological diversity, human and animal health'. Section 1 defines biosafety as 'the level of safety when risk management measures must be taken to avoid potential risk to human and

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<sup>85</sup> Gouse M 'Aspects of biotechnology and Genetically Modified Crops in South Africa' (2005):3 available at [http://belfercenter.ksg.harvard.edu/publication/...](http://belfercenter.ksg.harvard.edu/publication/) Accessed 15 November 2009. Permission to cite this article was granted to me by the author in his email of 14 November 2009, a copy of which is in this researcher's file.

<sup>86</sup> Morris J (n83) at 304.

<sup>87</sup> Gupta A and Falkner R 'The Cartagena Protocol o Biosafety and Domestic Implementation: Comparing Mexico, China and South Africa' (2006) available at [www.chathamhouse.org.uk](http://www.chathamhouse.org.uk) (accessed 19 November 2009).

<sup>88</sup> Section 3 (1) and (4) of the Genetically Modified Organisms Act No 15 of 1997 Republic of South Africa.

<sup>89</sup> Ibid section 5.

<sup>90</sup> Ibid section 2(a) (iii).

<sup>91</sup> Ibid section 5(2) (a).

<sup>92</sup> Ibid.

<sup>93</sup> Genetically Modified Organisms Act (n88).

<sup>94</sup> Ibid sections 15 and 16.

<sup>95</sup> Ibid section 2.

animal health and safety to the conservation of the environment, as a result of exposure to the activities with genetically modified organisms'.<sup>96</sup>

While the Act seeks and recognises the need to protect human and animal health from potential harm associated with GMOs, it falls short of making specific reference to the precautionary approach. Instead it places emphasis on providing criteria for scientifically based risk assessments and environmental impact assessments both of which are scientific in nature. Whereas risk assessment has inherent precaution by reason of identification of risks (including potential risks), Article 1 of the Protocol provides for the precautionary approach within parameters the outcome of which is adequate protection of the environment and human health. It therefore sought to identify and address the areas of concern for purposes of regulation. The element of public participation provided for under Art.23 of the Protocol is not part of the scientific aspects of precaution but it is an important source of information in respect achieving its objective. It means that while scientists do the onerous job of identifying possible risks, the legitimacy of the decisions made largely depends on acceptance by the public of such decisions.

Under the GMO Act, precautionary measures are manifestly reflected through risk assessment and risk management. For example, the Act makes it mandatory for the Council to take into account scientifically based risk assessment and proposed risk management measures in decision-making.<sup>97</sup> In contrast however, the taking into account of public input, environmental impact assessment and the potential socio-economic considerations in decision-making is discretionary.<sup>98</sup> Inevitably, the contrast suggests that in respect of risk management, precautionary measures are within the discretion of the Council.

Having recognised that there may be potential risks for which risk management measures would be needed, one would expect the Act to specifically provide for the precautionary approach to address scientific uncertainty. Ultimately, the above contrast leads to a presumption that regulation of biotechnology in South

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<sup>96</sup> Genetically Modified Organisms Act (n88) section 1.

<sup>97</sup> Ibid section 5 (1) (c).

<sup>98</sup> Section 5 (2) (a) Genetically Modified Organisms Act (n88).

Africa hardly establishes a reasonable balance between the competing values that characterise the GMO controversy.

The Regulations<sup>99</sup> remotely refer to a situation that attracts application of the precautionary approach by providing that '[l]ack of scientific knowledge or consensus on the safe use of genetically modified organisms shall not be interpreted as indicating a particular level of risk, an acceptable risk or absence of risk'.<sup>100</sup> Such a situation arising from scientific uncertainty should be addressed by precautionary measures yet the regulations do not make specific reference to such measures. They provide instead that '[t]he Council shall, when taking a decision to approve an application, determine appropriate mechanisms, measures and strategies to manage or control identified risks during the activity'.<sup>101</sup>

Thus the GMO Act seems elusive on the precautionary approach as it indirectly implies it in decision-making. Absence of substantive provisions on the approach in the Act, and the indirect manner in which the regulations refer to it, may suggest that South Africa has not sufficiently complied with the Protocol in so far as the precautionary approach is concerned. Arguably, owing to political considerations and the need to safeguard its international relations, the country has embraced the precautionary approach within its risk assessment structures without specifically using the wording of either Art 1 or Art.10 of the Protocol. This may serve the intended purposes under the Act, but legally, it seemingly amounts to incorrect incorporation of the Protocol.

Other laws that contain provisions relevant to the regulation of biotechnology in South Africa include the Constitution, the National Environmental Management Act (NEMA), the National Environmental Management: Biodiversity Act (NEMBA),<sup>102</sup> the Consumers Protection Act<sup>103</sup> and the Promotion of Access to Information Act.<sup>104</sup> The Constitution establishes the right of everyone to 'an environment that is not harmful

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<sup>99</sup> Regulations made under section 20 of the Genetically Modified Organisms Act No 15 of 1997 and published as GN R 106 Gazette Notice No 34020 of 29 March 2011 and became effective on 1 April 2011.

<sup>100</sup> Ibid Regulation 4(6).

<sup>101</sup> Regulation 7 (3) of the Regulations (n99).

<sup>102</sup> No 10 of 2004.

<sup>103</sup> No 68 of 2008.

<sup>104</sup> No 2 of 2000.

to their health or well-being'.<sup>105</sup> It requires that the environment must be 'protected, for the benefit of the present and future generations, through reasonable legislative and other measures...'<sup>106</sup>

The National Environmental Management Act provides for principles that 'apply throughout the Republic to the actions of all organs of state that may significantly affect the environment'.<sup>107</sup> Some of these principles include the requirement that '[e]nvironmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably'.<sup>108</sup> It requires that development must be socially, environmentally and economically sustainable.<sup>109</sup> Sustainable development requires that 'a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions'.<sup>110</sup> It further requires that, '[d]ecisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law'.<sup>111</sup> In addition, the participation of 'all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation ...'<sup>112</sup>

Two of the objectives of NEMBA are (i) the management and conservation of biological diversity and of the components of such biological diversity<sup>113</sup> and (ii) to give effect to ratified international agreements relating to biodiversity which are binding on South Africa.<sup>114</sup> Such agreements include the CBD and its Cartagena Protocol. Additionally, S.7 of the Act requires that the application of the Act must be guided by the principles set out in s. 2 of NEMA. The Act also intends to achieve the progressive realisation of the environmental rights provided for by s. 24 of the

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<sup>105</sup> Section 24 (a) Constitution (1996) Republic of South Africa (n58).

<sup>106</sup> Ibid.

<sup>107</sup> The National Environmental Management Act No 107 of 1998 Republic of South Africa.

<sup>108</sup> Ibid Section 2 (2).

<sup>109</sup> Ibid section 3.

<sup>110</sup> Ibid section 3 (vii).

<sup>111</sup> Ibid section 3 (k).

<sup>112</sup> Ibid section 3 (f).

<sup>113</sup> Section 2 (a) The National Environmental Management Act No 107 of 1998 Republic of South Africa.

<sup>114</sup> Section 2(a) of the National Environmental Management: Biodiversity Act No 10 of 2004 Republic of South Africa.

Constitution. The Promotion of Access to Information Act and the Consumer Protection Act are discussed in chapters six and seven respectively.

Cumulatively, these legislative acts are geared towards realisation of the environmental rights provided for by the Constitution. The emphasis placed on protection of biological diversity, public participation that embodies access to information and a cautious approach to environmental protection, are matters that are pertinent to the regulation of biotechnology. Adoption of environmental rights and the relevant legislation are a clear indication that South Africa has established an advanced environmental law regime from which other countries in Africa may draw useful lessons.

### 5.3.2 Kenya

The Biosafety Act of Kenya<sup>115</sup> aims to 'facilitate responsible research into, and minimize the risks that may be posed by, genetically modified organisms'.<sup>116</sup> The Act further aims to 'ensure an adequate level of protection for the safe transfer, handling and use of genetically modified organisms that may have an adverse effect on health and the environment'.<sup>117</sup> These two objectives constitute, at the very minimum, the basis for regulation of biotechnology at the international level.<sup>118</sup> Thus domestic implementation of the Cartagena Protocol is intended to put into effect internationally agreed obligations on facilitation of responsible research and the minimising of potential harm to the environment and humans. Objectives are important as they seek to provide a roadmap of what a document, instrument or legislation seeks to achieve. However, the two objectives of the Biosafety Act of Kenya are misconceived in two important ways.

First, the objectives refer to GMOs thereby creating the impression that it is all inclusive, encompassing both living organisms and their products. Absence of the wording 'and their products' at the end of each of the objectives, substantially excludes products such as maize flour and other processed foods or products that

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<sup>115</sup> Biosafety Act No 2 of 2009 Republic of Kenya.

<sup>116</sup> Ibid section 4 (a).

<sup>117</sup> Ibid section 4 (b).

<sup>118</sup> Both chapter 16 of Agenda 21, the Convention on Biological Diversity 31 *International Legal Materials* (1992):822 and its Cartagena Protocol (n8) all seek to promote responsible use of biotechnology with emphasis on safety of GMOs against potential harm to the environment and humans.

are derived from modified living organisms (LMOs). The issue as to whether or not the Protocol was to include living – organisms and their products was so critically contentious that it threatened the collapse of the negotiations. African States (the Like Minded Group) sought an all inclusive instrument while the Miami Group led by the USA and Canada lobbied for an instrument that excluded the precautionary principle arguing that it could be used to unnecessarily restrict trade in GMOs for political expediency.<sup>119</sup>

Adoption of the African Model Law (AML) in 1999 by the then Organisation of Africa Unity (OAU) now the African Union (AU) was intended to create a more restrictive regime that could sufficiently protect the rich Africa biodiversity and human health against potential harm caused by GMOs as opposed to the Protocol that is limited to LMOs. Taking into account this scenario, one would argue that in so far as the objectives of the Biosafety Act of Kenya are concerned, the Act sought to put one 'foot' in the Protocol and the other in the AML but in vain. This lays the basis for the next misconception.

Second, while the Protocol clearly provides for the precautionary approach as the guiding criterion in the regulation of biotechnology, the Biosafety Act of Kenya is silent on it. Instead it specifically provides for the establishment of 'a transparent, science-based and predictable process...' for reviewing and decision-making on GMOs and related activities.<sup>120</sup> By enacting the Biosafety Act in its present form, Parliament presumably took the view that GMOs are presumed to be safe until proved unsafe. This view is consistent with the position taken by proponents of GMOs. It is therefore tenable to argue that, having failed to embrace the precautionary approach as envisaged by Article 1 and 10(6) of the Protocol, the Act seems to create an imbalance in favour of science and the biotechnology industry in the regulation of GMOs.

In seeking to incorporate the precautionary approach, the Act in its Fifth Schedule provides that 'where there is uncertainty regarding the level of risk, the Authority may request for further information on the specific issues or may

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<sup>119</sup> Majone G 'What Price Safety? The Precautionary Principle and its Policy Implications' *40(1) Journal of Common Market Studies* (2002):89-109 at 89.

<sup>120</sup> Section 4 (c) Biosafety Act of Kenya (n115).

recommend implementing appropriate risk management strategies and monitoring the genetically modified organisms in the receiving environment'.<sup>121</sup> It further provides that 'lack of scientific knowledge or scientific consensus shall not necessarily be interpreted to indicate a particular level of risk, an absence of risk or an acceptable risk'.<sup>122</sup> Also, 'where there is uncertainty regarding the level of risk, the authority may request for further information ... or may recommend appropriate risk management strategies and monitoring'.<sup>123</sup>

Seeking further information or resorting to monitoring have legitimate purposes to serve but cannot be substitutes for the precautionary approach. While the appropriate risk management strategies envisaged by the Fifth schedule of the Act appear precautionary in character, they are not formulated in the wording of Art.10(6)<sup>124</sup> of the Protocol, which aims to ensure that potential adverse effects are minimised. By using the word 'appropriate',<sup>125</sup> Parliament had good intentions but the risk management strategies lack objectivity, particularly in the absence of provisions embracing the precautionary approach as envisaged by the Protocol. It then becomes difficult to answer the inevitable questions: what are the appropriate strategies; what criteria should be used in determining them and in whose interest?

Having acknowledged that there may be scientific uncertainty as to the level of risk, Parliament had an opportunity to make provision for the precautionary approach. The approach deals with situations where there is lack of sufficient knowledge or information. Indeed s. 4 (f) of the Fifth Schedule of the Act acknowledges that there are times when there may be 'uncertainty as to level of risk'. The appropriate measures envisaged by s. 4(f) of the Fifth Schedule merely form the basis for the making of recommendations by the NBA for risk management and monitoring. This does not appear to provide a clear opportunity for the NBA to postpone or even refuse granting authorization by reason of scientific uncertainty in the manner envisaged by Article 10 (6) of the Protocol.

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<sup>121</sup> Section 4 (f) of the Fifth Schedule of the Biosafety Act (115).

<sup>122</sup> Ibid section 3 (b).

<sup>123</sup> Ibid section 4 (f).

<sup>124</sup> Discussed at (4.3.4).

<sup>125</sup> Section 4 (f) of the Fifth Schedule of the Biosafety Act of Kenya (n115).

Other legislation relevant to the regulation of biotechnology in Kenya includes the Constitution<sup>126</sup> and the Environmental Management and Co-ordination Act (EMCA).<sup>127</sup> The Constitution obligates the state to 'eliminate processes and activities that are likely to endanger the environment'<sup>128</sup> and also to 'utilise the environment and natural resources for the benefit of the people of Kenya'.<sup>129</sup> It further obligates the state to 'encourage public participation in the management, protection and conservation of the environment'.<sup>130</sup> It imposes a duty on every person to 'cooperate with State organs and other persons to protect and conserve the environment...'<sup>131</sup> It also provides for consumer rights to 'goods ... of reasonable quality'<sup>132</sup> and to 'information necessary for them to gain full benefit from goods and services'.<sup>133</sup> Consumers also have the right to 'protection of their health, safety and economic interest...'.<sup>134</sup> This researcher argues that lack of substantive provisions on the precautionary approach in the Biosafety Act offends the consumer rights provided by Art. 46 (1) (c) of the Constitution.

The Constitution was promulgated about one year ago– the 27 August 2010. Its implementation is problematic especially due to infighting that characterises the coalition government established after the contentious 2007/8 election results. These results gave rise to short lived tribal violence. In addition, the next elections are due towards the end of 2012, a factor that appears to cause a shift in the priorities of the Parliamentarians from implementation of the new Constitution to strengthening their positions in the political arena. Moreover, the Constitution does not create substantive environmental rights in contrast to the Constitution of South Africa.<sup>135</sup> Instead it creates an obligation on everyone to cooperate in protecting the environment.<sup>136</sup> Realisation of the relevant rights envisaged by the Constitution may therefore not be achieved in the near future. Adoption of, and amendments to, relevant legislation are essential if such rights are to be realised. Amended

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<sup>126</sup> The Constitution of Kenya (n60).

<sup>127</sup> No 8 of 1999 Republic of Kenya.

<sup>128</sup> Article 69 (1) (g) Constitution (2010) Republic of Kenya (n60).

<sup>129</sup> Ibid Article 69 (1) (h).

<sup>130</sup> Ibid article 69 (1) (d).

<sup>131</sup> Ibid article 69 (2).

<sup>132</sup> Ibid article 46 (1) (a).

<sup>133</sup> Ibid Article 46 (1) (b).

<sup>134</sup> Ibid Article 46 (1) (c).

<sup>135</sup> See the discussion at (5.3.1).

<sup>136</sup> Article 69 (2) Constitution (2010) Republic of Kenya (n60).

legislation should hopefully include the Biosafety Act to specifically provide for the precautionary approach.

The other piece of legislation is EMCA, which provides that '[e]very person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment'.<sup>137</sup> The Act requires that the High Court shall be guided by the principles of sustainable development, which include public participation, the precautionary principle as well as intergenerational and intergenerational equity, in dealing with matters before it.<sup>138</sup> It further makes provisions for the conservation of biological diversity<sup>139</sup> and monitoring.<sup>140</sup> By requiring the High Court to be guided by principles of sustainable development in deciding cases, the Act seeks to rely on the superior courts to develop a jurisprudence relating to such principles. Inclusion of the precautionary approach is confirmation of a realisation by Parliament of the key role the approach plays in protecting the environment. The irony is that the Parliament failed to provide for the approach where it is needed most—in the biosafety Act.

The Environmental Management and Co-ordination Act was enacted in 1999. Consistent with rationality, one would expect that the Biosafety Act enacted in 2009, would reflect increased awareness on the need for a precautionary approach in environmental governance. Taking into account the dynamic nature of environmental law, and the spirit of the new Constitution, the need to harmonise EMCA, as well as the Biosafety Act with the Constitution in the relevant areas is imperative, unless litigation should pre-empt Parliament!

### **5.3.3 Zambia**

Underlying the regulation of biotechnology in Zambia are two interrelated concepts: the precautionary approach and public interest. As a prelude to the precautionary approach is the requirement not to give approval 'unless there is firm and sufficient evidence that the genetically modified organism or product of a genetically modified organism poses minimum risk, to human and animal health, non-genetically modified

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<sup>137</sup> Section 3 (1) Environmental Management and Co-ordination Act No 8 of 1999 Republic of Kenya.

<sup>138</sup> Ibid section 3 (5).

<sup>139</sup> Ibid section 50.

<sup>140</sup> Ibid section 69.

crop, biological diversity or the environment'.<sup>141</sup> The Act adopts the precautionary approach by providing that:

'Lack of scientific evidence shall not be used as a basis for not taking preventive measures where there is reason to suspect threats of any damage to socio-economic conditions, human and animal health, non-genetically modified crop, biological diversity or the environment.'<sup>142</sup>

Further, the Act requires that approval shall not be given 'where there is reason to believe that any harm or damage' may be caused to human and animal health non-GM crop, biological diversity or the environment 'although there is lack of scientific evidence or certainty'.<sup>143</sup> It adopts the precautionary approach with two outstanding characteristics. First, the approach is adopted in the strongest terms extending to all forms of damage. This is evidenced by reference to 'any damage'. As a result, the Act creates a much higher threshold than principle 15 of the Rio Declaration (upon which the precautionary approach adopted by the Protocol is based). The latter urges States to apply the precautionary approach where there are threats of 'serious or irreversible damage'. The higher threshold established under the Act is a manifestation of exercise of sovereign authority that enables States to take steps that are more protective of their biological diversity and is recognised by Art 2 (4) of the Protocol.

Second, by providing that socio-economic considerations can attract precautionary measures (in addition to the provisions of s. 19), the Act goes beyond the biological diversity and human health criteria established by the Protocol. Section 19 empowers the Biosafety Authority of Zambia (NBAZ) to refuse approval where the GMO has adverse socio-economic impacts, does not contribute to sustainable development and is not in accord with 'ethical values and concerns of the communities and does not undermine community knowledge and technologies' among other things. Socio-economic considerations may thus be a basis for refusing

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<sup>141</sup> Section 18 (1) Biosafety Act Republic of Zambia Act No 10 of 2007.

<sup>142</sup> Ibid section 18 (3).

<sup>143</sup> Ibid section (2).

approval, presumably independent of other factors. However, as we have argued elsewhere,<sup>144</sup> socio-economic considerations are as varied as they are complex.

Bosselmann argues that, like justice, sustainability may be simple or complex. Simple because of the unsustainable things we are aware of such as waste, fossil fuels, polluting cars and unhealthy food. Complex because it has no uniformly acceptable definition and it cannot be sufficiently understood without reference to values and principles – a combination of all of which make it an ethical discourse.<sup>145</sup> Thus, inclusion of socio-economic considerations to justify precautionary measures further complicates the decision-making process. It also gives rise to new but interrelated dimensions for applying the precautionary approach that were not envisaged by the Protocol. Even as the Protocol recognised the sovereign right of states to take more protective measures to conserve their biodiversity under Art. 2 (4), it must be understood to mean that it did not seek to achieve a threshold of zero risk in the regulation of biotechnology.

Concerning public interest the Act provides that '[t]he Authority may reject an application under this part on grounds of public interest'.<sup>146</sup> Public interest is neither defined nor is it capable of being defined. It is a broad concept which, according to Tamberlin J 'cannot be defined within precise boundaries. The categories of public interest are not closed and different minds will differ as to what is, or what is not, in the public interest'.<sup>147</sup> When the expression 'in the public interest' is used in a statute, especially where the Act does not give any positive indication of the considerations upon which a decision is to be based, Mason C. J notes that such an expression:

'classically imports a discretionary value judgement to be made by reference to undefined factual matters, confined only in so far as the subject matter and the scope and purpose of the statutory enactments may enable ... given reasons to be (pronounced) definitely extraneous to any objects the legislature could have had in view'<sup>148</sup>

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<sup>144</sup> Collier D and Moitui C 'Africa's Regulatory Approach to Biotechnology in Agriculture: An Opportunity to Seize Socio-Economic Concerns' (17) *African Journal of International and Comparative Law* (2009):29-56 at 39.

<sup>145</sup> Bosselmann K *The Principle of Sustainability* (2008):5 Ashgate Hampshire (England).

<sup>146</sup> Section 18 (4) Biosafety Act No 10 of 2007 Republic of Zambia.

<sup>147</sup> *McKinnon v Secretary, Department of the Treasury* (2005) FCAFC 142 at 243.

<sup>148</sup> *O'Sullivan v Farrer* (1989) CLR 210 at 216.

Such considerations must however aim at a 'conclusion or determination which best serves the advancement of the interest or welfare of the public, society or the nation and its content will depend on each particular set of circumstances'.<sup>149</sup> Where the relevant considerations are not specified (as in the Biosafety Act of Zambia) 'it is largely for the decision-maker, in the light of matters placed before him by the parties, to determine which matters he regards as relevant and the comparative importance to be accorded to matters which he so regards'.<sup>150</sup> The ultimate evaluation of the public interest will encompass an assessment of 'what are the relevant facets of the public interest that are competing and the comparative importance that ought to be given to them so that the "public interest" can be ascertained and served'.<sup>151</sup>

By failing to provide examples of factors that may be taken into account in refusing an application on grounds of public interest, it may safely be asserted that under the Zambian Biosafety Act, the understanding, interpretation and implementation of the public interest doctrine lies within the discretionary powers of the ZBA.

Inclusion of 'public interest' as a ground for refusing an application, in addition to other factors (such as socio-economic considerations, biological biodiversity, indigenous knowledge, and ethical considerations<sup>152</sup>) in decision-making, the biosafety legislation of Zambia complicates an already rigorous process. The public interest factor materially enhances the strict regulation of GMOs in Zambia.

By specifically providing for public interest as a criterion for decision-making (in addition to the precautionary approach), the Act goes far beyond the thresholds for decision-making provided for by the Protocol. Apart from being an indeterminate criterion, public interest may create problems in decision-making because it gives the BAZ wide discretion (subject to the principles inherent in domestic administrative law such as good faith, reasonableness and proper purpose), and it may be difficult to ascertain the limits of refusing an application. Another characteristic of biosafety legislation in Zambia is the provision that the BAZ 'shall, as a condition for approval,

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<sup>149</sup> *McKinnon v Secretary, Department of the Treasury* FCAFC (147) at 142 par 9.

<sup>150</sup> *Ibid* at par 11.

<sup>151</sup> *Ibid* at par 12.

<sup>152</sup> Section 19 (1) Biosafety Act of Zambia (n146).

require the applicant to furnish evidence of insurance cover or other sufficient arrangement to meet its obligations under the Act'.<sup>153</sup> This requirement is, in a sense, complimentary to the precautionary approach and the doctrine of public interest. A combination of these factors may make investment in the country especially by biotechnology companies seem cumbersome. They would opt to invest in countries with apparent liberal approaches to biotechnology, such as South Africa, Kenya and Uganda.

Other legislation relevant to the regulation of biotechnology in Zambia include the Constitution<sup>154</sup> and the Environmental Management Act (EMA).<sup>155</sup> As discussed at (5.2.2) the Constitution has embraced fundamental human rights including the right to life. It does not have specific provisions concerning the environment. However, environmental law jurisprudence has established that the right to life cannot be realised fully in a degraded environment. For example, the principle of intergenerational equity<sup>156</sup> is anchored on the need to protect the environment for the benefit of the present and future generations. By necessary implication, the right to life would supplement the environmental right of everyone to a clean and healthy environment.

EMA is an overall framework legislation that governs environmental protection in Zambia. In the event of inconsistency with other environmental protection legislation (including the Biosafety Act) EMA prevails.<sup>157</sup> Enacted recently in April 2011, EMA interprets the precautionary approach to mean that, 'lack of scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation... where there is a threat of serious or irreversible damage'.<sup>158</sup> By providing for environmental degradation in general, the Act embraces the approach in a broad-based manner in respect of environmental protection. It provides for the right to a clean and healthy environment,<sup>159</sup> principles

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<sup>153</sup> Section 19 (20) Biosafety Act of Zambia (n146).

<sup>154</sup> The Constitution Act No 1 1991 Republic of Zambia.

<sup>155</sup> No 12 of 2011 Republic of Zambia.

<sup>156</sup> Contained in Principle 2 of the Stockholm Declaration (1972) It states that 'The natural resources of the earth .... must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate'. The Declaration is available at <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97> (accessed 20 March 2010).

<sup>157</sup> Section 3 of the Environmental Management Act No 12 of 2011 Republic of Zambia.

<sup>158</sup> Ibid Section 2.

<sup>159</sup> Ibid section 4.

that govern environmental management such as polluter pays<sup>160</sup> and it adopts the concept of integrated environmental management.<sup>161</sup> These and other mechanisms of EMA are a reflection of a growing environmental law jurisprudence. The Act strengthens rather than weaken the biosafety regime in Zambia.

#### **5.3.4 Namibia**

The objective of the Biosafety Act of Namibia is to introduce a system and procedure for regulating GMOs with a view of providing ‘an adequate level of protection to the conservation and sustainable use of biological diversity.’<sup>162</sup> In its attempts to achieve this objective, the Act seeks to reconcile three interests. First is the health and safety of humans and environment against potential harm of GMOs; second, social, cultural, ethical and economic considerations and third, to promoting responsible research, development and use of GMOs.<sup>163</sup>

Unlike the Protocol that embraces the precautionary approach as a means to achieve its objective, the Act does not provide specific means. Instead, the three interests the Act seeks to safeguard are the benchmarks for regulation. However one needs to ask whether the Act has provisions that may necessitate (or even compel) adoption of the precautionary approach? The provisions relating to the risk management plan provide guidance on this issue.

Concerning risk assessment and management the applicant is required to prepare and submit a risk assessment report and a risk assessment plan.<sup>164</sup> In preparing the plan, the applicant must take into account ‘the means of managing any risks posed by those dealings in such a way as to protect the health and safety of humans and animals and the environment’.<sup>165</sup> In making a decision regarding an application within 30 days of the receipt of an application from the Council, the Act makes it mandatory for the Minister not to grant an application unless the Minister is satisfied, among other things that ‘any risks posed by the dealings proposed to be authorised by the permit are capable of being managed in such a way as to protect

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<sup>160</sup> Ibid Section 6 (c).

<sup>161</sup> Part III Environmental Management Act No 12 of 2011 Republic of Zambia.

<sup>162</sup> Section 2 Biosafety Act No 7 of 2006 Republic of Namibia.

<sup>163</sup> Ibid.

<sup>164</sup> Ibid section 23 (1). Biosafety Act 2006 (Act No 7 of 2006) Namibia.

<sup>165</sup> Ibid section 23 (2) (c).

the health and safety of humans and animals, and the environment'.<sup>166</sup> In addition, the Act it requires the Minister to be satisfied that GMO activities will be in the public interest before issuing a permit.<sup>167</sup>

Essentially, the risk management plan submitted by the applicant forms the basis for determining the means of managing potential risks. As discussed at earlier the Council has the discretion to consult any institution, person or authority in respect of the risk assessment and risk management plan, apparently to enable it compile a report for the Minister. This strongly suggests that Parliament sought to ensure that the Council was at liberty to seek independent views concerning the risk assessment and risk management plan, apparently due to possible vested interests of the applicant as well as the inherent scientific uncertainty in relation to safety of GMOs. The Council prepares a report that it submits to the Minister. In the process it apparently undertakes some form of 'filtering' process. The Minister has the power to request the Council in writing for such further information as the Minister may specify and the Minister must make a decision within 30 days of receipt of such further information.<sup>168</sup> This necessarily implies that should the Council fail to provide the further information requested, the Minister is nonetheless required to proceed and 'either grant or refuse' the application for a permit.<sup>169</sup> Thus failure by the Council to provide further information (which failure the Act neither envisages nor addresses) is not specifically set forth as a ground for refusing an application.

To the extent that the Minister has power to grant an application even in the absence of the further information requested, the Act not only lacks objectivity but fails to address uncertainty – a critical concern in regulation. Moreover possible failure by the Council to provide further information created an ample opportunity for Parliament to empower the Minister to refuse rather than 'either refuse or grant'<sup>170</sup> the application for a permit. By refusing to grant the application where the Council fails to provide further information as requested, the Minister would rely on the need to exercise precaution in decision-making.

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<sup>166</sup> Section 25 (4) Biosafety Act 2006 (Act No 7 of 2006) Republic of Namibia.

<sup>167</sup> Ibid section 25 (1) (4) (b). Also see the discussion at (5.3.4).

<sup>168</sup> Ibid section 25 (2).

<sup>169</sup> Section 25 (3) Biosafety Act 2006 (Act No 7 of 2006) Namibia.

<sup>170</sup> Section 25 (3) Biosafety Act 2006 (Act No 7 of 2006) Namibia.

The need for further information presented an opportunity for application of the precautionary approach. Having failed to adopt the approach, this researcher asserts that Parliament lacked objectivity when enacting the law. Had the Act made specific provisions embracing the approach, the Minister would reasonably be expected to refuse the application where further information is requested but not provided by the Council. This is also one of the problems that emerge from creating two centres of power in decision-making. In addition this is a situation similar to the provisions of s.4 (f) of the Fifth Schedule of the Biosafety Act of Kenya. It suggests that proponents of biotechnology would want weak but uniform biosafety regimes in Sub-Saharan Africa (SSA).

The Act further requires that the Minister must not grant an application for a permit unless the Minister is satisfied in accordance with the report and recommendations of the Council 'that any risks posed by the dealings proposed to be authorised by the permit are capable of being managed in such a way as to protect the health and safety of humans and animals and the environment'.<sup>171</sup> This provision imposes a mandatory obligation on the Minister yet it fails to provide legally recognisable criteria for ensuring the safety of such dealings. Instead the section establishes a subjective criterion that merely requires the Minister to satisfy himself/herself that any risks posed by the dealing are capable of being managed in such a manner as to protect humans, animals and the environment. To this extent, it is plausible to argue that whereas the Act creates an ample opportunity for adoption of the precautionary approach, it leaves it to the Minister to determine whether the potential risks of the dealing in question may be managed in the manner envisaged by the Act.

This thesis submits that these discretionary powers of the Minister under the Biosafety Act of Namibia are not only inconsistent with the objective and spirit of the Protocol but also superfluous. The Act partly places the destiny of human health, animals and the environment in the hands of one person—the Minister. Further, the fact that Ministers are usually political appointees who may be reshuffled or even dismissed without notice, places the decision-making process in a precarious position as the new Minister may in some cases (and for various reasons including

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<sup>171</sup> Ibid section 25 (4) (a).

varying attitudes to biotechnology), make a decision that is at variance with that of the former Minister.

The second material consideration is the requirement that the Minister 'must not grant an application for the issue of a permit unless the Minister is satisfied, in accordance with the report and recommendations of the Council ... that such dealings will be in the public interest'.<sup>172</sup> It suffices to note that while the Council and the Minister 'may take into account any factors which the Council considers appropriate...' the Act requires consideration of the extent to which the dealing is likely (among others): to contribute to sustainable development, to undermine indigenous knowledge or technology or to affect the social and economic advancement of people and society, including a particular community.<sup>173</sup> These are broad yet complex interdisciplinary issues which, in this researcher's view, may not be ascertained within the 30 days a decision is to be made. Moreover, the decision might mainly be based on the applicant's risk assessment report.

On the one hand, there is no guarantee that the risk assessment report may sufficiently cover the broad issues even if the report is subjected to scrutiny by 'any person, body or institution'.<sup>174</sup> This may hardly be accomplished effectively within the 30 days provided for by the law. On the other hand, inordinate delays in decision-making may be a reason for resentment by the applicant and other stakeholders who may be keen to invest in biotechnology. Attempts to reconcile these competing imperatives create a dilemma that gives rise to a compelling need for specific provisions on the precautionary approach.

Other legislation relevant to the regulation of GMOs in Namibia include the Constitution and the Environmental Management Act.<sup>175</sup> Article 95(l) of the Constitution imposes an obligation on the state to formulate policies aimed at 'maintenance of ecosystems, essential ecological processes and biological diversity of Namibia'. The country has adopted a ten year National Biodiversity Strategy and

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<sup>172</sup> Section 25 (4) (b) Biosafety Act (n170). Public interest has already been discussed at (5.3.3).

<sup>173</sup> Ibid section 25 (5).

<sup>174</sup> Section 24 (a) Biosafety Act (n170).

<sup>175</sup> No 7 of 2007 Republic of Namibia.

Action Plan<sup>176</sup> that recognises the intricate link between sustainability and protection of biological diversity. The Strategy and Action Plan provides guidance for the implementation of Art. 95(l) of the Constitution and the CBD. In an attempt to realise this constitutional obligation, the object of the Environmental Management Act is to ensure that 'significant effects of activities on the environment are considered in time and carefully'.<sup>177</sup> It makes provision for principles that guide environmental management. These include the requirement that 'participation of all interested and affected parties must be promoted and decisions must take into account their interests, needs and values'.<sup>178</sup> In addition, 'Namibia's cultural and national heritage including its biological diversity must be protected and respected for the benefit of the present and future generations'.<sup>179</sup> Further, the Act requires that sustainable development must be promoted in all activities that concern the environment.<sup>180</sup> The arid nature of the country seems to be a critical factor that has influenced the development of environmental governance in Namibia. While the country is in the process of enacting legislation relating to biological diversity,<sup>181</sup> the provisions of the Environmental Management Act have a direct impact on the regulation of biotechnology. In particular, the important requirement that the interests, needs and values of the people be taken into account in decision-making cannot be overemphasised.

## 5.5 Conclusion

This chapter has analysed the various approaches in the domestication of international law. The monist approach depicts international law as being part of domestic law while the latter requires that such law be integrated into domestic law by transformation through an act of Parliament. Namibia's approach is mainly monist while South Africa, Kenya and Zambia's approaches are mainly dualist. In their attempts to domesticate the Protocol, each of the three countries— Kenya, Zambia and Namibia has enacted biosafety legislation. South Africa chose to amend its

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<sup>176</sup> See 'Biodiversity and Development in Namibia: A 10 year- National Biodiversity Strategy and Action Plan for Sustainable Development Through Biodiversity Conservation 2001-2010' available at <http://www.met.gov.na/Documents/Biodiversity...> (accessed 18 December 2008).

<sup>177</sup> Section 2(a) Environmental Management Act No 7 of 2007 Republic of Namibia.

<sup>178</sup> Ibid section 3(c).

<sup>179</sup> Ibid section 3(g).

<sup>180</sup> Ibid Section 3(f).

<sup>181</sup> Ruppel O and Hinz M 'Legal Protection of Biodiversity in Namibia' in Ruppel O and Ruppel-Schlichting K (eds) *Environmental Law and Policy in Namibia* (2011) 117-129 at 126.

existing biosafety legislation. While the four countries have sought to implement the Protocol, embracing the approach however remains problematic, due to its confusing nature and purpose.

In seeking to avoid too cautious an approach, South Africa, Kenya and Namibia implicitly reflect the precautionary approach in their biosafety legislation. In contrast, Zambia embraces the approach in the wording of the Protocol but goes further by requiring the taking into account of the public interest in decision-making. This thesis submits that while implicitly reflecting the precautionary approach in legislation amounts to incorrect incorporation of the Protocol, adding the criterion of public interest amounts to overregulation. Either way, incorporation of the Protocol (or for that matter, enactment of legislation), is theoretical because it is an outcome Parliament's exercise of its legislative power. Translating the precautionary approach into reality in decision-making (inter alia from the perspective of administrative transparency) is what matters, as it provides the *acid test* for assessing the credibility of the biosafety legislation in the selected countries. The next chapter investigates the administrative implementation of the precautionary approach.

## Chapter Six

### ADMINISTRATIVE IMPLEMENTATION OF THE PRECAUTIONARY APPROACH IN DECISION-MAKING: TRANSLATING THEORY INTO REALITY

'Every treaty in force is binding upon the parties to it  
and must be performed by them in good faith'<sup>1</sup>

#### 6.1 Translating Theory into Reality

In 1923, writing in the aftermath of World War I, a German jurist, H Triepel, likened international law (of which international environmental law is a major component) to a field marshal. He argued that it was only through the generals that the orders of the field marshal could reach the troops on the ground. Should the generals fail to convey those orders to the troops, the marshal would lose the battle.<sup>2</sup>

Thus, three things matter. The field marshal must be there to issue commands; the generals must effectively communicate the commands to the troops on the ground; the troops must faithfully comply with the commands. In the same vein, international regulation of biotechnology (as enshrined mainly in the Protocol) is anchored on the precautionary approach, as a guiding criterion.<sup>3</sup> However, states must be willing to implement the Protocol (and by implication, the precautionary approach), if they are to comply with their obligations under international law.<sup>4</sup> This thesis argues that adoption of the precautionary approach may remain theoretical and serve no meaningful purpose unless it translates into reality in decision-making.

Figuratively, the precautionary approach may thus be likened to a field marshal because it is a guiding criterion for the regulation. The state may be equated with the general because it is under an international law obligation to domesticate the Protocol. The institutions may be regarded as troops as they are agents of the state in implementation and enforcement. The extent to which institutions may apply

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<sup>1</sup> Article 26 of the Vienna Convention on the Law of Treaties 8 *International Legal Materials* (1969): 679. The Convention was adopted in 1969 and entered into force on 27 January 1980.

<sup>2</sup> Cassess A *International Law in a Divided World* (1990):15.

<sup>3</sup> Article 2 (1) of the Cartagena Protocol on Biosafety 39 *International Law Materials* (2000):1027.

<sup>4</sup> See the discussion at (5.1)

the approach in decision-making, is material in achieving an effective balance between science and societal needs and priorities.

In the same breath, the Cartagena Protocol (the Protocol)—like most international instruments, impresses upon each party to ‘take necessary and appropriate legal, administrative and other measures to implement its obligations’ contained therein.<sup>5</sup> Such implementation reveals the willingness of parties to be bound by the international instrument. In assessing the importance of the domestic implementation of treaties, Jacobs and Roberts assert that:

‘[F]or the great majority of international treaties in our time, the way in which these treaties are executed and implemented by the contracting states in their internal order is of primary concern. It may even be said that many of the treaties have no use and no substance if they are not duly put into operation in the sphere of domestic law...’<sup>6</sup>

The implementation of the precautionary approach, in whatever form, is one thing and putting it into practical effect is another. Justice Stein asserts that translating the rhetoric of the precautionary principle into reality on the ground (especially) in decision-making is a major challenge of the twenty-first century.<sup>7</sup> He argues that if the principle is to become genuinely operational and inspirational, it ‘must be given specific work to do’ by the decision-makers who should be informed on the role of the principle and how it should be applied.<sup>8</sup>

Against this backdrop, this chapter examines implementation of the precautionary approach within the parameters of institutional governance. It investigates how public participation and access to information constitute external forces, which could provide the checks and balances required to enhance transparency in decision-making. This in turn improves the credibility of biosafety legislation. The chapter first analyses why it is necessary to reconcile science and transparency in decision-making.

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<sup>5</sup> For instance Article 2(1) the Cartagena Protocol (n3).

<sup>6</sup> Jacobs F and Roberts S *The Effect of Treaties in Domestic Law* (1987):274-275 Sweet and Maxwell London

<sup>7</sup> Stein J ‘A Cautious Application of the Precautionary Principle’ 2 *Environmental Law Review* (2000): 1-10 at 10.

<sup>8</sup> *Ibid.*

### 6.1.1 Reconciling Science and Transparency in Decision-making

The relevance of the precautionary approach arguably derives largely from the decision-making process. This is partly because the principle provides a form of 'bridge' in seeking to reconcile the supremacy of science<sup>9</sup> in the development and use of biotechnology as against environmental protection and human health. Moreover there is a compelling need for science and technology to become more responsive to social concerns and values;<sup>10</sup> they require a precautionary approach in this complex technological age.<sup>11</sup> This is the justification for risk assessment and risk management that inherently focus on precaution. Conflicting values are embedded in the various perspectives regarding genetically modified organisms (GMOs).

Monsanto is a case in point. Williams notes that at the height of its success in the late 1980s and early 1990s, Monsanto promised to revolutionise agriculture, alleviate hunger and move the world towards sustainable development. He argues that due criticism attributable to uncertainty concerning safety of GM crops, that dream is yet to be fulfilled.<sup>12</sup> It was not until much later that, in seeking to assess reasons for failure, Monsanto admitted that:

'With a booming stock market promising high rewards, Monsanto focused primarily on its relationships with investors, regulators and agricultural customers... officials cared much less for the onerous process of building trust with end consumers... In the vacuum of reliable information, a swirling tide of opinion, fact, fiction, and hearsay surrounded the subject of GMOs, creating the perception that Monsanto's business is a danger to public health and safety. This initial tide of fears (legitimate or otherwise) did not go away'.<sup>13</sup>

Possibly the consumption of GM food for more than twenty years may alter the initial fears, in favour of safety.

Further, environmental problems mainly result from the interaction between two linked yet complex systems: the Earth system (a domain of natural sciences), and social systems (a domain of social sciences such as law, political science and

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<sup>9</sup> Such supremacy emanates from two main sources: innovation as a purely scientific field and decision-making that is dominated by scientists and also dependent upon scientific advice.

<sup>10</sup> Some of which are discussed in chapter two.

<sup>11</sup> Raffensperger C and Tickner J *Protecting Public Health and the Environment* (1999):264.

<sup>12</sup> Williams A 'Value and Values in the Age of Transparency' (2003) available at [http://newparadigm.com/media/Tapscott\\_Value\\_and\\_Values.pdf](http://newparadigm.com/media/Tapscott_Value_and_Values.pdf) (accessed 20 July 2010)

<sup>13</sup> Ibid.

sociology)—the latter playing a vital<sup>14</sup> as it could neglect, ignore, downplay or adopt science. Additionally and in contrast, in this 21<sup>st</sup> Century, threats to openness in scientific fields emanate from increasing influence of science in society compared to dictatorial regimes.<sup>15</sup>

Thus, a systematic integration through multidisciplinary approaches of studies in natural sciences and social systems is required<sup>16</sup> with a view to achieving two objectives. First is to understand these linked complex systems and, on the basis of such knowledge, design more workable systems of governance.<sup>17</sup> Second is to translate theory (in the adoption of the precautionary approach) into practice on the ground.<sup>18</sup> However, attempts to reconcile advancements in natural sciences including biotechnology, and social systems particularly as regards regulation of biotechnology, have become emotive, and have increasingly attracted public interest. Attaining a reasonable balance between these conflicting interests requires high levels of transparency—an integral part of good governance in decision-making.

### **6.1.2 Good Governance and Decision-making**

Decision-making is the 'cornerstone' in the regulation of biotechnology. At this stage, science, socio-economic environmental cultural and political interests clash, raising matters of public concern, which include good governance. This is a continuous process through which varying, and at times, opposing interests may be accommodated. It includes formal institutions and regimes empowered to enforce compliance.<sup>19</sup> In *A. P. Pollution Control Board*,<sup>20</sup> the Supreme Court of India (Justice Jagannadha Rao) noted that '[g]ood governance is an accepted principle of international and domestic laws. It comprises of the rule of law, effective State institutions, transparency and accountability in public affairs, respect for human

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<sup>14</sup> Zaelke D, Stilwell M and Young O 'Compliance, Rule of Law and Good Governance' in Zaelke D, Kaniaru D and Kruzikova E *Making Law Work: Environmental Compliance and Sustainable development* (2006):37.

<sup>15</sup> Jasanoff S 'Transparency in Public Science: Purposes, Reasons, Limits' *68(21) Law and Contemporary Problems* (2006):21-45 at 21.

<sup>16</sup> Zaelke D *et al* (n14) at 37.

<sup>17</sup> *Ibid.*

<sup>18</sup> *Ibid.*

<sup>19</sup> Bosselmann K *The Principle of Sustainability* (2008):207.

<sup>20</sup> *A.P Pollution Control Board v Prof. M.V. Nayudu and others* (1999) 2 SCC 718

rights and the meaningful participation of citizens ... in decisions affecting their lives'.<sup>21</sup>

Zaelke views good governance as a concept which entails:

'Openness, participation, accountability, predictability and transparency. Good governance depends, in turn, on the *rule of law*, which is generally characterized as referring to States where conduct is governed by a set of rules that are applied predictably, efficiently, and fairly by independent institutions to all members of society, including those who govern'.<sup>22</sup>

Where the public is concerned, a salient principle of democratic theory requires that, in order for the exercise of power to gain legitimacy and to be seen as such, decisions must be made in line with public opinion.<sup>23</sup> This may significantly apply to political decisions. However, in order for policy, and the resulting biosafety legislation and decisions made pursuant to such legislation to gain a sense of legitimacy, democratic requirements such as public participation embodying access to information, have become imperative.

Further, 'the environmental community is generally an open one that relies on public access to information and is accustomed to demanding public participation... in decision-making ... because the public views environment as "their" issue'.<sup>24</sup> Moreover, when assessing the seriousness or irreversibility of a threat, a range of views is needed and this calls for professional expertise as well as public involvement in order to enhance chances of identifying uncertainties and also reach a consensus.<sup>25</sup> Considering that difficult questions of causality are essentially policy decisions, potentially impacted publics must be involved in the decision-making process.<sup>26</sup>

One of the ultimate tests of evaluating the success of the biotechnology industry is whether and the extent to which the public trusts the decision-makers who interpret

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<sup>21</sup> *A.P Pollution Control Board v Prof. M.V. Nayudu and others* (1999) (n20) at 736 par 42.

<sup>22</sup> Zaelke D *et al* (n14) at 40.

<sup>23</sup> Lewis J, Inthorn S and Wahl-Jorgensen K *Citizens or Consumers* (2005):82

<sup>24</sup> Weiss E Jackson J *Reconciling Environment and Trade* 2ed (2008):13.

<sup>25</sup> Deville A and Harding A *Applying the Precautionary Principle* (1997):26-32.

<sup>26</sup> Ticker J and Raffensperger C 'The Precautionary Principle in Action A handbook' available at <http://www.biotech-info.net/handbook.pdf> (accessed 15 August 2009).

scientific information and use it to assess and manage risks.<sup>27</sup> Insufficient or lack of trust is attributable to the nature of biotechnology, an area where decision-making is, for the most part, guided or even driven by scientific criteria. In addition, science plays a significant role in the governance of GMOs.<sup>28</sup> While role of scientists in the GMO governance is legitimate, objective communication (on their part) with the public on matters concerning GMOs would enhance the credibility of the decisions made.

Decision-making institutions mainly rely on experts' framing problems and options, yet public understanding and perception of biotechnology is material in supporting the authority of such persons.<sup>29</sup> This study argues that the decision-making process creates an opportunity of addressing various concerns including those emanating from risk assessment and public participation. Regrettably, the public may or may not understand biotechnology as expounded by scientists.<sup>30</sup> Such lack of understanding is:

'exacerbated by illiteracy among most peasant farmers and the general public in many parts of Africa. Thus the need to reconcile science in decision-making vis-à-vis transparency for purposes of making such decisions acquire a sense of legitimacy cannot be overemphasised.'<sup>31</sup>

Increased understanding is crucial partly because the social aspects of biosafety regulation and value based judgements cannot be ignored.<sup>32</sup> They could include issues such as whether or not biotechnology will improve or worsen lives in a given locality.

If the decision-making process is to be credible, it must be transparent and accountable to the public. Transparency encompasses 'candor, integrity, honesty, ethics, clarity, full disclosure, legal compliance and a host of other things that allow

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<sup>27</sup> McGarity T and Hansen P 'Breeding Distrust: An Assessment and Recommendations for IMPROVING Regulation of Plant Derived Genetically Modified Foods' (2001):7 A Report prepared for the Food Policy Institute of the Consumer Federation of America available at <http://www.biotech.info.net/breeding...> (accessed 18 June 2009)

<sup>28</sup> McGarity T 'Resisting Regulation with Blue Ribbon Panels' 33 *Fordham Urban Law Journal* (2006):1157-1197 at 1158.

<sup>29</sup> Rayner S and Malone E *Human Choice and Climate Change* (1998):37.

<sup>30</sup> *Ibid.*

<sup>31</sup> Ayele S 'The Legitimation of GMO Governance in Africa' 34(4) *Science and Public Policy* (2007):241.

<sup>32</sup> Kingiri A 'The Contested Framing of Biosafety Regulation as a Tool for Enhancing Public Awareness' 2(1) *International Journal of Technology and Development Studies* (2011) 64-86 at 72.

us to deal fairly with each other'.<sup>33</sup> Unfortunately, these attributes present transparency as an illusory concept incapable of being achieved yet law is essentially concerned with reasonableness rather than perfection. Regulation is thus intended to achieve tolerable levels of effectiveness.<sup>34</sup> In order for a biosafety regulatory system to be 'open, transparent and understandable' it should provide information to the public such as details on: the regulatory procedure, public participation and how the competent authority will conduct the decision-making process, including the basis of the decisions made.<sup>35</sup>

Claiming to be transparent is one thing; translating such claim into reality is another, even for corporations and states<sup>36</sup> For example, in the case of corporations (the principal institutions of capitalism,<sup>37</sup> including biotechnology companies) the people who run such corporations are intelligent with outstanding leadership qualities.<sup>38</sup> However, their first responsibility as corporate executives is to act in the best interest of such corporations as opposed to acting in a manner that serves the interests of any other person or thing.<sup>39</sup> As a result, some critics subjectively view corporations as entities that have a dynamic that does not take into consideration the concerns of the 'flesh-and-blood' of human beings who form the world in which such corporations exist<sup>40</sup>.

Multinational corporations such as Monsanto (which control 91% of the global GM seed market<sup>41</sup>), Syngenta, DuPont and others are major stakeholders in biotechnology. Such corporations are 'not merely dominant economic actors, they are the dominant political actors as well'.<sup>42</sup> Often, it is in the corporation's interest to

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<sup>33</sup> Bennis W, in his Preface to Bennis W, Goleman D and O'Toole J *Transparency: How leaders Create a Culture of Candor* (2008):vii- vii.

<sup>34</sup> Galligan D 'Citizens' Rights and Participation in the Regulation of Biotechnology' in Francioni (ed) *Biotechnologies and International Human Rights* (2007):355-359 at 335.

<sup>35</sup> Mugoya C 'Biosafety Research and Regulatory Policy in East Africa: Emerging Trends and Implications' in Sengooba T, Cohen J and Zawedde B (eds) 'Regulatory Cooperation, Using Information, Regional, and national Expertise' (2005):18 Proceedings of an East Africa Biosafety Policy Roundtable April 18-20 2005 Entebbe, Uganda available at <http://www.biovisioneastafrica.com/publications...> (accessed 27 June 2009).

<sup>36</sup> Bennis W *et al* (n33) at 2.

<sup>37</sup> Speth G and Haas P *The Bridge at the Edge of the World* (2008):7.

<sup>38</sup> Bakan J *The Corporation* (2004):50.

<sup>39</sup> *Ibid.*

<sup>40</sup> *Ibid* at 71.

<sup>41</sup> See 'Power Hungry: Six Reasons to Regulate Global Food Corporations' (2005) ActionAid International available at [http://actionaid.org.uk/\\_content/documents/po...](http://actionaid.org.uk/_content/documents/po...) (Accessed 19 July 2010).

<sup>42</sup> Speth G (n37) at169.

conceal information (whether confidential or not), that the government and the public may not easily obtain.<sup>43</sup> The result is 'a tug of war between corporate power and citizen power, and in the day-to-day world of politics, it is generally not an equal match'.<sup>44</sup> In order to address this mismatch, institutions responsible for decision-making must be accountable to the general public, which elects political leaders and pays taxes so as to sustain such institutions. Such bodies constitute an integral part of the institutional framework that governs GMOs in the selected countries.

Accountability arguably results mainly from transparency in decision-making. Consequently, the thesis argues that whether a decision is good or not may not concern the public as much as a decision taken in circumstances that lack transparency. Even if the decision-maker claims to be transparent, questions that arise and which are invariably difficult to determine include, transparent in whose opinion, to whom and in whose interest<sup>45</sup> The difficulty arises partly because, in practical terms, there will be situations where there is a gap between what the decision-maker 'knows' concerning risk or may be told by science and what the public are concerned about.<sup>46</sup> Achieving an effective balance between the two may appear almost impossible. That is why the precautionary approach has been identified as remedial, at least from the international biosafety regime from the perspective of the Protocol.

The approach is an important tool that may be used to reconcile the development and use of biotechnology as against other socio-economic, environmental, ethical and other considerations that concern the public. In this sense then, the principle may be seen as serving two important purposes. The first one is addressing scientific uncertainty concerning potential risks in which case the principle may be seen as a scientific tool. The second one is recognition is seeking to safeguard societal values and needs in which case the principle may be seen as a political tool. Relevance of the precautionary principle in both cases may largely depend on the manner and extent to which institutions may reasonably succeed in reconciling these conflicting interests. In turn success arguably depends on the extent to which the decision-making process is accountable to the public.

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<sup>43</sup> Speth G (n37) at 169.

<sup>44</sup> Ibid at 168.

<sup>45</sup> See the discussion in chapter seven.

<sup>46</sup> Bell S and McGillivray D *Environmental Law* (2006):70.

Accountability is particularly important because, essentially, environmental law is embedded in political aims and goals manifested in scientific standards.<sup>47</sup> For this reason, decision-making in environmental protection has largely become a process of balancing political and other values, as institutions attempt to achieve the objectives of policy and legislation.<sup>48</sup> Complications may also arise because, often, those people who exercise power are not always the same people with those over whom it is exercised'.<sup>49</sup> In addition, we live in an age of the 'hermeneutics of suspicion' in which the general public intuitively views those who exercise power as people who must be 'up to no good, corrupt or corrupted, bent, hiding the real truth beneath a tissue of lies'.<sup>50</sup> Accordingly, decision-making has attracted increased public demands for accountability<sup>51</sup>. These demands require that science and transparency be reconciled in decision-making.

In seeking to reconcile science and transparency, the levels of success that may be achieved is material in enhancing the functionality of institutions in the regulation of biotechnology in Africa. Such institutions must be functional. It means that that they should be founded on rationality and objectivity. Rationality because, the decisions made require legitimacy; objectivity because of the need to achieve the desired goal: safe and responsible use of biotechnology. Institutions are therefore useful tools of assessing whether and the extent to which biosafety laws in the selected countries are workable. The functionality of such institutions provides what this researcher refers to as a *litmus* test of analysing the relevance of the precautionary approach in the domestic sphere.

## 6.2 Institutional Governance of GMOs

The importance of institutional governance in the regulation of biotechnology need not be overstated. Decision-makers have the difficult task of resolving scientific disagreements, defining where science stops and policy making begins, and

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<sup>47</sup> Bell S and McGillivray D (n46) at 48.

<sup>48</sup> Ibid at 14.

<sup>49</sup> Mill J Stuart, (John Gray ed 1991):8 *On Liberty and Other Essays* Oxford University Press Oxford; Laes E, D'haeseleer W and Weiler R 'Addressing Uncertainty and Inequality in Nuclear Policy' 18(3) *The Journal of Enterprise Information management* (2005):357-376 at 357.

<sup>50</sup> Darch D and Underwood P *Freedom of Information and the Developing World* (2010):2.

<sup>51</sup> Jasanoff S (n15) at 24.

establishing policy to fill the gaps left by insufficient scientific information.<sup>52</sup> This is in addition to being responsible for activities involving GMOs domestically and being agents of the state in such matters internationally.

Article 19 of the Protocol obligates each party to 'designate one or more competent national authorities, which shall be responsible for performing the administrative functions required by the Protocol and which shall be authorized to act on its behalf with respect to those functions'. Decision-making in respect of living modified organisms (LMO) as envisaged by art 10 of the Protocol is among the most important administrative functions such competent authorities perform at the domestic level. In that process, they are required to take into account risk assessments carried out in a scientifically sound manner and in accordance with the provisions of the Protocol.<sup>53</sup> At the same time, the Protocol provides for the taking of precautionary measures in instances of lack of scientific certainty regarding the extent of potential adverse effects of an LMO on biological diversity and humans.<sup>54</sup>

Institutions play a key role in decision-making seeking to establish and maintain a balance between the competing interests. They implement various legal requirements such as risk management that requires precautionary measures in the event of scientific uncertainty. Thus, the composition, powers and duties of institutions are crucial to their realisation of transparency in decision-making. This may be assessed by examining how and the extent to which the law obliges those who grant or refuse applications concerning GMOs to serve the common interest of society as a whole.<sup>55</sup> That common interest must essentially reside in the safety of GMOs for the environment and human health. Under the Protocol, risk assessment and risk management are among the key mechanisms that seek to minimise, alleviate and control known and potential risks associated with GMOs.<sup>56</sup>

Decision-makers may apply the precautionary approach yet if the process lacks transparency, the relevance of the precautionary approach may diminish. The critical question that arises is whether biosafety legislation in the selected countries

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<sup>52</sup> McGarity T (n28) at 1157.

<sup>53</sup> Article 15(1) of the Cartagena Protocol (n3).

<sup>54</sup> Ibid article 11(8).

<sup>55</sup> Allott P' *The True Function of Law in the International Community* 5 *Indiana Journal of Global Legal Studies* (1997-8):399 391-413 at 399.

<sup>56</sup> Articles 1, 10 (6) and 15 of the Cartagena Protocol (n3).

provides sufficient checks and balances in the institutional governance structures to achieve or enhance transparency in decision-making.

Owing to the complexities of biosafety (such as determining acceptable levels of risk), decision-making is a difficult task. Additionally, experts may have knowledge in their fields - such as molecular biology or ecology, but the public is interested in or affected by the decisions made by such experts.

Based on the above, this study argues that implementation of the precautionary approach cannot serve a meaningful purpose in the absence of functional institutions responsible for decision-making. It is at decision-making that theory concerning implementation of the approach translates (or should) translate into reality, in an attempt to balance conflicting interests. Success is indicated by the extent to which scientific and non-scientific criteria are taken into account. It is against this backdrop that institutional governance in each of the selected countries is discussed below.

### **6.2.1 South Africa**

Institutional governance of GMOs in South Africa is vested in the Executive Council for GMOs, the Registrar, the Advisory Committee and the Minister. Section 3(1) of the Genetically Modified Organisms (GMO) Act<sup>57</sup> establishes the Executive Council for Genetically Modified Organisms (ECGMOs)—a juristic person which shall consist of no more than 10 members to be appointed by the Minister. The Council comprises representatives from eight government ministries including Agriculture, and Science and Technology.<sup>58</sup> The ECGMOs' objectives are twofold: to advise the Minister on all activities concerning GMOs and to ensure that such activities are performed in accordance with the Act.<sup>59</sup>

The Registrar<sup>60</sup> shall be an experienced and suitably qualified person who shall be accountable to the Executive Council.<sup>61</sup> . One of his or her important

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<sup>57</sup> No 15 of 1997 Republic of South Africa.

<sup>58</sup> Section 3 (2) (a) Genetically Modified Organisms Act No 15 of 1997 Republic of South Africa. Other members of the Council are those representing the ministries of Environmental Affairs and Tourism, Labour, Health, Trade and Industry, Art and Culture and the Ministry of Water and Forestry

<sup>59</sup> Ibid section (4).

<sup>60</sup> Appointed under section 8(1) GMO Act (n58).

<sup>61</sup> Bid Section 9 (1) GMO Act (n58).

functions is to satisfy himself or herself that 'all users apply the appropriate measures to protect the environment and human and animal health during the exercise of any activity' with GMOs. Importantly, the Registrar has power, subject to the terms and conditions laid down by the Council, to extend permits for a GMO activity in respect of which a permit had been issued previously.<sup>62</sup>

Extension of such a permit may have serious implications especially because the Council exercises discretionary powers under s. 5 (2) (d) to consult the Committee 'on such issues as the Council may consider necessary to come to a decision'. Since the law does not provide a limit as to when a permit may expire or as to when it may require renewal, the discretion to extend certain permits by the Registrar could be exercised arbitrarily. This discretion appears to be premised on the assumption that no potential harm may have been detected between the time of first issue and the time of extension. Cases of extension of a permit which has expired recently (within one year for example), may be justified but cases where the previous permit expired a number of years earlier could be problematic. Moreover (as discussed in chapter two), ecological changes are as complex as biotechnology itself, hence, the need for constant monitoring.

This thesis argues that to the extent that the Act empowers the Registrar to exercise some of the powers that should be exercised by the ECGMO, it creates two centres of power within the GMO governance structure. Like the Registrar, the ECGMO is a legally constituted body. It is accountable to the general public as part of the criteria for good governance and to the Biosafety Clearing House in compliance with the requirements of the Protocol.<sup>63</sup>

The Advisory Committee (the Committee)<sup>64</sup> consists ten persons<sup>65</sup> appointed by the Minister after recommendation by the Council. It plays a national advisory

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<sup>62</sup> Section 9 (3) GMO Act (n58).

<sup>63</sup> Article 19 of the Cartagena Protocol (n3) requires each Party to designate one or more competent national authorities 'which shall be responsible for performing the administrative functions required by this Protocol...' Such an authority may also serve as focal point in respect of the Biosafety Clearing House if no separate focal point is designated.

<sup>64</sup> Established under section 10(1) GMO Act (58).

<sup>65</sup> Two of which will be from the public sector. Among the two, one shall have knowledge on ecological matters and GMOs and the other one shall have knowledge of potential impact of GMOs on human health and animal health.

role on all matters concerning or related to GMOs.<sup>66</sup> In particular the Committee is obligated, upon request (and may on its own accord), advise the Minister, the Council, the Registrar and other appropriate bodies on all aspects concerning introduction of GMOs into the environment among other things.<sup>67</sup> The Act requires any member of the Committee to recuse himself or herself where such member has vested interests or where his/her participation may give rise to a conflict of interest.<sup>68</sup> By implication, the Committee is therefore expected to play a neutral role.

On the face of it, the composition of the Council may seem well balanced. However, it must be noted that all members are appointees of the Minister who exercises discretion to appoint<sup>69</sup> and remove members from office by reason of incompetence, misconduct or for any other reason.<sup>70</sup> These powers of the Minister may make the position of Council members and those of the Committee precarious. This gives rise to an irresistible inference that in order for such members to keep their positions, they must be complacent to Minister. The Minister's decisions are often influenced by or even dictated by political considerations not only in making appointments but in establishing priorities. Moreover, the Minister makes the final decision in respect of appeals.<sup>71</sup> It implies that the Minister is not necessarily bound by decision of the Appeal Board. These problems could be particularly more pertinent or relevant in many African countries.

Considering that governments are significant actors in the area of biotechnology, they have vested interests that the Minister (and by extension the ECGMOs and the Committee) may be keen to safeguard. Should the GMO Act be a reflection of the values of such interests and seek to protect them, the little or lack of sufficient attention on the precautionary approach in the Act may be easy to understand but difficult to defend.

In a sense, the composition of institutional structures in South Africa, strongly suggests that all matters concerning GMOs are regarded almost entirely as a government project. Exclusion of representatives of important stakeholders such as

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<sup>66</sup> Section 11 (a) GMO Act No 15 of 1997 (n58).

<sup>67</sup> Ibid section 11 (1) (b).

<sup>68</sup> Ibid section 13.

<sup>69</sup> Ibid section 3(1).

<sup>70</sup> Ibid section 6(2).

<sup>71</sup> Regulation 11(12) of the Regulations NO R. 120 Gazette Notice No. 32966 of 26 February 2010.

consumers and the non-technical general public from such structures remains a serious oversight on the part of Parliament.

On decision-making, the ECGMOs exercises discretion to grant permits in respect to activities concerning GMOs where the Council is satisfied that the application conforms to the requirements of the Act.<sup>72</sup> The Council shall determine whether an applicant should submit an assessment, (in accordance with the relevant provisions of the National Environmental Act–NEMA)<sup>73</sup> ) of the impact on the environment and an assessment of socio-economic considerations relating to such activities.<sup>74</sup> Further, the Council shall have regard to scientifically based risk assessments and proposed risk assessment measures.<sup>75</sup>

Before making a decision, the Council may consider three other factors: public input, the environmental impact assessments and the potential socio-economic impact of such activities.<sup>76</sup> By using the word 'may', the taking into account of these three is discretionary in decision-making. In exercising that discretion, the ECGMO is not obligated to take any or all of them into account. The effect is that the Act creates a situation the ECGMO may exploit to exclude public input and socio-economic considerations in decision-making.

Public input is important because the general public expresses its views freely and is not constrained by any rules of professional conduct or code of conduct. Socio-economic considerations may raise issues such as trade that fall outside the realm of risk assessments. These two areas are non-scientific in nature and would arguably attract the application of the non-scientific aspects relevant to the precautionary approach. As a consequence, there is no guarantee that the Council will not grant a permit relying on scientific risk assessments while disregarding public input and the potential socio-economic impact of GMO activities.

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<sup>72</sup> Section 5 (2) (b) GMO Act (n58).

<sup>73</sup> No 107 of 1998

<sup>74</sup> Section 5 (1) (a) GMO Act (n58).

<sup>75</sup> Ibid section 5 (1) (c).

<sup>76</sup> Ibid section 5 (2) (a).

### 6.2.2 Kenya

Institutional governance of GMOs in Kenya is centred on the National Biosafety Authority (NBA) and the Minister. The NBA is a corporate body<sup>77</sup> managed by a Board of sixteen members.<sup>78</sup> These are a chairperson, representatives from nine government Ministries including certain departments<sup>79</sup> and six other persons appointed by the Minister. The six (two of whom shall be from either gender) shall be appointed and gazetted by name. Three of the six shall be experts in the respective sciences namely: biological, environmental and social sciences; the other three shall each represent the interests of consumers, farmers and the biotechnology industry. The Chief Executive Officer performs functions that are essentially administrative. Such functions include the management of the affairs and transactions of the Authority.<sup>80</sup>

The object and purpose of the Authority is to exercise overall supervision and control of GMOs with a view to ensuring safety of human and animal health and, provision of an adequate level of protection of the environment.<sup>81</sup> By seeking to achieve an adequate level of protection without specifically providing for the precautionary approach as provided by the Protocol, the Act adopts lower thresholds. This falls short of the minimum criterion provided for by the Protocol on how to ensure an adequate level of protection. The resulting ambiguity weakens the Act and negatively impacts on the credibility of the legislation. The ambiguity may undermine attempts to establish a predictable process of reviewing and making decisions concerning GMOs and related activities as envisaged by s. 4 (1) (c) of the Act.

The Authority is the overall body that governs all activities concerning GMOs in the country.<sup>82</sup> The composition of the Authority is of concern to both opponents and proponents of biotechnology, who differ on how to achieve an appropriate

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<sup>77</sup> Section 5 (1) Biosafety Act No 2 of 2009 Republic of Kenya.

<sup>78</sup> Ibid Section 6 (1).

<sup>79</sup> The representatives are from the Ministries of Technology, Finance, Agriculture; the Director General of the National Environmental Management Authority, the Managing Director of the Kenya Bureau of Standards, the Managing Director of the Kenya Plant Health Inspectorate Services, the Director of the Department of Veterinary Services, the Secretary of the National Council of Science and Technology and the Chief Public Health Officer.

<sup>80</sup> Section 13 (2) Biosafety Act (n77).

<sup>81</sup> Ibid section 7 (1).

<sup>82</sup> Section 7 (1) Biosafety Act (n77).

balance of the various stakeholders within the governing body.<sup>83</sup> In addition to decision-making, the Authority is required, among other things, to co-ordinate, monitor and assess activities relating to GMOs; co-ordinate research and surveys in matters concerning GMOs; identify national requirements for manpower development and capacity building; establish and maintain a biosafety clearing house through which relevant information concerning living modified organisms (LMOs) may be availed of and exchanged.<sup>84</sup>

Promotion of awareness and education among the general public in matters relating to biosafety<sup>85</sup> is one of the key roles of the Authority that relates to the precautionary approach and transparency. While the Authority is compelled to promote such awareness and education, the Act does not indicate how this should be achieved. Absence of broad provisions concerning workshops, seminars and public gatherings significantly reduce opportunities for public involvement. This thesis argues that in as much as risk assessment is central in identifying risks and potential risks, public awareness and education on GMOs is equally important as it enhances an understanding of biosafety. Increased understanding may significantly promote both transparency and legitimacy of the biosafety regime.

There is another dimension of awareness and education: content. Here questions such as what is and who determines the content of such programmes are relevant. Biosafety is a wide concept that covers many areas of study many of which are scientific, others non-scientific and yet others legal, on all of which experts hold divergent views in all these areas. Using people with neutral views (however few they may be) is essential in disseminating objective information concerning GMOs. An illustration from the 2005 referendum<sup>86</sup> that sought approval of a new draft constitution, duped the '*Wanjiku*' or '*Wako*' draft may suffice.

The then Electoral Commission of Kenya sent out a large number of lawyers to various parts of the country a few days before the referendum for the purpose of increasing the peoples' education, understanding and awareness of the content and

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<sup>83</sup> Cooke J and Downie R 'African Perspectives on Genetically Modified Crops: Assessing the Debate in Zambia, Kenya and South Africa' (July 2010):14.

<sup>84</sup> Section 7 (2) Biosafety Act (n77). The Authority thus acts as the Focal point for purposes of information exchange envisaged by Article 20 of the Protocol.

<sup>85</sup> Section 7 (2) (f) Biosafety Act (n77).

<sup>86</sup> The referendum was held in August 2005.

implications of the draft Constitution. Large sections of Kenyans were of the view that many of the lawyers were hardly neutral culminating in indirect campaigning in support of either *Bananas* for a *Yes* vote - representing the government, or *Oranges* for a *No* vote – representing the opposition. The people rejected the draft constitution on various grounds, such as allegations that married women( including those as old as 90 years), would have rights to inherit land of their parents contrary to custom.

Likewise, the content of the public awareness and education programmes under the Biosafety Act may be acceptable to some degree but the ‘educators’ may be biased. Moreover, the Act does not place the precautionary approach at the centre of the regulatory regime meaning that the Authority’s educators will hardly disseminate objective information concerning the approach, if at all.

Concerning decision-making, the Authority is empowered to carry out risk assessment<sup>87</sup> (in a scientifically sound manner<sup>88</sup>) a major factor in decision-making.<sup>89</sup> The risk assessment report of the Authority is final for purposes of decision-making.<sup>90</sup> In the absence of any other independent scientific council or body that may evaluate the scientific soundness and transparency<sup>91</sup> of the Authority’s risk assessment report, there is no guarantee that such risk assessment report may be objective. As a consequence, the Authority’s decisions based on its own report may be geared towards serving selfish individual or group interests yet simultaneously being presented as serving the common interest.<sup>92</sup> Knowing whether and the extent such decisions may prioritise environmental protection and human health is a difficult thing. However, taking into account industry’s leadership and dominance in biotechnology, it is highly unlikely that such decisions will be detrimental to its interests. In such a scenario, expecting the Authority to place emphasis on the approach when the law itself seems to have neglected the approach, may be equated with trying to force an elephant to stand on a ‘mosquito’s legs’.

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<sup>87</sup> Section 27 (1) (a) Biosafety Act (n77).

<sup>88</sup> Fourth Schedule of the Biosafety Act (n77).

<sup>89</sup> Section 29 (1) (c); and the Fourth Schedule of the Biosafety Act (n77), which provide that ‘the risk assessment shall be used by the Authority to make informed decisions regarding genetically modified organisms’.

<sup>90</sup> Section 27 and 29 of the Biosafety Act (n77).

<sup>91</sup> As envisaged by Section 4(c) of the Biosafety Act and section 3 (a) of the Second Schedule of the Biosafety Act (n77).

<sup>92</sup> Allott P (n55) at 399-400.

Further, the Board has discretionary powers to 'appoint such officers, agents and other staff of the Authority as are necessary for the proper and efficient discharge of the functions of the Authority'.<sup>93</sup> Such appointment primarily seeks to ensure that the Authority functions properly and efficiently.<sup>94</sup> The question that arises is whether the Authority can delegate the carrying out of risk assessment to any other person or agent, and if so, what impact that may have on the credibility of such risk assessment. Considering that risk assessment is one of the main functions of the Authority and since s. 14 of the Act gives the Board wide discretionary powers to appoint an officer, agent or any other staff to carry out risk assessment, such delegated assessment squarely falls within such discretionary powers of the NBA. In such circumstances such risk assessment may lack credibility for three main reasons.

First, in the absence of an independent scientific advisory council, or any other independent body to verify or evaluate the objectivity of the risk assessment report of such officer, agent or staff, it may be almost impossible to prove whether or not the risk assessment was carried out in a scientifically sound manner. Consequently, risk assessment may become a routine function merely intended to satisfy the procedural requirements of the law rather than being used as an essential criterion that should objectively inform decision-making.

Second, the Act does not provide any safeguard against appointment of an officer, agent or staff that may have vested interests in the risk assessment. Only members of the Board are required to disclose any direct or indirect interest in any application before the Board or any other matter which is the subject of consideration at a meeting of the Board.<sup>95</sup> Unfortunately, the requirement for disclosure of interest does not extend to an officer, agent or staff, envisaged by s. 14 of the Act, who is not a member of the Board. The result is that there is no safeguard against the appointment of cronies of some members of the Board or people with vested interests to carry out risk assessment.

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<sup>93</sup> Section 14 Biosafety Act (n77).

<sup>94</sup> Ibid section 14.

<sup>95</sup> Section 4 of the Second Schedule Biosafety Act (n77).

Third, no provision is made in the Act as to the qualifications or other experience of such officer, agent or staff appointed under s. 14 of the Act. Failure to insert the words 'duly qualified' or any other suitable words between the words 'such' and 'officers' in the first line of s.14 of the Act defeats the good intentions Parliament may have had.

This thesis argues that risk assessment which lacks transparency can hardly objectively evaluate potential adverse effects that would attract the taking of precautionary measures. It may merely confirm absence of, or 'negligible', scientific certainty; it may be manipulated to serve selfish interests as it has not been subjected to a non-partisan review.

By empowering the Authority to carry out risk assessment without providing safeguards to ensure objectivity or independence, the Act may at worst be described as 'a rubber stamp' that aggressively endorses introduction of GMOs in Kenya. Lack of objectivity is partly attributable to the double role the NBA plays: selling and regulating biotechnology. Selling derives from overall control<sup>96</sup> and the carrying out of risk assessment; regulatory by reason of decision-making. As a result, the NBA can neither be neutral nor be seen to be neutral in discharging its functions. Neutrality is an essential component of objectivity. Lack of it leaves very little room (if any) for application of the precautionary approach which proponents view as a barrier to the development and use of biotechnology.

The NBA is further obligated to advise the Government on 'legislative and other measures relating to the safe transfer, handling and use' of GMOs. This enormous responsibility is placed on it for two main reasons. First, the NBA is the sole body that administers the Biosafety Act; the government is likely to or should take NBA's advice seriously. Second, based on its day-to-day activities the NBA is well placed to identify areas of policy and law that require improvements so as to enhance effectiveness of the biosafety regime.

In essence, the NBA is the sole body that carries out risk assessment, identifies potential risks, determines appropriate measures and monitors implementation of such measures. In the absence of any other independent body, a

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<sup>96</sup> Section 7 (1) Biosafety Act (N77).

combination of all these and other functions gives rise to a conflict of interest that minimizes the credibility of the NBA as the government agent in relation to GMO activities.

The Minister plays a key role in the administrative structures which govern GMOs in Kenya. He appoints the chairperson of the NBA,<sup>97</sup> six out of the sixteen members of Board,<sup>98</sup> the Chief Executive Officer,<sup>99</sup> biosafety inspectors (on recommendation of the NBA)<sup>100</sup> all members of the Appeals Board including the chairperson.<sup>101</sup> The Minister is further empowered to make regulations (in consultation with the NBA) for 'the better carrying into effect' of the provisions of the Act.<sup>102</sup>

The functions of the Minister place him at a powerful influential position in a powerful and influential position in the regulation of biotechnology. Appointment of the Minister is invariably political and not based on expertise in a particular discipline. Likewise, nothing in the Act prevents the Minister from appointing individuals who may be considered to be *politically correct*, whether or not such individuals have sufficient expertise in biotechnology. Moreover, often the Minister has a political agenda he may need to promote and safeguard. Biotechnology (like most technologies), is not politically neutral.

### 6.2.3 Zambia

Institutional governance of GMOs in Zambia is vested in the National Biosafety Authority (NBAZ)<sup>103</sup>, the Scientific Advisory Committee (SACZ)<sup>104</sup> and the Minister. The NBAZ is a body corporate comprised of thirteen part-time members appointed by the Minister<sup>105</sup>. Seven of the members are representatives from various ministries including science and technology environment and natural resources,

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<sup>97</sup>ibid section 6 (1) (a).

<sup>98</sup> Ibid section 6 (1).

<sup>99</sup> Ibid Section 6 (1) (I).

<sup>100</sup> Ibid section 43.

<sup>101</sup> Ibid section 35.

<sup>102</sup> Ibid section 51.

<sup>103</sup> Section 4 (1) Biosafety Act No 10 of 2007 Republic of Zambia

<sup>104</sup> Ibid section 6 (1).

<sup>105</sup> Ibid section 4 (1).

agriculture and justice.<sup>106</sup> Other members include one from each of the following groups: consumers, religious, farmers and traditional authorities; plus two other people.<sup>107</sup>

By drawing members representing a wide range of interests, Parliament sought to embrace biotechnology but within an environment acceptable to, tolerated or approved by consumers, farmers, religious groups, traditional authorities and the public. Absence of a requirement that the chairperson or vice-chairperson be a scientist enables the Minister to appoint any member to such positions. Even if the chairperson or vice-chairperson or both were to be scientists, the composition of the NBAZ appears complex with the result that anybody wishing to introduce GMOs is likely to find it quite challenging. Moreover, the interests of the biotechnology industry are not represented (as opposed to Kenya) in the NBAZ. In addition, a person with vested interests in biotechnology is not eligible to be appointed as a member of the NBAZ.<sup>108</sup>

The NBAZ is empowered among other things, to make decisions in consultation with the SACZ concerning GMOs, promote public awareness and education, establish and maintain a data base on GMOs and GMO products, prescribe criteria, standards and guidelines that facilitate implementation of the Act, review or make a risk assessments of GMO or any GMO product, keep any GMO or any GMO product under constant review, designate inspectors and undertake inspections.<sup>109</sup> It serves as the National Biosafety Focal Point consistent with the requirements of the Protocol,<sup>110</sup> appoints members of the SACZ,<sup>111</sup> and appoints 'a suitably qualified and experienced person' as the Registrar of the NBAZ.<sup>112</sup>

The SACZ performs two important functions. It conducts risk assessments;<sup>113</sup> it is the consulting agency for the NBAZ as it is required to provide 'scientific and

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<sup>106</sup> Section 2 (a) First Schedule of the Biosafety Act (n103) Others ministries are health, commerce, trade and industry and information

<sup>107</sup> Section 2 (b) First Schedule of the Biosafety Act (103).

<sup>108</sup> Section 4 (d) First Schedule Biosafety Act of Zambia (n103).

<sup>109</sup> Ibid section 5 (1) (a-l) (n103).

<sup>110</sup> Ibid section 5 (2).

<sup>111</sup> Ibid section 6 (2) Biosafety Act (n103).

<sup>112</sup> Ibid section 8 (1) First Schedule Biosafety Act (n103).

<sup>113</sup> Ibid section 6 (1) and section 7 (a) Biosafety Act (103).

other technical advice and assistance to the Authority'.<sup>114</sup> For these and other reasons, the SACZ may be regarded as the 'Think Tank' for the NBAZ especially in relation to relevant scientific matters. However, while the SACZ is comprised of experts from entirely scientific fields such as agronomy, weed science and molecular biology, the NBAZ has members from a wide range of interests covering both scientific and non-scientific fields. In these circumstances, it implies that the scientific advice given by the SACZ at the request of the NBAZ must be viewed together with the various interests represented in the NBAZ before such advice is used as a basis for decision-making.

Inclusion of members from Ministries responsible for information and justice within the NBAZ is of particular interest. The Department of Information has many opportunities to gather information from government and the public regarding GMOs. Some of the information may be of interest to the decision-makers. Hence the representative may, if requested or where necessary, give an opinion concerning public perceptions regarding GMOs. In turn, the NBAZ may use the Department to disseminate information expeditiously.

In essence representation of the Department of Information may significantly facilitate the flow of information discussed below. Where the public may have reservations concerning a GMO application, the NBAZ will have to consider such reservations together as against the risk assessment report and other factors. These considerations may dictate precautionary measures with a view to harmonising conflicting interests in the decision-making process.

Representation from the Department of Justice constitutes recognition of the two broad categories of biosafety: scientific and regulatory. The recognition confirms that biosafety is an interdisciplinary subject and that regulation is an integral part of it. Further, the Department of Justice is closely associated with the drafting of and amending legislation. Expertise from the Department will enhance the NBAZ's knowledge of relevant legal issues. Such knowledge translates into a better understanding of the international context within which regulation of GMOs takes place. It is essential in appreciating the important role the precautionary approach plays in regulating biotechnology.

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<sup>114</sup> Ibid section 6 (1) Biosafety Act (n103).

The Minister plays two crucial roles: appointment of members of the NBAZ<sup>115</sup> and appointment of an Appeals Tribunal.<sup>116</sup> The appeals are to be lodged with the Minister. This study suggests that the neutrality of opinion concerning GMOs on the part of such members constitutes objectivity in decision-making. Objectivity is essential as decision-making involves balancing competing interests. It also plays a key role in determining the outcome of decisions made. This thesis submits that members of the NBAZ and the Tribunal with biased attitudes concerning GMOs lack neutrality.

The composition and the functions of the NBAZ (among other factors) place it in a defensively powerful yet decisive position that prioritises safeguards against potential over the development and use of GMOs in Zambia. The emphasis on safeguards to address potential harm creates more opportunities for application of the precautionary approach. Such emphasis (already discussed in chapter five) gives rise to a more restrictive biosafety regime than was intended by the Protocol. Apparently, strict regulatory aspects of the Act outweigh by far the research and development (R&D) activities in Zambia.

#### **6.2.4 Namibia**

The administration of GMOs in Namibia is mainly vested in the Biosafety Council (BCN) and the Minister. The BCN is not a legal person and does not make binding decisions. It considers an application, makes its report and recommendations.<sup>117</sup> It submits these to the Minister, through the National Commission on Research, Science and Technology (the Commission), together with the application and any other submissions received in relation to the application.<sup>118</sup> The Minister is required to make a decision within 30 days of receipt of the application from the BCN.<sup>119</sup> The Registrar is appointed by the Commission, and performs administrative functions (such as issuing permits<sup>120</sup>) subject to the control and direction of the BCN.<sup>121</sup>

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<sup>115</sup> Section 1 First Schedule Biosafety Act (n103)

<sup>116</sup> Ibid section 20 (2).

<sup>117</sup> Ibid Section 24 (1) Biosafety Act No 7 of 2006) Republic of Namibia.

<sup>118</sup> Ibid section 25 (1).

<sup>119</sup> Ibid section 25 (1).

<sup>120</sup> Ibid section 25 (9).

<sup>121</sup> Ibid section 16.

The BCN comprises seven members appointed by the Commission (with prior approval of the Minister<sup>122</sup>) under the relevant legislation<sup>123</sup>. Such members<sup>124</sup> ‘must be persons bringing skills or experience in the membership of the Council’.<sup>125</sup> Before such appointments, the Commission is required to ‘invite nominations from interested persons and organisations of persons with suitable skills or experience...’ by way of notice in the *Gazette* and in at least two newspapers circulated widely in the country.<sup>126</sup>

The composition of the BCN has four material attributes. First, it represents a reasonable number of varying areas and interests that are relevant to regulation. These include environment issues, public health, food hygiene and food safety, all of which constitute proof that Parliament clearly placed emphasis on the need to protect the environment taking into account human health. These are the two imperatives the precautionary approach seeks to balance under the Protocol.

Representation from areas such as molecular biology; research, science and technology however strongly suggests that the producers of GMOs are well represented. However, lack of representation from stakeholders such as consumers and the public raises more questions than answers, especially in relation to democratic governance. Institutions are not headed by elected representatives. In addition, the GMO controversy is a cross cutting phenomenon that requires participation of all interested or affected people or groups. Moreover, as argued at (6.2.1) the public speaks freely as it is not constrained by any rules of ethics or code of conduct.

Freedom of expression arguably enables the public to openly express its views including raising objections concerning GMOs. Objections may particularly tilt the balance in favour of precautionary measures in decision-making especially where communities are vehemently opposed to GMOs. This researcher submits that lack of representation of consumers and the general public remains a serious

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<sup>122</sup> Ibid section 6 (1).

<sup>123</sup> Research, Science and Technology Act No 23 of 2004 Republic of Namibia.

<sup>124</sup> Appointed from the areas of environmental issues, including environmental assessment; public health issues; including food hygiene and food safety; animal health and welfare or other related agricultural issues; molecular biology; law; research, science and technology; and trade and economy.

<sup>125</sup> Section 6 (2) Biosafety Act (n117).

<sup>126</sup> Ibid section 6 (3).

oversight on the part of the drafters of the Act for which Parliament should take responsibility.

Second, the mandatory requirement of skills or experience<sup>127</sup> as a precondition for appointment to the BCN, is a manifestation of the seriousness with which the Act treats both knowledge and expertise about GMOs as it attempts to enhance the quality of GMO governance. Third, by empowering the Commission to invite nominations from interested persons and people in organisations,<sup>128</sup> the Act seeks to make the appointments to the BCN competitive. It also inculcates a sense of transparency thereby enhancing legitimacy of the appointment process. Fourth, by opening to all Namibians, Parliament did not intend to make GMO governance an exclusive government domain. This is one of the strong attributes of the regime.

In exercising executive authority however, the Minister is mandated to approve nominations<sup>129</sup> to the BCN. Failure by the Act to reserve the power of such approval to Parliament creates an avenue for political interference in an otherwise reasonably democratic process of GMO governance. Another important point relates to refusal by the Minister to grant a permit for an activity which is likely to undermine indigenous knowledge or technology, and /or affect 'the social and economic advancement of people and society, including a particular community'.<sup>130</sup>

The BCN is mandated to perform various functions including requirements to report and make recommendations to the Minister in respect of applications for permits to deal with GMOs or GMO products; provide information and advise to the public in relation to the regulation of GMOs; encourage public participation in decision-making while maintaining confidentiality of information; undertake research in connection with risk assessment and the Biosafety of GMOs; and to be the focal point for purposes of the Protocol. The BCN is also mandated to advise the Minister on 'the effectiveness of the legislative framework for the regulation of GMOs and products of GMOs, including possible amendments of relevant legislation'.<sup>131</sup>

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<sup>127</sup> Section 6 (3) Biosafety Act (n117).

<sup>128</sup> Ibid section 6 (3).

<sup>129</sup> Ibid section 6 (6).

<sup>130</sup> Ibid section 25 (4) (5) Biosafety Act (n117).

<sup>131</sup> Section 15 Biosafety Act (n117).

These functions constitute an indication towards effective regulation of biotechnology in Namibia. However, the powers conferred upon the Minister including those of decision-making<sup>132</sup> on applications for dealings in GMOs, negatively impacts on the role of the BCN in various ways. They deprive the BCN of an important role which it could play on GMO governance as the Minister is the ultimate decision-maker. Further, the immense powers vested in the Minister may complicate and undermine attempts to reconcile the competing interests relevant to regulation discussed in chapter two. As mentioned earlier, the Minister is a political appointee and may have vested political interests in relation to GMOs.

Further the Minister is empowered to 'prescribe exemptions from any of the provisions of this Act in relation to any GMO or GMO products or any class of GMOs or GMO products...or make provision for the granting by the Council of exemptions'.<sup>133</sup> The Act does not provide any reason for granting the Minister such wide powers, nor does it require her/him to consult the BCN or any other person committee or Parliament. These are therefore wide discretionary powers, abuse of which could fundamentally undermine the spirit and purpose of the Act. Should the Minister exempt an applicant from submitting a risk assessment report and a risk management plan, application of precautionary measures could become irrelevant. In addition, exemptions from public consultation could, needless to say, frustrate the democratic aspects of decision-making in the regulation. While exemptions are part of law-making and may be useful, care must be exercised when establishing permissible limits, in a discipline such as biotechnology that is marred in controversy.

### **6.3 Public Participation and the Precautionary Approach**

The precautionary approach is not only normative in nature; it provides a holistic environment of everyday social learning.<sup>134</sup> In that process, public participation reveals the actual instrumental pressures in which the political and economic phenomena play a key role.<sup>135</sup> In attempts to address these pressures, participation can be seen, not only as 'a normatively driven feature of democratic governance, but

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<sup>132</sup> Ibid Section 25 (3).

<sup>133</sup> Ibid section 21 (a) and (b).

<sup>134</sup> Stirling A 'Participation, Precaution and Reflective Governance for Sustainable Development' in Adger N and Jordan A (eds) *Governing Sustainability* (2009) 193-225 at 194.

<sup>135</sup> Ibid.

fundamentally as a means to enhance the relationship between appraisal and wider processes of governance'.<sup>136</sup> Public participation is therefore the key to the implementation of the precautionary approach because of the need for decision-makers to make value judgments when assessing the human and environmental risks of activities in the regulation of biotechnology.<sup>137</sup> The role of the public may include submissions to decision-makers, involvement in administrative hearings, citizen suits, and access to information.<sup>138</sup>

Further, public participation arguably enhances the credibility of the decision-making process. This is partly because successful adoption and use of biotechnologies is mainly attributable to active involvement of scientists, entrepreneurs, financiers, policymakers, journalists and the general public.<sup>139</sup> Such involvement is essential in assessing the functionality of biosafety regimes in the selected countries. This study argues that the extent and quality of such functionality gives rise to an enabling biosafety regime within which efficacy of the precautionary approach may be realised. If it takes place in the early stages of a project Public participation may make implementation of the precautionary approach more meaningful by taking account of views expressed by the public.<sup>140</sup> Such participation may also facilitate more flexible socially responsive research and design modification as the project gets underway, thereby minimizing resistance to technology development.<sup>141</sup>

Early public participation also enables product developers to work in a challenging environment which demands that they address negative sentiments expressed by the public concerning the products and by so doing they may ultimately improve the quality of their products.<sup>142</sup> For example, Germany has become the global leader in the production and use of renewable energy (using

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<sup>136</sup> Stirling A (n134) at 194.

<sup>137</sup> Preston J 'The Role of the Judiciary in promoting Sustainable Development: The Experience of Asia and the Pacific' (2006):39 A paper presented to the Kenya national Judicial Colloquium on Environmental Law Mombasa Kenya 10-13 January 2006 available at [www.lawlink.nsw.gov.au/...Preston/Speech\\_10jan06\\_Preston.pdf](http://www.lawlink.nsw.gov.au/...Preston/Speech_10jan06_Preston.pdf) (accessed 16 August 2010).

<sup>138</sup> Preston J; Bruch C, Coker W and Arsdale C 'Constitutional Environmental Law: Giving Force to Fundamental Principles in Africa' *Columbia Journal of Environmental Law* (2001):131-211 at 183.

<sup>139</sup> Bananuka J 'Biotechnology: Eastern African Perspective o Sustainable Development and Trade Policy (2008) available at [http://ictsd.net/downloads/2008/04/biotech\\_eastern...](http://ictsd.net/downloads/2008/04/biotech_eastern...) (accessed 4 July 2009).

<sup>140</sup> Raffensperger C et al (n11) at 263.

<sup>141</sup> Ibid at 263.

<sup>142</sup> Ibid at 263.

photovoltaic solar panels), mainly by involving people at an early stage thereby making the initiative people driven – initiatives that are supported by credible policy and legislation.<sup>143</sup>

Public participation is also important especially in cases where institutions are powerful and self-centred.<sup>144</sup> Such institutions are often unwilling to accept change; they invariably inhibit or discourage it.<sup>145</sup> Such institutions which the environmental historian Nicholson describes as ‘dead but they won’t lie down’ have a habit of easily dismissing environmental lobby groups thereby responding defensively and negatively towards criticism.<sup>146</sup>

### **6.3.1 Public Participation and GMOs: an International Environmental Law Perspective**

Though non-binding, the Stockholm Declaration proclaimed that citizens, communities, enterprises and institutions must take responsibility for protection of the environment.<sup>147</sup> It further declared that the ‘free flow of up-to-date scientific information...’ was essential to ‘facilitate the solution of environmental problems’.<sup>148</sup> About twenty years later, the Rio Declaration recognised that ‘[e]nvironmental issues are best handled with the participation of all concerned citizens, at the relevant level’.<sup>149</sup> In addition ‘each individual shall have appropriate access to information concerning the environment... and the opportunity to participate in decision-making processes’.<sup>150</sup>

These soft law instruments have materially influenced the development of the jurisprudence on public participation, of which access to information forms an integral part. Both instruments illustrate the need for public involvement in matters concerning environmental protection. Moreover, states are abstract sovereign entities. It is people that must accept responsibility and also take action in order to protect the environment for the benefit of the present and future generations.

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<sup>143</sup> Gosling M ‘Laws put Germany first in renewable energy’ Cape Times 23 February 2010:11.

<sup>144</sup> Nicholson M *The New Environmental Age* (1990):13.

<sup>145</sup> Ibid.

<sup>146</sup> Ibid.

<sup>147</sup> Principle 7 of the Stockholm Declaration available at

<http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97> (accessed 20 March 2010).

<sup>148</sup> Ibid Principle 20.

<sup>149</sup> Principle 10 of the Rio Declaration 31 *International legal Materials* (1992):876.

<sup>150</sup> Ibid Principle 10.

The Convention on Biological Diversity provides for public education and awareness by requiring Parties to 'promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity...'<sup>151</sup> It further obligates Parties to cooperate with other states in developing educational and public awareness programmes with respect to conservation and sustainable use of biological diversity.<sup>152</sup> This researcher argues that promotion of an understanding of the importance of and the need to conserve biological diversity will remain abstract unless the people who have gained such knowledge (or part of it) are involved in the decision-making process. Public involvement inculcates a sense of ownership which in turn will enhance acceptance of responsibility—an essential ingredient of achieving appropriate levels of environmental protection.

The Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters recognises the concern of the public about the deliberate release of GMOs into the environment. It reiterates the 'need for increased transparency and greater public participation in decision-making in their regulation.'<sup>153</sup> Its objective is to ensure that parties guarantee the right of access to information, public participation and access to justice.<sup>154</sup> While it is a regional instrument<sup>155</sup>, the Aarhus Convention is a milestone on issues relating to access to information, public participation and in turn, accountability as well as transparency in decision-making. The selected countries are not parties, but its object and spirit applies equally to them in respect of environmental decision-making, in particular, the regulation of GMOs.

Public participation under the Cartagena Protocol has two important obligations for parties: to consult and to inform the public the results of the decisions made.<sup>156</sup> Concerning both obligations the Protocol requires parties to 'consult the public in the decision-making process regarding living modified organisms and shall make the results of such decisions available to the public, while respecting confidential information in accordance with Article 21'.

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<sup>151</sup> Article 13 of the Convention on Biological Diversity 31 *International Legal Materials* (1992): 822.

<sup>152</sup> *Ibid* Article 13.

<sup>153</sup> Adopted at Aarhus Denmark on 25 June 1998 available at [www.moew.government.bg/aarhus/text\\_e.html](http://www.moew.government.bg/aarhus/text_e.html) (accessed 21 June 2011).

<sup>154</sup> *Ibid* article 1.

<sup>155</sup> Primarily for Europe and Central Asia. The European Union is also a party.

<sup>156</sup> Article 23 of the Cartagena Protocol (n3).

Consultation arguably serves a meaningful purpose in an environment where member states fulfil their obligation under Art. 23 of the Protocol to 'promote and facilitate public awareness, education and participation' concerning the safe transfer, handling and use of living modified organisms (LMOs). By placing this obligation on the Parties, the Protocol recognises that public understanding and education concerning issues of biosafety in relation to LMOs is an essential component of public participation. In order for people to make informed decisions concerning issues of biosafety, those responsible for decision-making should understand what people know and what people want to know rather than what such decision-makers seek to impose on the people.

By requiring the Parties to make the results of decision-making known to the public, the Protocol obliges transparency in decision-making. This is reasonable as compliance with such an obligation is the only way the public may know whether and the extent to which, their views were taken into account in decision-making. Should such views not be taken into account the public will at least know some of the reasons why not. In addition, where the public considers that its participation did not make much difference, the legitimacy of such decisions and future participation by the public in the process will significantly be affected.<sup>157</sup> Objective balancing of views expressed by the public and the reasons given for rejecting such views or parts of them, will enable one to assess levels in both transparency of both the institutions responsible for decision-making and the decision-making process.

### **6.3.3 Public Participation, GMOs and Decision-making**

Owing to divergences in opinions concerning agricultural biotechnology, public participation, as discussed here, neither implies nor means consensus. It means that stakeholders, including the affected or interested public are given a chance to express their views concerning GMOs meaningfully. Equally important (and as discussed in chapter two) GMOs, in one way or the other, interfere with the traditional life of the people, either through farming methods or the food people eat. For example, the farming methods may be affected in cases where farmers may not

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<sup>157</sup> Glover D, Keeley J, Newell and McGee R 'Public Participation and the Cartagena Protocol on Biosafety' IDS Main Report (2003):34 available at [http://www.bisafety-info.net/file\\_dir/596248857a](http://www.bisafety-info.net/file_dir/596248857a) (accessed on 28 July 2010).

be allowed to plant seed from their previous harvests by patent holders of the GM seeds in question. It is necessary that the people whose traditional lives are being affected should be given an opportunity to participate in deciding-making.<sup>158</sup>

Over the years, public participation is the hallmark of democratic societies, in which elected leaders enact legislation and make decisions that bind the people.<sup>159</sup> The legitimacy of such decisions (including unpopular decisions) derives not so much from their content but rather from the fact that such leaders are elected.<sup>160</sup> Issues of legitimacy become complicated due to delegation of decision-making to government agencies or the exercise of statutory power by regulatory bodies that are neither elected nor directly accountable to the democratic process.<sup>161</sup> Public participation becomes an important mechanism of bridging the gap between government agencies and the general public in many areas including the regulation of biotechnology. In addition, a key objective underlying participatory rights is to enhance the credibility of decision-making through improving the quality or range of the ideals and information upon which decisions are based.<sup>162</sup>

Aware of the need to fill such a gap, among other considerations, the selected countries have made provision for public participation in varying formulations discussed below. Critical questions that arise include how to ensure that the views expressed by the public are taken into account in decision-making. Such views may arguably influence or even require the taking into account of precautionary measures. There may be variations from one country to the other regarding the manner and extent of participation but the underlying principle is that members of the public are hardly bound by any codes or rules of conduct. They can express their views freely apart from any legal limitations on freedom of speech that may exist.

By taking into account the views (most of which may be informed by criteria other than scientific considerations) expressed by various stakeholders, decision-makers may possibly extend the application of the precautionary approach beyond

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<sup>158</sup> Sen A *Development as Freedom* (2000):31.

<sup>159</sup> Galligan D (n34) at 342.

<sup>160</sup> Galligan D (n34) at 342.

<sup>161</sup> *Ibid.*

<sup>162</sup> Kirk E, and Blackstock K' Enhanced Decision-making: Balancing Public Participation Against "Better Regulation" in British Environmental Regimes' *Journal of Environmental Law* 23(1) (2011) 97-116 at 97.

the limits of scientific uncertainty. To the extent that application of the approach is derived from or is partly be influenced by the views of the public, decision-making may become more credible. Such legitimacy could significantly minimise apparent scepticism of proponents of biotechnology towards the precautionary approach.

Whether, and the extent to which, the selected countries meaningfully embrace public involvement in their biosafety legislation is essential in facilitating application of the precautionary approach. Two aspects of public involvement, ie access to information and public participation are discussed below. The third aspect—access to justice, falls outside the scope of this study.

#### **6.3.4 Public Participation and GMO Governance in South Africa**

The GMO Act has no substantive provisions concerning public participation or consultation.<sup>163</sup> In relation to decision-making however, it provides that '[t]he Council may...before making a decision regarding an application submitted in terms of this section consider...public input...' Other factors to be considered include the environmental impact assessment and the potential socio-economic impact of such activities. These two factors are also discretionary. In addition, the Act does not define 'public input' or give examples as to what it entails. Even worse, the Regulations<sup>164</sup> are also silent on this issue but instead provide for public notification<sup>165</sup> that may trigger public input.

The Regulations<sup>166</sup> under the GMO Act contain some provisions concerning public notification. In respect of a proposed release or commodity clearance of GMOs, they require that, '[p]ublic notification shall be in the form of a notice published in the print media informing the public of the application'.<sup>167</sup> The applicant

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<sup>163</sup> In contrast, section 53 of the National Environmental Management: Integrated Coastal Management Act No.24 of 2008 Republic of South Africa dedicates part 5 to public participation. It contains mandatory provisions that obligate the Minister, MEC or other person who exercises power under the Act to consult with the relevant ministries, local government bodies and also publish a notice in the Gazette and provide 'sufficient information to enable members of the public to submit representations or objections'.

<sup>164</sup> Regulations NO R. 120 Gazette Notice No. 32966 of 26 February 2010 (N71) made under section 20 of the Genetically Modified Organisms Act No 15 of 1997 (N58).

<sup>165</sup> Ibid Regulation 9.

<sup>166</sup> R 106 Government Gazette Notice No. 34020 of 29 March 2011, Republic of South Africa made under section 20 of the Genetically Modified Organisms Act No 15 of 1997. They took effect on 1 April 2011.

<sup>167</sup> Ibid Regulation (9) (1).

is required to publish the notice in at least three national newspapers in respect of a proposed general or commodity release and in at least two (2) newspapers circulating in the immediate area and 'one (1) newspapers' circulating nationally.<sup>168</sup> Where no newspapers circulate in the immediate area of the proposed trial release, the applicant 'shall inform the public through other means of effective communication ... record of such proceedings must be provided to the Registrar as proof'.<sup>169</sup>

The applicant must then submit to the registrar one hard copy and one electronic copy of the public notice within seven (7) days from the date of its publication.<sup>170</sup> The public notice published by the applicant must contain a request that interested parties submit comments or objections in connection with the application within a period not less than 30 days after the date of the last publication in the media.<sup>171</sup> Such comments or objections are to be submitted to the registrar.<sup>172</sup>

Essentially, the GMO Act and these subsidiary rules, provide the fabric for public participation. Such participation derives from, and it is triggered by situations where there is a proposed release of a GMO. This has two main implications. The first is that failure to provide substantively for public participation means that the first time the public or interested parties may learn about a GMO is when a project is about to commence. It would make a difference if the Act had general provisions for public participation and awareness, thus making transparency about GMOs obligatory and a continuous process.

Second, the Regulations emphasise the immediate area where a release is to take place. This may provide awareness to the people in the vicinity the area in question. The oversight however is that although cultivation of GM food may take place in a particular area, distribution and consumption may be nationwide. This makes the requirement for effective communication other than by newspapers superfluous. This is because the obligation for media publication is nationwide. Restricting effective communication to the immediate area where the release is intended to take place creates disparity since people in other areas where no

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<sup>168</sup> Ibid Regulation (9) (2).

<sup>169</sup> Regulation (9) (3) R 106 Government Gazette Notice No. 34020 of 29 March 2011 (n166).

<sup>170</sup> Ibid Regulation (9) (4).

<sup>171</sup> Ibid Regulation (9) (5) (f).

<sup>172</sup> Ibid Regulation 9 (4).

newspapers are available will not have an opportunity to make comments or raise objections. If distribution and consumption are nationwide, the release should be interpreted as being nationwide with the result that consultation should be wider than the immediate area where the release is to take place.

The Regulations' failure to provide criteria for determining what constitutes effective communication is an oversight that makes the provision vague. Effective communication is a complicated phenomenon in itself and another question is effective in whose view? In the event of a challenge, effectiveness will be decided by a court. The Regulations create loopholes as well as ambiguity because, even if the records of an alternative means of effective communication are sent to the Registrar, the test for determining the effectiveness of such communication remains subjective. Vague as it may be, the provision could be used to call public hearings. In such hearings the people could freely, or through appointed experts, express their views. Even if such a hearing may not necessarily satisfy fully the requirements for effective participation, it is a step in the right direction.

The comments of, or objections raised by the public or other stakeholder could dictate that more appropriate or additional measures on risk management be taken. However, neither the Act nor the Regulations make provision concerning feedback in relation to such comments or objections. Regulation 3(8) requires the Council to 'provide reasons for any decision taken...' There is no provision as to how the interested or affected people and the public may become aware of a decision made by the Council under Regulation 3(7). It would be difficult (or impossible) for the public to know whether and the extent to which their comments or objections were taken into account.

The right to be informed of decisions made by the Council has another dimension. The Act provides that '[t]he liability for damage caused by activities relating to a genetically modified organism shall be borne by...user concerned'<sup>173</sup> and user is defined as 'a person who conducts an activity with a genetically modified organism'<sup>174</sup> This study argues that the majority of users are the peasant farmers most of whom have insufficient or no knowledge concerning potential harm

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<sup>173</sup> Section 17 (2) Genetically Modified Organisms Act (n58).

<sup>174</sup> Ibid Section1.

associated with GMOs. These are the same people the Act appears to preclude from knowing the decisions made by the Council. They are also people who cannot afford to appeal, to which the discussion now turns.

Appeals are important as an appellant may successfully seek the taking of precautionary measures if she/he establishes scientific uncertainty. Lack of knowledge (mentioned above) about decisions made by the Council may negatively impact on appeals. The Act provides thus '[a] person who feels aggrieved by any decision or action taken ... may ... appeal against such decision or action to the Minister...'<sup>175</sup> By granting a right of appeal to any person aggrieved (including the public) yet failing to make provision for the public and other stakeholders to be informed of decisions made by the Council, the Act is deficient, and at the very least, unrealistic.

The fees payable for appeals are also an impediment to meaningful public participation. Whereas an import/ export licence attracts fees of R 400.00 and contained use R 1180.00, an appeal costs R 4280.00.<sup>176</sup> This does not include legal fees, if any, as there is a right to legal representation provided by the Regulations.<sup>177</sup> In so far as it may be desirable to promote research in GMOs, the high fees chargeable for appeals, is inhibitive against victims. It defeats logic to expect a person who cannot afford money to buy a newspaper (where a public notification is to be published) to raise a huge sum of money for an appeal. Presumably, the high fees payable for appeals is intended to discourage or at least minimise the lodging of such appeals— which is a process in which the public or affected parties may participate by seeking judicial review of decisions. This raises questions of access to justice that fall outside the scope of this study.

While the GMO Act is unsatisfactory on public participation, its provisions on notification are fairly elaborate. The provisions extending notification to areas where no newspapers are available suggest that Parliament sought to address the plight of the communities and other stakeholders who live in almost inaccessible areas. Such people also have few financial resources. The Act also provides for appeals if an

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<sup>175</sup> Ibid Section 19 (1).

<sup>176</sup> Table 2 of the Regulations R 106 Government Gazette Notice No. 34020 of 29 March 2011 (n166).

<sup>177</sup> Ibid Regulation 11(8).

applicant is not satisfied. The requirement that the Council and the Appeal Board give reasons<sup>178</sup> for decisions enhances the credibility of such decisions.

### 6.3.5 Kenya

In the regulation of biotechnology, public participation is provided for in two interrelated situations: where a person submits an application seeking introduction of a GMO into the environment;<sup>179</sup> and in decision-making.<sup>180</sup> Upon receipt of an application for introduction of a GMO into the environment, the Authority shall:

‘publish in the Gazette, at least two newspapers with nationwide circulation, and in an appropriate electronic media, notice concerning any application for release into the environment of a genetically modified organism, for the general information of the public’<sup>181</sup>

Within thirty days from the date of publication of the notice, any person may ‘make representations to the Authority regarding such an application, and the Authority shall address appropriately any relevant concerns raised by such a person’.<sup>182</sup>

It is worth noting that National Biosafety Authority (NBAK) is responsible for: publishing the notices and addressing ‘appropriately any relevant concerns’ raised by the person concern<sup>183</sup> and ultimately determining the application by taking into account, among other things, ‘any relevant representations submitted by members of the public’. This study argues that even on this point alone, public participation in issues of biosafety in Kenya is placed under the direction, scrutiny and control of the NBAK. By so doing Parliament seems to have flagrantly yet regrettably ignored the apparent conflict of interest the NBAK will undoubtedly have. Playing the three roles of receiving representations, addressing them and taking submissions by the public into account in decision-making, in an environment of conflicting interests may defeat the purposes of public participation in GMO governance in Kenya. A critical question that seems to have escaped the attention of Parliament (assuming that Parliament

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<sup>178</sup> Regulation 3(8) and 11 (11) of Regulations R 106 Government Gazette Notice No. 34020 of 29 March 2011 (n166).

<sup>179</sup> Section 19 (1) and (2) Biosafety Act (n103).

<sup>180</sup> Ibid Section 29 (1) (d).

<sup>181</sup> Ibid Section 29 (4).

<sup>182</sup> Ibid Section 29 (5).

<sup>183</sup> Section (19) (5) Biosafety Act (n103).

was keen about it), and remains unanswered, is how to ensure transparency of the public participation process.

In relation to public participation, the Biosafety Act of Kenya violates a cardinal principle of law which entails that justice done must be seen to be done. The NBA publishes the notices, addresses concerns raised by the public, and determines the application for introduction of a GMO into the environment within a set up where only the applicant is entitled to reasons for rejection of the application.<sup>184</sup> The result is that the public is effectively deprived of the right to know which representations were made, whether and the extent to which such representations were taken into account in decision-making as the NBAK is not under any legal obligation to provide a feed back to the public.

Concerning publication of the notice in at least two newspapers with nationwide circulation and in an appropriate electronic media, two observations based on accessibility, cost and language may suffice. On accessibility circulation of newspapers in many rural areas is still a problem for two main reasons. Road transport - the most common and fairly affordable means of transport - is poor, with dilapidated roads some of which are impassable during heavy rains that occasionally sweep away some bridges in rural areas.<sup>185</sup> Newspapers are hardly taken to such remote yet fertile agricultural areas with a high peasant population. Moreover it is widely known that poor infrastructure is a major barrier in African agriculture. Poor infrastructure in turn becomes a key factor supporting the claim of this researcher, at least in part, that GMOs are intended to serve the interests of large scale farmers who are, in most cases, served with a good road network.

Poor people who have no food will hardly think of nor would they have money for newspapers. In addition, many people may listen to the radio, yet the language of communication can be a barrier. Even if the language was to be a local one, translating scientific terminology such as 'genetically modified crops' accurately into

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<sup>184</sup> Section (30) (3).Biosafety Act (n103).Ibid

<sup>185</sup> In Kenya for example heavy rains washed away some of the bridges within the Rift Valley in October 2009 making it difficult for primary school examinations to be transported to exam centres. See The Standard on line (Kenya) of 11 November 2008 available at [www.standard.net](http://www.standard.net) (accessed on 11 November 2008).

a local language is almost impossible. In Kenya for example, GM seeds are referred to as *mbegu mpya* meaning new seeds in Kiswahili.<sup>186</sup>

Distortions associated with language are likely to lead the public to the idea that GM crops and food are merely a new brand intended to increase farm yields. This may be true but, as argued earlier, it lacks objectivity. In addition poor people find it difficult to understand policy and legal issues concerning biotechnology, a factor that is exacerbated by absence of trust in legal systems.<sup>187</sup> Thus the public is likely to have an idea about the potential risks and forces that underpin the regulation of such crops – a factor that may impede its awareness about and the need for precautionary measures in decision-making.

Concerning decision-making, the NBAK is required to take into account ‘any relevant representations submitted by members of the public’.<sup>188</sup> While this is mandatory, the discretionary power of determining what is relevant makes sense, since not everything the public may say is relevant or important. Concerning public comments however the Act provides for ‘any person to submit written comments on a proposed decision for any application for placing a genetically modified organism on the market, within thirty days from the date the notice is posted’.<sup>189</sup>

The Biosafety Act of Kenya requires the NBAK to ‘give notice in the Gazette of all decisions made regarding applications for approval’.<sup>190</sup> The comments are of course restricted to applications for the release of GMOs onto the market, yet one wonders what role such comments would play in relation to a decision that has already been made. Even if they were useful in a review of the NBAK’s decision, a review may only take place when the Council receives ‘significant new scientific information relating to biosafety of the genetically modified organism or contained use activity involved’.<sup>191</sup> Such information applies to scientific issues many of which the public can hardly be aware of. Moreover obtaining such information requires time, cost and expertise – matters that arguably go beyond the ability of individuals and the public to procure. The Biosafety Act neither makes provision for the contents

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<sup>186</sup> One of the national languages.

<sup>187</sup> Glover D *et al* (n157) at 35.

<sup>188</sup> Section (29) (1) (d) Biosafety Act (n103).

<sup>189</sup> Section 54 (4) biosafety Act (n103).

<sup>190</sup> *Ibid* (n188) Section 54 (2).

<sup>191</sup> *Ibid* (n188) Section 33 (1).

of the notice to be published nor does it require it to be placed at or near the site of intended release of the GMO.

The Regulations<sup>192</sup> just published under the Biosafety Act contain no provisions on public participation meaning that only the parent Act applies to such participation. The only relevant provision is the one relating to unauthorised importation of GMOs. Regulation 5 (a) and (b) merely provide discretionary power for the NBA to inform and advise the public in relation to unauthorised entry of a GMO into the country.<sup>193</sup>

In contrast to the Regulations under the Biosafety Act of Kenya, the Regulations under the GMO Act of South Africa (discussed at 6.3.4), provide an elaborate procedure for public participation, meaning that South Africa is progressively enhancing the credibility of its legislation. One would expect that Kenya should have learnt from South Africa the need to adopt credible biosafety legislation right from the start, instead of adopting a regime that is widely believed to be weak and start amending it later.

In 2008, the government launched a six year (2008-2013) National Biotechnology Awareness Strategy (BioAWARE-Kenya) aimed at improving the public understanding of biotechnology.<sup>194</sup> Public awareness and dialogue encompassing all stakeholders may change the negative perceptions on the part of the public from viewing regulation as a domain of scientists to a negotiating tool between science and politics.<sup>195</sup> While the government had good intentions, the drafting process of the Biosafety Act was seen by sections of the civil society as allegedly 'a boardroom process with inadequate representation of stakeholders'.<sup>196</sup> These views may be those of opponents and thus subjective but they indicative lack of effective implementation of the Strategy.<sup>197</sup>

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<sup>192</sup> The Regulations made under section 51 of the Biosafety Act No 2 of 2009 Republic of Kenya contained in Gazette Supplement Legal Notice No 98 of 15 August 2011. See the analysis at (7.3.1.2).

<sup>193</sup> See the analysis at (7.3.1.2).

<sup>194</sup> See 'Kenya Launches National Biotechnology Awareness Strategy' available at <http://www.aatf-africa.org/userfiles/bioawarelaunch.pdf> (accessed 22 April 2010).

<sup>195</sup> Kingiri A (n32) at 78.

<sup>196</sup> Kingiri A (n32) at 74.

<sup>197</sup> See the analysis at (7.3.2.1).

### 6.3.6 Zambia

The Biosafety Act of Zambia provides 'The Authority shall consult the public prior to the grant of any authorization under this Part, in such manner and within such period as may be prescribed'.<sup>198</sup> Further, the 'Authority shall, upon receipt of an application and the information referred in section thirteen, avail the information to the public and any relevant government institution'.<sup>199</sup>

Section thirteen provides for a mandatory notification procedure that includes requiring an applicant to provide detailed information as provided in the Second and Third Schedules. Such information includes the qualifications of the personnel involved in carrying out the release of GMOs,<sup>200</sup> potential environmental impact,<sup>201</sup> health considerations,<sup>202</sup> the emergency response plan<sup>203</sup> and labelling which must specify any known reaction or allergies or other side-effect.<sup>204</sup> Further information required by section thirteen includes information on previous approvals and rejections of GMOs or their products,<sup>205</sup> a declaration confirming that the information provided is correct<sup>206</sup> and a clear environmental monitoring plan.<sup>207</sup>

Of importance also is the mandatory obligation that '[t]he Authority shall, within such period as may be prescribed, inform the applicant and the public of its decision'.<sup>208</sup> The Act further empowers the Minister in consultation the NBAZ to make regulations providing for matters that include the procedure and manner of consulting or making information available to the members of the public<sup>209</sup> and also on the conduct of public hearings.<sup>210</sup>

The Biosafety Act of Zambia provides for an elaborate notification procedure that has material implications both for the public and the applicant. It gives the public

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<sup>198</sup> Section 14 (1) Biosafety Act (n103).

<sup>199</sup> Ibid Section 14 (2).

<sup>200</sup> Second Schedule Biosafety Act (n103).

<sup>201</sup> Ibid.

<sup>202</sup> Ibid.

<sup>203</sup> Ibid.

<sup>204</sup> Third Schedule Biosafety Act (n103).

<sup>205</sup> Ibid section 13(d).

<sup>206</sup> Ibid Section 13 (h).

<sup>207</sup> Ibid Section 13 (i).

<sup>208</sup> Ibid Section 16 (1).

<sup>209</sup> Section 15 (a) Biosafety Act (n103).

<sup>210</sup> Ibid Section 15 (c).

greater recognition of its role in the regulation. Such recognition and role, including the immense amount of information that must be made available to the public, enhances public awareness, especially concerning the potential harm of GMOs. The detailed mandatory requirements in section thirteen and the Second and Third Schedules in particular, enable the public to access a wide range of scientific information about GMOs. Relying on such detailed information, the public is better placed to express its views as may be appropriate including demanding additional precautionary measures.

Mandatory requirements such as '[t]he Authority shall, in making or reviewing its decision regarding any application, take into account the views or concerns of the public, any relevant institution or other stakeholder made in accordance with the provisions of this Act',<sup>211</sup> are arguably intended to ensure that the actors representing the varying interests are heard and their views taken into account in decision-making. Taking these views into account is particularly important, not only because it may minimise negative perceptions as at (discussed at 2.6.5) concerning GMOs but also because it enhances the effectiveness, and hence the credibility, of the decision-making process. Such views are not only geared towards satisfying democratic considerations in the regulation but also in regulating modern (and hence civilized) societies in general.

Concerning appeals only the applicant has the right to appeal.<sup>212</sup> Thus the Act excludes other stakeholders, including the public, from appealing against a decision of the NBAZ. Enacting an elaborate biosafety regime that vehemently promotes public participation, yet failing to grant the public or other interested or affected party the right to appeal remains a serious flaw (on the part of Parliament) that erodes any internal checks and balances the Act seeks to embrace. Since the NBAZ is required to consult the public,<sup>213</sup> take into account its views or concerns in decision-making<sup>214</sup> and inform it of its decision,<sup>215</sup> it is essential that aggrieved persons be granted a right to appeal against decisions of the NBAZ. The requirement to take views or concerns into account is mandatory thereby enabling the public to play a

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<sup>211</sup> Section 14 (5) Biosafety Act (n103).

<sup>212</sup> Ibid section 20 (1).

<sup>213</sup> Section 14 (1).

<sup>214</sup> Ibid section 14 (5).

<sup>215</sup> Ibid section 16 (1).

crucial role in decision-making. Granting the public greater recognition in that process is logical, yet failure to grant it a right to appeal is not reasonable.

The Act apparently places the applicant - and by necessary implication the proponents of biotechnology - in an immensely cumbersome and seemingly weak position. The notification procedure contains several requirements that may, more often than not, scare and subsequently discourage potential applicants by reason of the apparent high costs involved and the time required to gather and compile all the detailed information required in the Second and Third schedules. Of course the Act did not intend the applicant to provide information that she/he is not capable of accessing as some of the required information constitutes an integral part of risk assessment provided for in the Fourth Schedule. Yet genetic engineering being a technology founded on scientific experiments characterised by scientific uncertainty which the precautionary approach seeks to address, it is unrealistic and possibly unfair to expect the applicant to present GMOs – organisms whose safety is contested globally - as extremely safe. Moreover, the Protocol seeks to achieve an adequate level of protection of the environment and human health using the precautionary approach as the minimum guiding tool.

In essence, the Act takes an approach that is significantly protectionist of the environment and human health. By empowering the general public in the manner it does, it seeks to ensure that GMOs are subjected to rigorous regulation. As a result, then, it is tenable to assert that Parliament seems to have said ‘yes’ for ‘NO’ to GMOs in Zambia.

### **6.3.7 Namibia**

Save for the exemptions provided for in the Biosafety Act.<sup>216</sup> ‘[a]person must not deal with a GMO or GMO product unless... the person is authorised by a permit issued under this Act to deal with the GMO or GMO product’.<sup>217</sup> In considering an application for a permit the BCN ‘may take any action it considers appropriate’ ... including appointing any person or committee of persons to carry out an

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<sup>216</sup> Section 21 of the Act empowers the Minister to ‘prescribe exemptions from any of the provisions of this Act in relation to any GMO or GMO products or class of GMOs or GMO products...’ or make provision empowering the BCN to grant such exemptions.

<sup>217</sup> Section 20 (1) (a) Biosafety Act (n117).

investigation, including a process of public consultation'.<sup>218</sup> Such action may also include 'holding a public hearing'.<sup>219</sup> Where a public hearing is to be held, the Registrar is required to issue a notice at least 14 days before the date of the public hearing - such a notice shall be issued in writing to the applicant and to each person from whom a submission was received; the notice shall also be published in at least two newspapers widely circulated in Namibia.<sup>220</sup> The notice must specify the date, time and place of the public hearing and must also contain a brief description of the nature of the application.<sup>221</sup>

Thus under the Act, public consultation is discretionary. It is part of the process of investigation to be carried out by the person or committee of persons appointed by the BCN. Requiring such a person or committee of persons to report to the BCN on matters including those concerning the application, the risk assessment and the risk management plan,<sup>222</sup> means that the public is entitled to make submissions or comments on a wide range of aspects concerning biosafety. For example a risk management plan is a mechanism of which precautionary measures form an integral part. By giving an opportunity to a third party comprising of a person or committee of persons, to report to the BCN on matters concerning the risk management plan, it is tenable to argue that the Act seeks to subject potential risks associated with GMOs to independent review before a decision is made. Such a process may to some extent enhance objectivity of GMO governance in Namibia.

Having given the BCN the power to delegate duties such as public consultation to a person or a committee of persons, the Act neither creates a relationship between public consultation and risk assessment together with the risk management plan nor does it specify at what stage such public consultation may be carried out. There is no dispute that risk assessment - if carried out objectively – may determine potential harm of GMOs to the environment and human health.<sup>223</sup> It

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<sup>218</sup> Section 24 (1) (b) Biosafety Act (n117).

<sup>219</sup> Ibid section 24 (1) (c).

<sup>220</sup> Ibid section 24 (2).

<sup>221</sup> Ibid section 24 (3) (a) and (b).

<sup>222</sup> Section 24 (1) (b) Biosafety Act Republic of Namibia (n117).

<sup>223</sup> Ibid section 23 (2) (b) provides thus 'in preparing the risk assessment report, take into account the risks that the type of dealings proposed to be authorised by the permit may pose to the health and safety of humans or animals or to the environment'.

follows that the risk assessment report and the risk management plan<sup>224</sup> should be accessible to the public to enable it to make informed comments and submissions. The same argument applies to the holding of a public hearing by the BCN.

Such public hearings will serve a meaningful purpose only when the public is, at least, vaguely aware of any potential harm stated in the risk assessment report and the proposed risk management plan. This argument may not be acceptable to stakeholders who are keen to introduce the GMO as far as possible without undue delay, thus raising the critical question whether the report and the plan are public documents? In the absence of any provisions in the Protocol domestic legislation making such report and plan confidential documents, this researcher submits that such report and plan are public documents. Thus all stakeholders including the public are entitled to inspect them and make such comments as may be appropriate.

It is partly by making comments on the report and plan that the public may make meaningful contributions to and feel involved in regulation. Moreover, the report of the BCN to the Minister must obviously reflect what is contained in the report, which forms the basis of the plan. Since the law is silent on the stage at which public consultation is to be carried out, should the BCN conduct such consultation without giving the public an opportunity to access the report and the plan such action would be inconsistent with the tenets of transparency and could be somewhat discriminatory.

Carrying out public consultation without making available the report and the plan – even in summary form – to the public, would be tantamount to asking it to comment on issues concerning human health and the environment, of which issues it is not aware and probably does not sufficiently understand. This would raise serious doubts on the credibility of the public consultation process. An important question would for example be whether public participation is for ‘rubber stamp’ purposes or whether it serves legally recognised purposes?

This thesis argues that public participation can only serve legitimate purposes when conducted in an environment of openness and transparency. This would give the public an opportunity to access the report, which may enable it to make

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<sup>224</sup> Section 23 Biosafety Act (n117).

submissions and express opinions on the precautionary measures proposed in the plan. Further in relation to the holding of a public hearing, the Registrar is required to issue a notice in terms of s. 24 (2) which among other things contains 'a brief description of the nature of the application'. The concern of this researcher is that this provision is lacking as it does not specifically provide for - even briefly - the benefits and potential harm of such GMO. Moreover the application must, where required, be accompanied by a risk assessment report and a risk management plan.<sup>225</sup> By the time the Registrar issues the notice to the applicant, those who made submissions and to the general public, s/he is already aware of any potential harm and how the plan addresses such harm. Transparency entails that such information be conveyed to the general public in the notice issued by the Registrar. This researcher takes the view that failure by the Act to provide for information on benefits and potential risks in the notice is inconsistent with the transparency and unfair. The Act does not prohibit anybody from carrying out an independent risk assessment but this may be costly and time consuming.

The wide discretion of the Minister to make exemptions discussed at (6... above) is a factor that may immensely and negatively impact on public participation. For example should the Minister make or cause exemptions relating to the appointing of any person, or committee of persons, to carry out an investigation, including a process of public consultation, or to the holding of a public hearing, the democratic aspects of regulation would not only be ignored but the decision-making process as a whole would lack legitimacy – an essential component of credibility.

The Act does not make provision for the public to be informed of the decision made by the Minister on an application to deal with GMOs or any GMO products. It provides '[u]pon deciding an application for the issuance of a permit, the Minister must in writing notify the applicant and the Council of his or her decision and, if the application is refused, state the reasons for the refusal'.<sup>226</sup> It appears unreasonable to seek the views of the public and deny them the right to know the decision made on the application. Such denial undermines the public's and other stakeholder's willingness and motivation to attend future public hearings or make submissions - unless of course that was the hidden intention in the Act. Failure of the public to

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<sup>225</sup> Section 22 (1) (b) Biosafety Act (n117).

<sup>226</sup> Section 25 (8) Biosafety Act Republic of Namibia (n117).

participate in future public hearings or make submissions is a sure way of ensuring that the public does not raise issues which could dictate application of precautionary or additional precautionary measures.

#### **6.4 Access to Information and the Precautionary Approach are Interdependent**

Access to information may be regarded as a prerequisite for public involvement in decision-making.<sup>227</sup> It promotes accountability, minimises corruption and is an essential component of good governance.<sup>228</sup> Three main reasons make access to information held by government compelling. First many governments habitually tend to conceal information from the public (even if such information is not legally part of the state secrets) making abuse difficult to determine. Second, insufficient accountability to the public by government contributes to lack of transparency on its part and it negatively impacts on good governance. Third, access to information enables the public to assert their right to live in a healthy and clean environment and also to observe its duty to protect the environment.<sup>229</sup>

Access to information held by the private sector is also crucial because most of the available scientific information relating to GMOs is in the possession of corporate and research institutions.<sup>230</sup> Consistent with the discussion in chapter seven, the intentions of such entities are invariably questioned. They are seen as having vested financial interests by reason of which they constantly seek to ensure that GMOs are viewed as positive contributions to the well-being of humanity.<sup>231</sup>

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<sup>227</sup> Holder J and Lee M *Environmental Protection, Law and Policy* (2007):101.

<sup>228</sup> See 'A Haze of Secrecy: Access to Environmental Information in Malaysia' (2007) Article 19 ISBN 978-1-902598-86-4 available at <http://www.article19.org/pdfs/publications/malaysia-a-haze-of-secrecy.pdf>.

<sup>229</sup> The preambular paragraphs of the Aarhus Convention on Access to Information, Public Participation in Decision-making and access to Justice in Environmental Matters adopted at Aarhus Denmark on 25 June 1998 available at [www.moew.government.bg/aarhus/text\\_e.html](http://www.moew.government.bg/aarhus/text_e.html) (accessed 21 June 2011).

<sup>230</sup> Young T 'Genetically Modified Organisms and Biosafety: A Background Paper for Decision-makers and Others to Assist in Consideration of GMO issues' (2004):10 The World Conservation Union (IUCN) available at <http://data.iucn.org/dbtw-wpd/edocs/PGC-001.pdf> (accessed 23 October 2009).

<sup>231</sup> Ibid.

Information and data are power.<sup>232</sup> Whoever has one of them, or both, has the power and ability to influence and possibly (indirectly) manipulate the decision-making process. Thus, insufficient data and lack of information are impediments to effective regulation.<sup>233</sup> Possession and control of data and information may, to some extent tend to concentrate power in the hands of a few,<sup>234</sup> but one must, appreciate for example that biotech seed producers are no more selfish than traditional seed producers. Such control leaves many consumers and the general public without 'sufficient power and knowledge' about what they purchase and eat.<sup>235</sup> Such people know very little or nothing concerning GMOs let alone the precautionary approach. In addition, a limited flow of information has a negative impact on transparency.<sup>236</sup> This concept is closely associated with the tenets of governance that include increased participation, accountability, as well as democratic environmental and risk governance.<sup>237</sup>

The avenues of transparency with respect to access to information include continuous information collection; complete and proper organisation of existing data; facilitation of access to information; quick response to demands presented; continual transmission of information data and the option of confirming and discussing the information given.<sup>238</sup> Hence, lack of access to or insufficient information negatively impacts on transparency. Arguably, the right to know is a normative goal that governance by disclosure seeks to achieve

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<sup>232</sup> Finamore B 'The Unprotected Environment: Case Studies Illustrating the Need for New Solutions' *Fordham Law Review* 15 (2004):428-458 at 433.

<sup>233</sup> Lee M 'Beyond Safety? Broadening Scope of Risk Regulation' *62 Current Legal Problems* (2009):249 (242-285).

<sup>234</sup> Bailey R 'Growing a Better Future' (2011):7 A Report prepared for Oxfam International available at [www.oxfam.org/grow](http://www.oxfam.org/grow) (accessed 13 June 2011).

<sup>235</sup> Ibid.

<sup>236</sup> Zedan H 'The Road to the Biosafety Protocol' in Bail C et al *The Cartagena Protocol on Biosafety: Reconciling Trade in Biotechnology with Environment & Development* (2002):23-33 at 25.

<sup>237</sup> Gupta A 'Transparency to the Rescue: Assessing Effectiveness of "Governance by Disclosure"' Global Governance Working paper No 38 (2009) available at <http://www.glogov.org> accessed 2 January 2011.

<sup>238</sup> Machado A 'Information and Environment: The Evolution of Environmental Law' *37(2-3) Environmental Policy and Law* (2007):198-200 at 198.

### 6.4.1 South Africa

The Constitution<sup>239</sup> establishes the right of access to information.<sup>240</sup> It provides that everyone has the right to access 'any information held by the state ... and 'any information held by another person and that is required for the exercise or protection of any rights'.<sup>241</sup> Among other things, the Environmental Management Act (NEMA)<sup>242</sup> requires that '...access to information must be provided in accordance with the law'.<sup>243</sup> Currently, the Promotion of Access to Information Act<sup>244</sup> is the primary piece of legislation that governs access to information. Among other things, seeks to give effect to the constitutional right of access to information and to promote transparency, accountability and effective governance of all public bodies and private bodies.<sup>245</sup>

While access to information is a normative right in South Africa, enactment of the Promotion of Access to Information Act is a manifestation of the political will to safeguard access to information. It is a step forward towards the development of a jurisprudence on such a right. However realisation of the right in a contested area such as biotechnology raises more questions than answers. One such question is whether, and if so, to what extent the GMO Act ensures that interested parties and the general public have access to reasonably sufficient information concerning GMOs.

The GMO Act does not contain specific provisions on access to information. Under the regulations, access to information and public participation are largely intertwined. In the public notification discussed earlier, the notice by the applicant is required to contain information about the name and address of the applicant,<sup>246</sup> objective of the application<sup>247</sup> and a general description of the GMO in question.<sup>248</sup> In

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<sup>239</sup> Act No 108 of 1996 Republic of South Africa.

<sup>240</sup> Article 32 of the Constitution Act No 108 of 1996 Republic of South Africa.

<sup>241</sup> Ibid.

<sup>242</sup> Act No. 107 of 1998.

<sup>243</sup> Section 2 (4) of the National Environmental Management Act No 107 of 1998

<sup>244</sup> No 2 of 2000 Republic of South Africa.

<sup>245</sup> Section 9 (a) and (e) respectively of the Promotion of Access to Information Act No 2 of 2000 Republic of South Africa.

<sup>246</sup> Regulation 9(5) (a) of the Regulations R 106 Government Gazette Notice No. 34020 of 29 March 2011 (n166).

<sup>247</sup> Ibid 9 (5) (b).

<sup>248</sup> Section 9 (5) (c) of the Regulations NO R. 120 Gazette Notice No. 32966 of 26 February 2010 (n71).

addition it may 'where appropriate' provide a description of the place of release, including the town, the size of the release and information concerning the surrounding environment.<sup>249</sup> It must also contain the address of the Registrar to whom comments and objections may be submitted.<sup>250</sup>

Neither the Act, nor the Regulations require the applicant to provide information on any potential harm associated with the GMOs in question in the notification to the public. The applicant is required to provide data on which risk assessment was based<sup>251</sup> and to include measures to manage potential risks identified with a proposed project<sup>252</sup> in the application to the Registrar. There is no requirement that this information be included in the notification to the public. This excludes the general public from readily accessing material information concerning potential harm that would form the basis of comments or objections by interested parties or the general public.

Further, the applicant need only disclose the place of release 'where appropriate' ie where circumstances permit. Appropriateness is an objective term, but the parameters of which may be wide but not unlimited thus admitting considerable discretion in interpretation. The context in which the term has been used by the Act raises a presumption that it is within the applicant's discretion to decide the circumstances in which disclosure is appropriate. In addition, the associated ambiguity defeats the notion of effective communication envisaged by the Regulations. Moreover, one may argue that not knowing where the site(s) is would strengthen the case that the potential risks are high.

Absence of provisions on access to information is, in this researcher's view, part of a concerted effort to adopt legislation that is as permissive as the circumstances allow. In the same vein failure to make specific provisions embracing the precautionary approach was not by oversight but rather a deliberate attempt to minimise what proponents of biotechnology view as barriers to its rapid development. Arguably, the idea is that by keeping GMOs in as much secret as possible, demand for precautionary measures by the public diminishes as well.

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<sup>249</sup> Ibid Regulation 9 (4) (d).

<sup>250</sup> Ibid Regulation 9 (5) (g).

<sup>251</sup> Ibid Regulation 4 (4).

<sup>252</sup> Ibid Regulation 4 (4).

Moreover information is knowledge hence a source of power and control. The less information the applicant releases concerning potential adverse effects the longer the public may remain ignorant to the commercial advantage of the former.

In relation to appeals a person aggrieved by any decision or action taken by the Council, the registrar or an inspector may appeal to the Minister.<sup>253</sup> The appellant is however required by the regulations to state the reference number and the date of the document by means of which such appellant was notified of that decision.<sup>254</sup> This is information members of the public can hardly access mainly because neither the Act nor the regulations require the Council's decision to be made public as opposed to a decision of the Appeal Board which is to be made public within 30 days of the final decision by the Minister.<sup>255</sup>

Problems with access to information concerning GMOs are best illustrated by the *Biowatch case*<sup>256</sup> in which Biowatch (the applicant - a non-governmental organisation) sought on four occasions information that included: whether the first respondent (the Registrar) had any information on the location of field trials; whether any Bt maize (a GMO) had been released; access to a selection of risk assessments in order to determine their adequacy in relation to certain licenses that had been granted; under which legislation field trials licenses had been granted prior to the GMO Act coming into operation; and permission to inspect records regarding compliance with public participation provisions under the GMO Act.<sup>257</sup> Some of the requests had been granted while others such as the location where field trials had been conducted had been refused.<sup>258</sup> Among other things Dunn J held that 'the applicant's right of access to information did not only accrue or crystallize when it launched the present proceedings: its rights accrued or crystallized on each of the

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<sup>253</sup> Section 19 (1) of the GMO Act Republic of South Africa (n58).

<sup>254</sup> Regulation 11 (1) (b) of the Regulations R No 120 under the GMO Act (n71).

<sup>255</sup> Section 19 (6) of the GMO Act Republic of South Africa (n58); Also Regulation 11 (12) of the Regulations NO R. 120 of the Regulations R No 120 under the GMO Act (n71).

<sup>256</sup> *Trustee for the Time being of the Biowatch Trust v Registrar: Genetic resources and others* (2005) (4) SA 111 (T) 112 – 148.

<sup>257</sup> *Ibid* at 112.

<sup>258</sup> *Ibid* at 114.

occasions on which it submitted its requests for information to the Registrar'.<sup>259</sup> The Court further held that:

'the applicant had established that it had a clear right to some of the information to which access was requested; that the Registrar's failure to grant it access to such information as it was legally entitled to constituted a continued infringement of the applicant's rights under s. 32 (1) (a) of the Constitution'.<sup>260</sup>

The applicant was condemned to pay costs to the fourth respondent (Monsanto) by reason of the inept way in which the requests were made and the manner in which the notice of motion was formulated all of which compelled Monsanto as well as the fifth and sixth respondents (Stoneville and D&PL respectively, neither of which sought costs) to come to court to protect their interests.

In setting aside the order as to costs and replacing it with an order compelling the government to pay Biowatch the costs it incurred in the High Court, Sachs J in the Constitutional Court noted that

'The government's duty was to act as impartial steward and not to align itself either with those who had furnished the information or with parties seeking access to it. It was important that the objectivity not only be present, but be seen to be present in circumstances where information related to questions of general public interest and controversy, and there was no lawful ground to withhold it. This required objectivity and distance in respect of any competing private interests that might be involved'.<sup>261</sup>

In the *Biowatch* case part of the information sought by the applicant for example related to access to a selection of risk assessments in order to determine their adequacy in relation to certain licenses that had been granted. Such information would have enabled the applicant, and by extension the public, to know whether the risk assessments in question had identified any potential harm to the environment and humans, and if so, whether appropriate precautionary measures had been put in place and whether the regulatory system was doing its job or not.

Refusal to provide non-confidential information, delay and lack of impartiality in supplying information as well as failure to provide it in full to an interested party, is conduct that creates suspicion, thereby aggravating existing negative public

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<sup>259</sup> Ibid at 113.

<sup>260</sup> Ibid at 115.

<sup>261</sup> *Trustees for the Time being of the Biowatch Trust* (n256) at par 45.

perceptions concerning GMOs. In such circumstances any precautionary measures adopted may become irrelevant due to lack credibility of decision-making institutions, the custodians of information sought.

By aligning itself to biotech companies, the government seems to have formed some kind of 'unholy alliance' not only to continue keeping information secret, but also to frustrate efforts by the public to access such information. Moreover using courts to get information is costly and time consuming. This is unfair especially taking into account acknowledgement by the Minister for Communications that information is power and yet most South Africans have no access to the information.<sup>262</sup>

#### 6.4.2 Kenya

The Constitution<sup>263</sup> provides for the right of 'access to information held by the state'.<sup>264</sup> Access also extends to information held by another person, which information is required for the exercise or protection of any right or fundamental freedom.<sup>265</sup> The state is required to 'publish and publicise any important information affecting the nation'. This is the new Constitution. Many Kenyans believe it was people driven. Promulgated less than a year ago<sup>266</sup>, its implementation is in its infancy. Its success is unpredictable. Currently, the right to access information is only normative. It needs statutory law to provide the necessary details that would make implementation feasible. Absence of a provision requiring the state to enact such legislation places a heavy burden on Courts to formulate the content and significance of the right in more detail. This however depends upon relevant matters being filed in the courts.

The Environmental Management and Co-ordination Act (EMCA)<sup>267</sup> has no specific provisions on access to information. The Authority is however required to cause to be published an environmental impact assessment report for two

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<sup>262</sup> The confirmation was made by Minister Sipwe Nyanda during a live Parliamentary interview on SABC's channel two TV on 21 April 2010 at 8.05 am. The Minister argued that information is power that enables the people to make informed decisions while lack of such access disempowered them.

<sup>263</sup> The Constitution 2010 Republic of Kenya.

<sup>264</sup> Ibid section 35 (1) (a).

<sup>265</sup> The Constitution 2010 Republic of Kenya.

<sup>266</sup> On the 27 August 2010.

<sup>267</sup> No 8 of 1999 Environmental Management and Co-ordination Act No 8 of 1999 Republic of Kenya.

consecutive weeks in the *Gazette* and in a newspaper circulating in the area or proposed area of the project in question.<sup>268</sup> The notice is to contain a summary description of the project,<sup>269</sup> the place where it is to be carried out,<sup>270</sup> the place where the report may be inspected<sup>271</sup> and a time limit not exceeding sixty days for the submission of oral or written comments on the report.<sup>272</sup> The Regulations<sup>273</sup> also provide for a public hearing in which a proponent of a project makes a presentation and responds to presentations at the public hearing.<sup>274</sup> This face to face engagement may result in exchange of information that may enrich popular understanding of the project in question. However, the relationship between EMCA and other legislation associated with environmental protection such as the Biosafety Act appears obscure.

There is no indication that the provisions of EMCA significantly apply to activities under the Biosafety Act or any other Act. In turn the Biosafety Act makes no reference to the provisions of EMCA. This is in contrast to NEMA–framework legislation containing Principles that apply throughout the Republic of South Africa in respect of ‘actions of all organs of state that may significantly affect the environment.’<sup>275</sup> It also provides for Integrated Environmental Management in its chapter five. The GMO Act contains provisions to the effect that, where required, an environmental impact assessment shall be submitted in accordance with the provisions of the NEMA.<sup>276</sup>

Like the Constitution, the Biosafety Act is also relatively new. The Act was enacted in 2009. It has not been tested in the courts as it is yet to become operational due to the absence of relevant regulations. Even so, questions still arise as to how realistic the Act is in respect of access to information by interested parties and the general public.

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<sup>268</sup> Ibid Section 59 (1).

<sup>269</sup> Ibid Section 59 (1) (a).

<sup>270</sup> Ibid Section 59 (1) (b).

<sup>271</sup> Ibid Section 59 (1) (c).

<sup>272</sup> Ibid Section 59 (1) (d).

<sup>273</sup> Environmental (Impact Assessment and Audit) Regulations 2003 Republic of Kenya.

<sup>274</sup> Regulation 22 (5) of the Environmental (Impact Assessment and Audit) Regulations 2003 Republic of Kenya.

<sup>275</sup> Section 2 of the National Environmental Management Act No 107 of 1998.

<sup>276</sup> Section 5 (1) (a) of the genetically Modified Organisms Act as read together with Section 2(1) and chapter five of the National Environmental Management Act (n275).

The Act obligates the National Biosafety Authority (NBAK) to 'avail to any person copies of records kept under section 32 of the Act, including details of any application that do not qualify as confidential information'.<sup>277</sup> Section 32 provides for a register that contains a copy of every application, the risk assessment report, the decision document, the approval and any other information the Authority may consider necessary. These documents contain information essentially supplied by the applicant which information is used for decision-making. Relying on these documents the public are likely to understand biosafety from the point of view of the applicant.

An applicant can hardly reveal information that is detrimental to her or his application. Moreover the Act gives immense protection to confidential information including requiring the NBAK 'not to use confidential information for any other purpose not authorized under this Act, and shall ensure that such information is protected by any other person involved in handling applications under this Act'.<sup>278</sup>

The Act requires the NBAK to 'promote public awareness and education... through the publication of guidance documents and other materials aimed at improving understanding of biosafety'.<sup>279</sup> Of importance is the content, presentation and the targeted audiences of such publications and other materials. Objective public understanding of issues concerning biosafety may be enhanced through dissemination, at the right time, of correct and accurate information. This may be achieved by using people with a neutral stand concerning GMOs – a stand that is rare to find taking into account the varying interests that have complicated GMO governance. Moreover, issues public awareness touch on aspects of democracy raising critical questions such as how does one determine what is good for the people using what criteria and how does one achieve objectivity in disseminating information (and what information) about GMOs to the public.

The Act has no provisions on identification and labelling, a strong indication Kenya does not regard GMOs as being different from foods that are non-GM. As a consequence consumers will not be able to differentiate between GM and non-GM

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<sup>277</sup> Section 4 (3) Biosafety Act Republic of Kenya Act No 2 of 2009.

<sup>278</sup> Ibid Section 25 (2).

<sup>279</sup> Ibid Section 54 (1).

food. For this reason such consumers and the public in general are denied important information that will enable them to know and choose the kind of food they want to eat.

Failure by the Act to provide substantive rights of access to information confirms the contempt with which the right to such access is treated in favour of commercial interests. The resulting imbalance necessarily prohibits the public from knowing crucial information on alleged benefits and potential harm of GMOs. This serious concern must be addressed if domestic implementation of the precautionary approach is to make any sense.

### 6.4.3 Zambia

The Constitution<sup>280</sup> has no provisions relating to access to information. Hence, issues concerning access in the governance of GMOs depends upon the relevant provisions of Biosafety Act.<sup>281</sup> Upon receipt of an application with the information required by s. 13 of the Biosafety Act, the NBAZ is obligated to make such information available to the public and any government institution.<sup>282</sup> After public makes comments on the application<sup>283</sup> the Act requires that '[t]he Authority shall, in making or reviewing its decision regarding any application, take into account the views or concerns of the public, any relevant institution or other stakeholder made in accordance with the provisions of the this Act'.<sup>284</sup>

The Act further empowers the Minister to make regulations by statutory instrument that makes provision, among other things, for 'the procedure and manner of consulting or making information available to the members of the public for purposes of this Act'.<sup>285</sup> These and other requirements are crucial in assessing the opportunities the public have to access information and importantly the extent to which such access impacts on awareness of and the need for precautionary measures.

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<sup>280</sup> Adopted on 24 August 1991 Republic of Zambia.

<sup>281</sup> No 10 of 2007.

<sup>282</sup> Section 14 (3) Biosafety Act (n103).

<sup>283</sup> Ibid Section 14 (4).

<sup>284</sup> Section 14 (5) Biosafety Act (n103).

<sup>285</sup> Ibid Section 15 (a).

Availability of relevant information and the opportunity to raise concerns are material considerations that enable the public to make informed decisions, express their views and make relevant objections. By commenting on the ways in which the GMO in question may benefit people or prejudice socio-economic, cultural, environmental and other interests, the public provides the NBAZ with an opportunity of more effectively analysing the various interests in decision –making, particularly the taking into account (at least in part) of the public interest provided for by s. 18 (4) of the Act. The weighing of interests that takes place during decision-making, not only provides justification for the taking of or for refusal to take precautionary measures, it enhances both the legitimacy and transparency of the decision-making process as a whole. Such an outcome translates adoption of the precautionary approach into reality.

#### **6.4.4 Namibia**

Neither the Constitution of Namibia nor the Biosafety Act<sup>286</sup> has provisions concerning access to information. Instead, the Act has two aspects that indirectly relate to access to information. The first is that a public hearing may be held by the BCN.<sup>287</sup> The Act does not specify the issues that may be the subject matter of a public hearing. By reason of being a public hearing except on matters relating commercially confidential information<sup>288</sup> one may, by implication, argue that the public may raise any other issues concerning biosafety including the application in question.

By making provision for the public hearing to be conducted by the BCN as opposed to a person or committee of persons, it does appear that the Act seeks to provide an independent opportunity for the BCN to hear the views of the public directly. This is useful especially because in compiling its report the BCN may compare the information gathered from the members of the public with that gathered from the public consultation process conducted by the person or committee of persons appointed by the BCN pursuant to the provisions of s. 24 (1) (b).

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<sup>286</sup> Act No 7 of 2006 (n217).

<sup>287</sup> Ibid Section 24 (1) (c) Biosafety Act of Namibia (n117).

<sup>288</sup> Section 24 (4) and (5).

Second is the requirement that '[t]he Minister must not grant an application for the issue of a permit unless the Minister is satisfied ... that such dealings will be in the public interest'.<sup>289</sup> In determining what constitutes public interest the Act provides guiding principles that include the extent to which such dealing is likely to: contribute to sustainable development; undermine indigenous knowledge or technology or to affect the social and economic advancement of the people and society.<sup>290</sup> These are complex issues which include social-economic considerations that lie at the centre of the global GMO controversy discussed in chapter two. Such issues require the views of various stakeholders including both expert and public opinion. If the Minister does not apply his/her mind objectively to this section, then, it is tenable to assert that his/her decision would be controversial provisions of the Act. Taking into account the wide discretionary powers given to the Minister under s.25(4) of the Act, one may argue that application of precautionary measures also fall, at least in part, within the discretionary powers of the Minister.

## 6.5 Conclusion

This chapter has examined the important role institutions and the public play in making domestic implementation of the precautionary approach a reality in the selected countries. The composition and powers conferred upon institutions, access to information and public participation in the decision-making processes provide the *litmus* test for assessing the credibility of the biosafety regimes (and by implication, the precautionary approach) in the selected countries. Consistent with the belief of Wolff, the political philosopher, only if even the meagre provisions on public involvement were absent could the people in the selected countries know of its importance in the regulation of GMOs.<sup>291</sup> Having discussed the thesis in parts, an overall analysis follows.

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<sup>289</sup> Section 25 (4) Biosafety Act of Namibia (n117).

<sup>290</sup> Ibid Section 25 (5).

<sup>291</sup> Wolff J *An Introduction to Political Philosophy* (2006):7Oxford University Press

## Chapter Seven

### ANALYSIS AND FINDINGS

‘... not about the influence of power but the power of influence’<sup>1</sup>

#### 7.1 Barriers to Transparency in the Regulation of GMOs

In the mists of a mountainous terrain, Bilbo the hobbit, with his friends the dwarves, and Gandalf the Wizard, found themselves in a dilemma. In their attempts to avoid being killed by the goblins of Middle Earth of the Third Age, they flee thereby exposing themselves to a serious risk: being captured by the wolves. In trying to find an acceptable solution, Bilbo wondered: ‘What shall we do, what shall we do!’ ‘Escaping goblins to be caught by wolves’. This is the great myth that formed the origin of the popular proverb: ‘out of the fryingpan into the fire’, or so suggests J.R.R Tolkien, creator of the mythology of the Middle Earth.<sup>2</sup>

Seemingly, the above mythology is analogous to the precautionary approach. For example, while hunger, undernourishment and starvation may result in deaths, failure to meaningfully embrace the precautionary approach in biosafety legislation exacerbates exposure of the environment and humans to potential risks that include irreversible harm. The precautionary approach is intended to find a middle ground to resolve this dilemma. In Africa the adoption of precautionary approach is even more compelling. The continent has an increasing population that needs more food and a rich biodiversity that needs to be protected against the many threats including potential harm associated with GMOs on one hand. On the other is the need of African states to comply with their existing obligations under international law particularly under the WTO regime.

The dilemma concerning implementation of the precautionary approach has been stated succinctly as follows:

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<sup>1</sup> Stengel R TIME Magazine 10 May 2010 p. 4.

<sup>2</sup> Tolkien R *The Hobbit or There and Back Again* (1999):93.

'[i]f the precautionary principle is used to block ...innovation, public welfare is damaged. An unbalanced and excessive caution can undermine economies, jobs, human aspirations, health and the environment. Unjustified fears can lead to counterproductive behaviour (as, for example, when consumers avoid eating fruit because of the exaggerated fear...). Trade restrictions arising from the misuse of the principle strain international relations and hurt consumers and producers'.<sup>3</sup>

These conflicting interests at the decision-making level are a challenge in the development of jurisprudence on implementation of the precautionary approach. States have different interests and priorities with respect to biotechnology, as well as varying attitudes towards the precautionary approach. In addition, misuse of the precautionary approach for political expediency is difficult to determine, the same way it may be cumbersome to reverse the decisions made.

Another issue is that the factors that impact on the world food situation include climate change, globalisation, high energy demand as food crops are being used for fuel and pricing. It implies that the determination of issues such as food production, what food and marketing are gradually going beyond the powers of individual states. For example by 2009, the GM seed market globally was worth \$10.9 billion and the crops produced from that seed were worth \$ 130 billion.<sup>4</sup> Thus, with economic power comes political power that has enabled corporations to exert great influence over laws and policies resulting in weaker regulation, which in turn, may have negative impacts on health, safety and the quality of food.<sup>5</sup>

The primary aim of transnational companies (TNCs, of which multinational biotechnology companies form part), appears to be the need to maximise profits as opposed to giving priority to improving the lives of the common people. Acquisitions and mergers by large multinational biotechnology companies, such as Monsanto together with increases in patent protection, have tended to change farmers from 'seed owners' to 'licensees' of patented products.<sup>6</sup> Such farmers are part of the public, which has little or no knowledge about potential risks and benefits of GMOs.

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<sup>3</sup> Hunter D, Salzman J and Zaelke D *International Environmental law and Policy* 4ed (2011) 481.

<sup>4</sup> Barton J 'The Success of Genetically Modified Crops Provides Opportunities to Win over Critics' (March 2010) available at <http://www.asnapp.org> (accessed 2 November 2010).

<sup>5</sup> See 'Power Hungry: Six Reasons to Regulate Global Food Corporations' (2005) ActionAid International available at [http://actionaid.org.uk/\\_content/documents/po...](http://actionaid.org.uk/_content/documents/po...) (accessed 19 July 2010).

<sup>6</sup> Tansley G 'Farming, Food and Global Rules' in Tansley G and Rajotte T (eds) *The Future Control of Food* (2008):3-23 at 9.

They may have little opportunity and no forum to raise their concerns about adverse effects. In such circumstances, a transparent biosafety regime becomes an essential tool for promoting social harmony and legitimacy of biotechnology, enhancing rather than hindering these objectives.

Thus, regulation is a form of social contract that provides the terms under which state, society and commerce agree (or should agree) to accept the costs, risks and benefits of biotechnology.<sup>7</sup> The terms of such a contract are manifested in the mechanisms of a particular biosafety regime. For a regime to be workable, it must be transparent and accountable to stakeholders, in particular, the public. There is however a significant lack of transparent communication among actors, the result of which is that assessment of biotechnology is lagging behind its development.<sup>8</sup> It is for this reason that the precautionary approach plays a central role in assessing transparency. As already discussed in chapter one, the precautionary approach places emphasis on transparency and accountability among other things.<sup>9</sup>

Decision-makers may invariably find themselves in a dilemma when resolving scientific disputes. They may find it difficult to determine where scientific criteria end in the event of scientific uncertainty and where policy considerations begin.<sup>10</sup> In addition law is an instrument of social power and it can be manipulated by the powers of the moment to serve their interests.<sup>11</sup> In the area of biotechnology such manipulation could seek to serve the vested interests of powerful stakeholders such as the biotechnology industry and powerful environmental non-governmental organisations – thus, making transparency an elusive concept to the detriment of precautionary decision-making.

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<sup>7</sup> Jasanoff S 'Product, Process, or Programme: Three Cultures and the Regulation of Biotechnology' in Bauer M (ed) *Resistance to New Technology* (1997):55.

<sup>8</sup> See 'Executive Summary of the Synthesis Report of the International Assessment of Agricultural Knowledge, Science and Technology (IAASTD)' (April 2008):14 available at [http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/15\\_04\\_08\\_sr\\_exec\\_sum\\_130408\\_final.pdf](http://news.bbc.co.uk/2/shared/bsp/hi/pdfs/15_04_08_sr_exec_sum_130408_final.pdf) (accessed 5 May 2010).

<sup>9</sup> Ticker J and Wright S 'The Precautionary Principle and Democratizing Expertise: a US Perspective' *Science and Public Policy* (2003):213-218 at 213.

<sup>10</sup> McGarity 'Resisting Regulation with Blue Ribbon Panels' 33 *Fordham Urban Law Journal* (2006) 1157-1197 at 1157.

<sup>11</sup> Jouannet J 'Universalism and Imperialism: The True-False Paradox of International Law?' *The European Journal of International Law* 18 (3) (2007) 379-407 at 386.

In seeking to enhance the credibility of decision-making in environmental governance, the Canadian government has formulated guiding principles that enhance precautionary decision-making. The key provision obligates decision-makers to observe '[a] greater degree of transparency, clearer accountability and increased public involvement'.<sup>12</sup> The importance of transparency in GMO governance cannot be overemphasised because questions of who is accountable and transparent, to whom and on what terms represent crucial dimensions in any regulatory regime and therefore deserve critical analysis.<sup>13</sup>

The ways in which accountability and transparency are manifested in the regulatory regime fundamentally impact on the way in which power is negotiated and shared and may lead to consequences with potentially substantial costs and benefits.<sup>14</sup> For example, the approval of Monsanto's GM soy in Paraguay enabled large scale farmers to make profits by exporting the crop as animal feed to provide meat for the West, resulting in the destruction of traditional methods of agriculture that provided food for the local people.<sup>15</sup>

While some of the political leaders in Africa as well as sections of the public may be aware of the potential harm associated with GMOs,<sup>16</sup> adoption of the precautionary approach in biosafety legislation remains problematic, thus placing transparency in the regulation of biotechnology at the crossroads. In assessing transparency of biosafety legislation through the lens of the precautionary approach, it is necessary to examine, by way of comparison, the varying approaches in the domestic implementation of the approach and account for them.

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<sup>12</sup> Benidickson J *Environmental Law* 3ed (2009):26 Irwin Law Toronto.

<sup>13</sup> Lodge M 'Accountability and Transparency in Regulation: critiques, doctrines and instruments' in Jordan and Levi-Faur (eds) *The Politics of Regulation: Institutions and Regulatory Reforms for the Age of Governance* (2004):124 -144 at 124 Edward Elgar Publishing Limited Cheltenham (UK).

<sup>14</sup> Ibid.

<sup>15</sup> Ennart H 'Small-scale Farmers Will Lose Their Jobs' (2010) available at <http://www.gmwatch.org/> accessed 13 December 2010.

<sup>16</sup> For example in 2008 while emphasising the need to adopt biosafety legislation in Kenya, William Ruto, the then Minister for Agriculture is reported to have noted that biotechnology was a 'highly divisive technology'. See *The Standard* 15 February 2008 available at [www.eastandard.net](http://www.eastandard.net) accessed 15 February 2008.

## 7.2 Applicable Thresholds for the Precautionary Approach

Permissible thresholds in the relevant international law instruments – the Cartagena Protocol (the Protocol) in particular – provide a basis for analysing the various ways towards adoption of the approach in the selected countries. The Rio Declaration on Environment and Development requires application of the precautionary approach in situations ‘where there are threats of serious or irreversible damage...’<sup>17</sup> The Declaration was part of the soft law instruments that formed the basis of future developments in international environmental law, as the international community realised the compelling need to take steps to protect the environment.

The Protocol adopted the approach as contained in principle 15 of the Rio Declaration. In addition, it imposes limitations on the application of the approach to living modified organisms resulting from biotechnology ‘that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account human health, and specifically focusing on transboundary movements’.<sup>18</sup> Annex III of the Protocol also identifies the manner in which risk assessment should be conducted. It provides that ‘Lack of scientific knowledge or scientific consensus should not necessarily be interpreted as indicating a particular level of risk, an absence of risk, or an acceptable risk.’

These limitations are justifiable when considered within the broader context of the Protocol being a protocol to the Convention on Biological Diversity (CBD).

This precautionary approach was thus embraced by the Protocol with limitations that raise many unanswered questions that include:

- How and using what objective criteria, does one determine what amounts to a serious or irreversible threat and when?
- Who should oversee that the decision-maker (usually a competent authority) takes appropriate action consistent with the permissible thresholds of risk management?

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<sup>17</sup> Principle 15 of the Rio Declaration Rio 31 *International Legal Materials* (1992):876

<sup>18</sup> Article 1 of the Cartagena Protocol 39 *International Legal Materials* (2000):1027.

These are issues that are difficult to resolve. They arguably become barriers to assessing transparency in decision-making, especially because of the emphasis placed on scientifically sound risk assessment under the Protocol and domestic law

The Protocol and the biosafety regimes in the selected countries provide mandatory and detailed requirements on scientifically sound risk assessment. These are binding on States and applicants dealing with living modified organisms (LMOs) and GMOs respectively. From this perspective, transparency is therefore understood and measured using scientific criteria. The question that then arises is: who benefits most from the introduction of GMOs into Africa? Part of this question may be answered by analysing emerging trends in the selected countries and the implication of such trends for regulation.

### **7.3 Implementation of the Precautionary Approach in the Selected Countries: Emerging Trends**

The various approaches to implementation of the precautionary approach reveal two trends, namely permissive and strict regimes. The classification is not entirely distinct due to overlaps especially in decision-making. These terminologies are used by way of contrast only for purposes of distinguishing the approaches among the selected countries. This is because every country exercises its sovereign powers to determine what is best for its people and the Protocol thus established minimum criteria for regulation.

#### **7.3.1 Permissive Regimes**

The term 'permissive' connotes those biosafety regimes that progressively promote introduction of GMOs into a country. Enactment of legislation is itself a form of precaution. However, permissive regimes arguably seek to ensure that barriers that may delay or frustrate advancements in biotechnology are minimised. While the biosafety legislation of South Africa and Kenya contain relevant provisions for appropriate measures to manage risks identified in risk assessment,<sup>19</sup> the discussion in chapter five and six shows a trend that tilts towards permissiveness in the regulation of GMOs. It suggests that governments with permissive regimes place

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<sup>19</sup> See the discussion at (5.3).

importance on sound science and cost-effective analysis with deep-rooted suspicion that the precautionary principle may hinder economic growth and rational policy making.<sup>20</sup>

### 7.3.1.1 South Africa

In 2008, a senior official from the Council for Scientific and Industrial Research (CSIR) of South Africa, in seeking to rebut claims of lack of transparency in the GMO Act by reason of lack of provisions on the precautionary approach, claimed that the principle was indirectly implied in the Act.<sup>21</sup> This is because the Advance Informed Agreement (AIA) is precautionary in itself. It gives parties to the Protocol an opportunity to weigh their options and make a decision in relation to the GMO in question. Hence, transparent use by the decision-maker of the AIA procedure may be regarded in part as the practical application of the precautionary approach.

The executive may initially imply the precautionary approach and act accordingly by enacting legislation, but this interpretation and action can later be tested by a court of law that will determine finally whether the precautionary approach may be implied from the Act. Implying the precautionary approach would be a legitimate role of the courts in interpreting the Act or sections of it in litigation before them. This has cost implications; it raises issues about access to justice. Moreover Art. 10 (6) of the Protocol provides, in a clear manner, the operational aspects of the precautionary approach, which should be embraced in the same or similar words in domestic law. This thesis submits that the scenario manifested in the GMO Act<sup>22</sup> falls short of the provisions of the Protocol that requires each party to 'take...appropriate legal... measures to implement its obligations...'.<sup>23</sup>

The biosafety legislation of South Africa and Kenya include the requirement for scientifically sound risk assessment is justifiably given prominence, the same way

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<sup>20</sup> Jordan A and O'Riordan T 'The Precautionary Principle in Contemporary Environmental Policy and Politics' in Raffensperger C and Tickner A (eds) *Protecting Public health ns the Environment* (1999):15-35 at 33.

<sup>21</sup> These claims were made by a senior official from CSIR (name in file with this researcher) at a Biosafety Workshop 'Benefits, Opportunities, and risks from the Release of GMOs in Africa' organised by the International Centre for Genetic Engineering and Biotechnology (ICGEB) and other stakeholders at Cape Town 15-19 September 2008 which this researcher attended.

<sup>22</sup> The Genetically Modified Organisms Act No 15 of 1997 Republic of South Africa.

<sup>23</sup> Article 2(1) of the Cartagena Protocol (n18).

the Protocol does. Precaution is itself a scientific phenomenon inherent in risk assessment. However, regulation attracts varying complex socio-economic, cultural, political interests and a multiplicity of actors that include industry and consumers. Effectiveness of regulation in turn, is (or should) be analysed within the parameters of the mechanisms provided by such permissive regimes. Absence of specific provisions on the precautionary approach as provided by Art.1 and 10 (6) of the Protocol or in similar terms, may mislead the general public to think that regulation is an exclusive realm of science. This is not the case because, to the contrary, the precautionary approach does not devalue science.<sup>24</sup> It instead offers governments wide flexibility in choosing appropriate action, once taking some measures becomes necessary.<sup>25</sup>

Problems arise however when comparing the thresholds provided for by the biosafety legislation of South Africa and Kenya as against the spirit and thresholds of the international regime as provided for by the Protocol to which both countries are parties. By agreeing to the precautionary approach, the parties established binding minimum criteria and standards for international regulation of biotechnology. Both South Africa and Kenya are therefore bound to comply with the Protocol. In attempting to comply with its obligations, South Africa enacted the Genetically Modified Organisms Amendment Act<sup>26</sup> 'so as to give effect to the Protocol pertaining to genetically modified organisms to which South Africa is a party'.<sup>27</sup>

Like the parent Act, the GMO Amendment Act does not specifically provide for the precautionary approach, but implicitly reflects it in risk management. Thus it is plausible to argue that the GMO Amendment Act reflects, at least in part, a political arrangement intended to convince the general public and the international community that South Africa is keen to comply with its obligations under international Law. Moreover, the way a particular technology apportions risks and benefits, the

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<sup>24</sup> Hunter D et al (n3) at 479.

<sup>25</sup> Ibid at 478.

<sup>26</sup> No 23 of 2006 Republic of South Africa.

<sup>27</sup> Ibid. See the preambular paragraph.

social and political interests that technology might favour and the real purpose of the technology are political questions<sup>28</sup> to be determined by government.

Absence of provisions on the precautionary approach (save for precaution attributable to risk assessment), the gaps in the GMO Act may be remedied by provisions in other legislation. These include the environmental right provided for by the Constitution;<sup>29</sup> the principles of environmental protection under NEMA (two of which are that, a risk-averse and cautious approach shall be taken and decisions be taken in an open and transparent manner in particular);<sup>30</sup> the relevant provisions under the National Environmental Management: Biodiversity Act<sup>31</sup> and the Consumer Protection Act.<sup>32</sup> These provisions may appear to fill the gaps and also provide limitations in the GMO Act but a careful analysis suggests otherwise. For example, NEMBA requires that no permit for the release of GMO may be issued under the GMO Act where the Minister 'has reason to believe that the release of a genetically modified organism into the environment...may pose a threat to any indigenous species or the environment...unless an environmental impact assessment has been conducted' in accordance with chapter five of NEMA as if such a release were a listed activity contemplated in that chapter.<sup>33</sup> The irony is that under NEMA GMOs are listed as activities that require basic assessment<sup>34</sup> as opposed to a full environmental impact assessment.

The Consumer Protection Act<sup>35</sup> makes provision for labelling GMOs, but the Regulations made under the Act, provide for labelling for goods or products that 'contain at least 5 per cent' GMOs.<sup>36</sup> Products containing less than one per cent

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<sup>28</sup> Lee M 'Beyond Safety? The broadening Scope of Risk Regulation' 62 *Current Legal Problems* (2009) 242-285 at 243

<sup>29</sup> Section 24 Constitution Act No 108 of 1996 Republic of South Africa

<sup>30</sup> Section 2 National Environmental Management Act No 107 of 1998 Republic of South Africa.

<sup>31</sup> No 10 of 2004 Republic of South Africa.

<sup>32</sup> Act No 68 of 2008 Republic of South Africa.

<sup>33</sup> Section 78(1) of the National Environmental Management : Biodiversity Act No 10 of 2004 Republic of South Africa.

<sup>34</sup> Regulation 25 of Environmental Impact Assessment published in Gazette Notice No 33306 of 18 June 2010 (made under the National Environmental Management Act No 107 of 1998) that took effect on 2 August 2010. (See Gazette Notice Listing Notice No 1 of 2010 published in Gazette Notice No 333411 of 30 July 2010).

<sup>35</sup> No 68 of 2008 Republic of South Africa.

<sup>36</sup> Section 7(3) of the Regulations contained in Government Gazette No 34180 of 1 April 2011 Republic of South Africa. The Regulations are yet to take effect. Section 7 (10) of the regulations requires the regulations to take effect six months after commencement of the Act which Act took effect on 1 April 2011.

GMO need not be labelled.<sup>37</sup> This may create confusion as to the permissible thresholds for labelling because if Parliament intended that products containing more than one per cent should be labelled, there was no need of making provision relating to 'at least five per cent'. It further provides that where it is scientifically impracticable or not feasible to test the percentage of GMO ingredients a product contains, such a product must be labelled '[m]ay contain genetically modified ingredients'.<sup>38</sup> This thesis argues that this provision is problematic as it gives stakeholders such as the investors and producers of GMOs, a leeway to further protect their interests. Moreover, scientists do innovation, the testing of GMOs and often form the majority of the decision-making bodies. Some of them may have vested interests and often work closely with the proponents.<sup>39</sup> It is thus tenable to argue the GMO Act and the other legislation (such as NEMA and NEMBA) systematically seek to safeguard the interests of the proponents.

The GMO Act of South Africa was seemingly 'based on an expert-ruled policy'.<sup>40</sup> This suggests that the Act was influenced by an 'early narrow framing often exercised by experts' before issues of safety became part of the political agenda.<sup>41</sup> It may thus be argued that public participation was limited compared to the situation today. Moreover, the Act was enacted to facilitate commercial release of transgenic crops as the lawmakers were struggling to keep pace with scientific innovation that had already taken place in agricultural biotechnology.<sup>42</sup> In addition, the country had attained constitutional democracy barely three years before adoption of the GMO Act. Hence, the Act was passed at a time when most institutions of government and the people were arguably preoccupied with issues associated with the newly attained democracy.

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<sup>37</sup> Section 7(6) of the Regulations (n36).

<sup>38</sup> Ibid section 7(8) of the Regulations (n36).

<sup>39</sup> See the discussion at (2.6.7).

<sup>40</sup> Aerni P and Bernauer T 'Stakeholders Attitudes Toward GMOs in the Philippines, Mexico and South Africa: The Issue of Public Trust' 34 (3) *World Development* (2006) 557-575 at 557. The Policy referred to is the National Biotechnology Strategy for South Africa (June 2001).

<sup>41</sup> Anderson K, Britt-Marie and Drottz-Sjöberg *et al* 'Models of Transparency and Accountability in the Biotech Age' 26 (46) *Bulletin of Science, Technology and Society* (2006) *Bulletin of Science Technology and Society* (2006):45-56 at 54.

<sup>42</sup> Cooke J and Downie R 'African Perspectives on Genetically Modified Crops' A Report for the Centre for Strategic and International Studies (CSIS) (2010) available at [www.csis.org](http://www.csis.org) (accessed 17 August 2010).

Being a party to the CBD,<sup>43</sup> South Africa enacted the GMO Act about four years of the Convention's entry into force. The country had already started conducting laboratory experiments of Bt maize and Bt cotton; enactment of the Act was therefore intended to make their commercial release possible. Further, enactment of the Act was in compliance with the provisions of Art. 8 (g) of the CBD, which sought to ensure that parties embraced biotechnology responsibly.<sup>44</sup> The Act was therefore enacted at a time when implementation of the CBD was yet to be realised by many African countries, in respect of the regulation of biotechnology. Enactment of such a regime was also critical as it took place at a time when the parties to the CBD were preparing a protocol on biosafety. By 2000 when the Protocol was adopted, South Africa did not need new legislation but instead sought to amend the GMO Act, in order to comply with its obligations under the Protocol.

Cumulatively, the GMO Act implicitly reflects the precautionary approach, rather than specifically providing for it in the same manner as the wording of the Protocol. In addition, the Regulations<sup>45</sup> under the GMO Act, explicitly empower the Council to impose further mechanisms where appropriate (in respect of risk management), in addition to mechanisms, measures and strategies proposed by the applicant. Regulation 9 also provides for an elaborate procedure, the outcome of which would be improved public participation.

### **7.3.1.2 Kenya**

Like South Africa, the Biosafety Act of Kenya has no substantive provisions on the precautionary approach, similar to the wording of the Protocol. This commonality in the two countries' approaches in relation to the precautionary approach, raises a number of pertinent questions including what were the driving forces behind the drafting of the Biosafety Act of Kenya; why should a process spanning the period 1999-2009 come up with a piece of legislation that falls below the minimum criteria set by the Protocol and whether the approach taken by South Africa had a role to play.

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<sup>43</sup> South Africa signed the Convention on Biological Diversity on 4 June 1993 and ratified it on 2 November 1995.

<sup>44</sup> See the discussion at (4.2).

<sup>45</sup> GN R 106 Gazette Notice 34020 of 29 March 2011 (which took effect on 1 April 2011) Republic of South Africa.

At the outset, it is important to note that, unlike South Africa where the strategy preceded the GMO Act, the Biosafety Act of Kenya<sup>46</sup> was drafted in the absence of both a biotechnology policy and strategy.<sup>47</sup> Even so, the policy published in 2006 had ten objectives, key of which were to 'prioritize, promote, and coordinate research in basic and applied sciences in biotechnology and to create enabling administrative and legal frameworks for biotechnology development and commercialization'.<sup>48</sup> Since the Biosafety Bill preceded the policy, it may imply that the latter shed light on the former. Instead of legislation being guided by policy, the vice-versa was the case.

Like the GMO Act of South Africa, the Biosafety Act of Kenya has no specific provisions embracing the precautionary approach. It instead implicitly reflects it within its risk management procedures.<sup>49</sup> Absence of specific provisions on the precautionary approach in both the policy and the Act and taking into account that the Act was drafted independent of the policy yet both promote a permissive approach to biotechnology strongly suggests that the permissiveness was the ultimate goal of the drafters. Moreover the policy is said to have been influenced by the United States Agency for International Development (USAID)<sup>50</sup> among other proponents of GM technology in Kenya.

Kenya chose to enact a new law (the Biosafety Act No 2 of 2009) to regulate GMOs as opposed to amending existing law. By 2003 some experts in government and others had expressed the view that adapting existing laws (as was the case in the USA) was less expensive and less time consuming but it could lead to regulatory gaps and redundancies.<sup>51</sup> This was four years after the initiative to enact biosafety legislation had started and it was the year the Protocol entered into force. The

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<sup>46</sup> Act No 2 of 2009 Republic of Kenya. The first Biosafety Bill in Kenya was drafted in 2003.

<sup>47</sup> Karembu M Otunga D and Wafula D 'Developing a Biosafety Law: Lessons from Kenyan Experience' (2010):1-61 at 11 available at [www.isaaa.org](http://www.isaaa.org) (accessed 8 August 2010).

<sup>48</sup> A National Biotechnology Development Policy 2006 Republic of Kenya available at [www.biosafetykenya.co.ke](http://www.biosafetykenya.co.ke) (accessed 12 October 2010).

<sup>49</sup> See the discussion at (5.3.1).

<sup>50</sup> See 'Africa Developing Biosafety Regulations for GMOs' available at <http://www.organicconsumers.org/ge/africa102703.cfm> (accessed 14 July 2010).

<sup>51</sup> Traynor P and Macharia H 'An analysis of the Biosafety system for Biotechnology in Kenya: Application of a Conceptual Framework' (2003):25 A Report prepared for the International Service for National Agricultural Research (ISNAR) ISBN 92-9118-073-4 available at [www.bio-earn.org/Content/.../biosafety/2003-kenyabiosafety.pdf](http://www.bio-earn.org/Content/.../biosafety/2003-kenyabiosafety.pdf) (accessed 20 October 2010).

assertion by these experts created the impression that the country was keen to develop a holistic biosafety regime. A holistic biosafety regime is arguably one that is based on the precautionary approach covering all activities from research and development (R&D) to commercialization and post-release monitoring.

Kenya was one of the countries that attracted Global Environmental Facility (GEF)<sup>52</sup> funding within the context of the development of National Biosafety Frameworks (NBF) that started in 2001. The GEF is the designated financial mechanism of the CBD and the Protocol.<sup>53</sup> The United Nations Environmental Programme (UNEP) is the GEF's main implementing Agency in respect to development of NBFs in developing countries<sup>54</sup>. Other Agencies include the United Nations Development Programme (UNDP) and the World Bank (which acts as trustee<sup>55</sup>).

The GEF Initial Strategy had three objectives, namely assisting countries to prepare for the entry into force of the Protocol through establishment of national biosafety frameworks (including strengthening capacity for risk assessment and increased stakeholder participation); promoting information sharing and collaboration at regional and sub regional level among countries that share similar ecosystems and promoting identification, collaboration and partnerships with bilateral and multilateral organizations.<sup>56</sup>

By 2002, soon after the NBF initiative was put in place, UNEP launched a \$38.4 million scheme to help establish 100 biosafety bodies in developing countries.<sup>57</sup> Critics of the GEF project argued that the money was too little to achieve

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<sup>52</sup> Established in 1991, the GEF is currently the largest funder of projects to improve the global environment. See 'Global Environmental Facility: Investing in our Planet' available at [www.thegef.org](http://www.thegef.org) (accessed 7 September 2009).

<sup>53</sup> See 'Evaluation of the GEF Support to Biosafety' (2006):5 available at [www.gef.org](http://www.gef.org) (accessed 20 May 2009).

<sup>54</sup> See 'A Comparative Analysis of Experiences and Lessons From the UNEP\_GEF Biosafety Projects' (2006):6 UNEP-GEF Unit available at [www.gef.org](http://www.gef.org) (accessed 15 July 2010).

<sup>55</sup> Chazournes 'The Global Environmental Facility (GEF) A Unique and Crucial Institution' 14(3) *Review of European Community and International Environmental Law* (2005) 193-201 at 194. For further information about GEF see Clemencon R 'What Future for the Global Environmental Facility?' 15(1) *Journal of Environment and Development* (2006) 50-74.

<sup>56</sup> See 'Global Environmental Facility: Initial Strategy for Assisting Countries to Prepare for Entry Into Force of the Cartagena Protocol on Biosafety' (2000) available at [www.unep.org/biosafety/Documents/GEF\\_strategy.pdf](http://www.unep.org/biosafety/Documents/GEF_strategy.pdf) [http://www.unep.org/biosafety/Documents/GEF\\_strategy.pdf](http://www.unep.org/biosafety/Documents/GEF_strategy.pdf) (accessed 12 August 2011).

<sup>57</sup> Hodgson 'UNEP "buys Support for Cartagena" say Critics' 20 *Nature Biotechnology* (2002):205

any meaningful purpose and that the main focus of the project was financial enticement to 'buy ratifications' for a Protocol that was not enjoying much support.<sup>58</sup> The consultants seconded to UNEP denied the 'buying ratifications' allegation and argued that the project was an incentive for countries to think harder on the implications of the Protocol.<sup>59</sup> Nonetheless, the GEF project was therefore instrumental in assisting Kenya to develop biosafety legislation.

The heated debate among proponents and opponents did not spare the GEF support for NBFs. The opponents saw GEF as being in favour of biotechnology industry while the proponents saw it as being against industry. At its November 2004 meeting, the GEF Council requested an evaluation of GEF activities financed under the GEF's Initial Strategy. This culminated in a 2006 report which exonerated the GEF from the claims of lack of neutrality in carrying out its mandate.<sup>60</sup>

The government of Kenya seemed to be torn between the two opposing camps. The US led group of countries including Canada on one hand, and the one led by the EU on the other.<sup>61</sup> Both were said to be working 'behind the scenes, trying to influence the government to either put or remove certain things in the proposed Biosafety policy and law to accommodate their interests'.<sup>62</sup> For example, analysts claim that the proponents wanted to ensure no labelling while the opponents insisted on inclusion of such provisions.<sup>63</sup> The proponents of biotechnology in Kenya sought a permissive regime while opponents sought a strict regime, thus placing the government in a dilemma. It did not want to rush the matter for fear that it may 'burn its fingers or hurt other stakeholders'.<sup>64</sup> This suggests that the government was unable to take a decision on whether the country was to adopt a permissive or a strict biosafety regime.

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<sup>58</sup> Ibid.

<sup>59</sup> Ibid.

<sup>60</sup> See 'Evaluation of the GEF Support to Biosafety' (2006) available at [www.gef.org](http://www.gef.org) (accessed 20 May 2009).

<sup>61</sup> Okwemba A 'Kenya: Intrigues Behind Biosafety Bill' (2006) available at <http://www.checkbiotech.org/> (accessed 12 August 2010).

<sup>62</sup> Ibid.

<sup>63</sup> Ibid.

<sup>64</sup> Ibid.

This dilemma seems to have been a departure from the attitude displayed in August 2005 when the Agriculture Secretary ordered the destruction of all *Bt* maize crops undergoing field trials because their adverse environmental impact had not been fully assessed. The Secretary further noted that there was an emerging tendency of local scientists succumbing to pressure from international collaborators (the Secretary never disclosed) who sought to expedite approvals for their research in disregard to established procedures.<sup>65</sup> She/he did not disclose names of the alleged collaborators.

Table 1

GM activity	Stage of development	Collaborative Partners
Sweet potato engineered for disease resistance	Contained laboratory and confined field trials	Kenya Agricultural Research Institute (KARI), Monsanto, Agricultural Biotechnology Support programme (ABSP), International Service for Acquisition of Agri-Biotech Applications (ISAAA), Michigan State University, Kenyan universities
Bt maize-IRMA project engineered for resistance to insects (African maize stem borer)	Contained laboratory and green house and confined field trial	KARI, International Maize and Wheat Improvement Centre (CIMMYT), Syngenta, Rockefeller Foundation, United States Agency for International Development (USAID), Kenyan universities
Cassava engineered for cassava mosaic disease (CDM) resistance-African Cassava Mosaic virus and East African Mosaic virus	Contained laboratory and green house application has been pending for confined field trials	KARI, Danforth Center-USA, USAID, Cornell University, ISAAA and Kenyan universities
Bt cotton engineered for insect resistance-cotton bollworm	Contained greenhouse and field trials	KARI, Delta-Pine South Africa, Monsanto, Kenya Industrial Research Development (KIRDI)

Table 1.

<sup>65</sup> Kameri-Mbote (note ...) 'Will Kenya's Biosafety bill of 2005 ever become law?' <http://www.gmoafrica.org/2007/06/will-kenyas-biosafety-bill-of-2005-ever-become-law.html> (accessed 20 March 2010).

Table 1 on the previous page (adapted from Kingiri and Ayele (2009)<sup>66</sup> gives an indication of some of the international collaborators involved in GMO activities in the country.

Considering the time taken,<sup>67</sup> the expenses incurred by these international collaborators in funding research activities and the nature of multinational corporations in general (discussed earlier), it is tenable to conclude that these collaborators and other proponents of biotechnology may have put pressure on the government to enact weak biosafety legislation.

In May 2006 a high level delegation of Members of Parliament (MPs) from Kenya and Malawi visited GM farms in South Africa<sup>68</sup>. The trip was organised at a time when the two countries were debating bills that would allow commercialisation of GMOs.<sup>69</sup> Observers claim that the US producers of genetically modified corn (USGC) influenced the passing of the Kenyan Bill; USGC alleges that the Bill was a direct result of many years of work promoting biotechnology in the East African region.<sup>70</sup>

At the end of the trip, those MPs resolved to fast-track the introduction of GMOs into their respective countries.<sup>71</sup> Fast-tracking seems to have become a reality in Kenya especially because of the haste with which the Bill was introduced into Parliament as the coalition government was struggling to consolidate its unity and legitimacy following the 2007-2008 post election violence.

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<sup>66</sup> Kingiri A and Ayele S 'Towards a Smart Biosafety Regulation: The Case of Kenya' *8 Environmental Biosafety Research* (2009):133-139 at 135.

<sup>67</sup> Karembu M and Otunge D assert that scientists spend many years in laboratories developing innovations to improve livelihoods only to be frustrated by lack of supportive policies and legislation. See 'Decision makers Helping Frame Policies' (2009):65 an ISAAA brief available at [www.isaaa.org/resources/.../40/.../isaaa-brief-40-2009decision\\_makers.pdf](http://www.isaaa.org/resources/.../40/.../isaaa-brief-40-2009decision_makers.pdf) accessed on 2 October 2010. This assertion supports the allegation that international collaborators will seek to ensure biotechnology policies and legislation safeguards their interests.

<sup>68</sup> Maina W 'Kenya's Bio-safety Bill vs. Organic Farming' (January 2009) available at [http://threatreofinconveniences.wordpress.com/category/bio-safety/...](http://threatreofinconveniences.wordpress.com/category/bio-safety/) accessed 20 August 2010. The GM farms the parliamentarians visited in South Africa were projects of the US producers of genetically modified corn (USGC)

<sup>69</sup> The trip was sponsored by the US producers of genetically modified corn (USGC) see Ibid Maina (note ...) 'Kenya's Bio-safety Bill vs. Organic Farming' (January 2009) available at [http://threatreofinconveniences.wordpress.com/category/bio-safety/...](http://threatreofinconveniences.wordpress.com/category/bio-safety/) (accessed 20 August 2010)

<sup>70</sup> Maina W (n68).

<sup>71</sup> Ibid.

It is not surprising that soon after the Act was enacted GM maize imported from South Africa was allegedly already on the market in Kenya<sup>72</sup> and even though the Act was yet to become operational in the absence of the relevant regulations. Taking into account the permissive nature of the legislation finally enacted, one can conclude that the proponents of biotechnology won the 'battle', but perhaps not the 'war' against GMOs in Kenya. As Karembu and others note, the Act was a 'sweet victory for the Biosafety Consortium members and for science, technology and innovation in Kenya'.<sup>73</sup> Additionally, the Assent for the Act given by the President on 12 February 2009 was applauded by those who had been involved in the process of developing the biosafety legislation, thus:

'a palpable wave of excitement was felt in the hearts and offices of those who had been involved in the development and passage of the Biosafety Bill, 2009... One would not imagine that a signature on a 43-page document would mean much...'<sup>74</sup>

However, some scholars including Kingiri argue that the regulatory process was limited in scope as it did not sufficiently address issues concerning public participation, representation and potential manipulation by actors with vested interests.<sup>75</sup>

Currently public opinion is however still divided on the risks and benefits of GM crops and competing political priorities may slow full implementation of the Act.<sup>76</sup> An obvious example is the priority given to the implementation of the new Constitution.<sup>77</sup> By seemingly being one-sided, the Act failed to reconcile the 'scientific push for innovation and the legal system's concern for precedent'<sup>78</sup>. Moreover, enactment of a permissive regime does not necessarily mean that the opponents ceased to exist. While resistance to GMOs in Kenya persists and it

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<sup>72</sup> Thatiah P 'Alarm raised as GMO Foods Hit the Market' *The Standard* 14 May 2009 available at [www.eastandard.net](http://www.eastandard.net) (accessed 14 May 2009).

<sup>73</sup> Karembu M *et al* (n47) at 27.

<sup>74</sup> *Ibid* at 1.

<sup>75</sup> Kingiri A 'The Contested Framing of Biosafety Regulation as a Tool for Enhancing Public Awareness' 2(1) *International Journal of Technology and Development Studies* (2011): 64-86 at 74.

<sup>76</sup> Cooke J and Downie R (n42) at 11.

<sup>77</sup> The Constitution (2010) Republic of Kenya Gazette Notice Supplement No 55 of 27 October 2010.

<sup>78</sup> Haack S 'Irreconcilable Difference: The Troubled Marriage of Science and Law' 72(1) *Law and Contemporary Problems* (2009):1-23 at 2.

seems to be growing,<sup>79</sup> there is disagreement on the most suitable way of introducing GMOs into the country.<sup>80</sup> A win by proponents essentially results in a shift of the struggle from institutional governance to the public arena and the courts.

The Act became operational on 1 July 2011. Essentially, this makes it possible for the NBA to allow commercial release including importation of GMOs into the country.<sup>81</sup> Commencement in the absence of regulations to be made under s.51 of the Act, raises questions, the key one being why would the Minister bring the Act into operation in such circumstances. It is also an indication of lack of transparency in decision-making. In addition, it is widely believed by the general public that millers had seemingly taken advantage of the ongoing food shortages to import GM maize from South Africa and Europe before the Act became operational.<sup>82</sup>

By way of contrast, South Africa did not bring the GMO Act into effect without the enabling regulations. This thesis takes the view that by bringing the Biosafety Act of Kenya into effect in such circumstances, the Minister seemingly acted in bad faith. This may set a bad example to countries, such as Namibia, where regulations are yet to be approved.

Six weeks after making the Act operational, the Minister published the Regulations,<sup>83</sup> which seek to ensure safe movement of GMOs into and out of Kenya while protecting human health and the environment.<sup>84</sup> They prohibit importation of GMOs without authorisation.<sup>85</sup> In the event of unauthorised importation, the NBA 'shall initiate remedial actions such as refusal of entry, destruction or set conditions of use...and may 'inform and advise' the public of such GMOs.<sup>86</sup> In contrast to the Regulations under the GMO Act of South Africa, the Kenyan Regulations have no

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<sup>79</sup> See 'Kenya Approves Law to Allow GM Crops' (2011) available at [http://www.businesslive.co.za/africa/africa\\_markets/2011/07/05/kenya-approves](http://www.businesslive.co.za/africa/africa_markets/2011/07/05/kenya-approves) (accessed 20 August 2011).

<sup>80</sup> See 'Dialogue Key to GMO Introduction, Say Scholars' (2011) Standard Newspaper (Kenya) available at <http://www.standardmedia.co.ke/news> (accessed 19 August 2011).

<sup>81</sup> Commencement of the Act is contained in Legal Notice No 71 signed on 22 June 2011 and published on 24<sup>th</sup> June 2011 available at <http://www.kenyalaw.org/klr/index.php?id=802> (accessed 15 July).

<sup>82</sup> See 'Kenya Farmers in Protest over Monsanto's Genetically Modified Corn' available at [newscastmedia.com/.../kenyan-farmers-in-protest-over-monsantos](http://newscastmedia.com/.../kenyan-farmers-in-protest-over-monsantos) (accessed 15 July 2011).

<sup>83</sup> The Biosafety (Import, Export and Transit) Regulations published in Gazette Supplement Legal Notice No 98 of 15 August 2011.

<sup>84</sup> Ibid Regulation 3.

<sup>85</sup> Ibid 4 (5) and (6).

<sup>86</sup> Ibid Regulation 4 (5) (a) and (b) (n84).

provisions on aspects such as risk assessment, risk management and public participation.

The over simplicity and lack of detail of these Regulations confirm both the haste with which they were drafted and the argument raised above in respect of the actions of bad faith on the part of the Minister.<sup>87</sup> In addition, by empowering the NBA to set conditions for the use of unauthorised GMOs, the Regulations contradict the parent Act that places emphasis on transparent science based criteria for regulation. The Regulations also offends the Protocol which requires that illegal importations of LMOs be disposed of by 'repatriation or destruction, as appropriate' at the expense of the country of origin.<sup>88</sup> Further the Regulations supersede the Act that has no provisions on illegal importations, save for the requirement that all GMO activities require written approval.<sup>89</sup>

In the absence of any legally convincing grounds, it appears that the Minister approved the flawed Regulations with the possible ulterior motive of legalising the GMO maize that may have been ordered into the country illegally. Should this be the case, the flawed Regulations, are, at the very least, an afterthought and thus unsupportable in law. It would be difficult to convince many that such Regulations were subjected to public scrutiny.

The study notes two other glaring anomalies in s. 2 of the Act. It defines "genetically modified organism" as 'any organism that posses a novel combination of genetic material obtained through the use of biotechnology techniques'.<sup>90</sup> The thesis submits that use of the word 'techniques' at the end of the definition is unnecessary and may cause confusion because biotechnology involves the use of various techniques of which genetic engineering is key. The second one relates to the definition of "modern biotechnology" as one that includes the application of —

- a) in-vitro nucleic acid techniques including the use of ...(DNA) and direct injection of nuclei acid into cells or organelles; or

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<sup>87</sup> Media reports indicate that the Minister was sacked in a mini cabinet reshuffle announced by president Kibaki today 24 August 2011. See 'Raila Drops Ruto' The Standard 24 August 2011 available at [http://www.standardmedia.co.ke/InsidePage.php?id=2000041531&cid=4&ttl=Raila drops Ruto](http://www.standardmedia.co.ke/InsidePage.php?id=2000041531&cid=4&ttl=Raila%20drops%20Ruto) (accessed 24 August 2011).

<sup>88</sup> Article 25 of the Cartagena Protocol (n18).

<sup>89</sup> Section 18 (1) Biosafety Act of Kenya.

<sup>90</sup> Section 2 Biosafety Act No 2 of 2009 Republic of Kenya.

- b) fusion of cells beyond the taxonomic family, *that overcome natural physiological, reproductive and recombination barriers and which are not techniques used in traditional breeding and selection;*<sup>91</sup>

The Protocol recognises that the processes involved in both (a) and (b) are those that overcome natural barriers and are not used in traditional breeding and selection. Integrating the (italicised) qualifying words with (b) to the exclusion of the techniques in (a) is inconsistent with the Protocol which recognises that the qualifying words apply to the techniques in (a) and (b). Moreover the separation is unreasonable as both processes do not use traditional breeding or selection. Thus the section should be amended to read as follows:

- a) In-vitro.....
- b) fusion of cells beyond the taxonomic family'

that overcome natural physiological, reproductive and recombination barriers and which are not techniques used in traditional breeding and selection;

The third shortcoming relates to the objective<sup>92</sup> where the Act refers to genetically modified organisms leaving out the important words 'and its products', which would represent the non-living component of regulation. By so doing, the Act creates an impression that it applies to living modified organisms (LMOs) rather than LMOs and their products. Thus, it creates an impression that it is intended to regulate GMOs when, in fact, its objective seems to be limited to LMOs leaving out their products such as maize flour, which constitutes large portions of imports. The reference to LMOs is consistent with the objective of the Protocol but the Act clearly seeks to regulate GMOs.<sup>93</sup>

These anomalies in the Act confirm the haste with which Parliament passed the Act, much the same way the Minister brought it into effect, in the absence of the enabling regulations. In addition, analysts claim that the Kenyan Biosafety Bill<sup>94</sup> was

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<sup>91</sup> Italics inserted to connote emphasis

<sup>92</sup> Section 4 of the Biosafety Act No 2 of 2009 Republic of Kenya.

<sup>93</sup> *Ibid* section 4 (a) of the Biosafety Act No 2 of 2009 Republic of Kenya. Also see the discussion at (5.3.2).

<sup>94</sup> Of 2008.

shrouded in secrecy.<sup>95</sup> Such anomalies adversely affect the credibility of the Act, raising questions that include the interests both the drafters and parliament seek to protect. Importantly, it suggests that there is a need for the lawmakers (including drafters of Bills) to engage more closely with issues concerning the GMO controversy. This should be done in a manner that may enable them to appreciate, even more, the importance of enacting credible biosafety legislation, for the benefit of all stakeholders. With that understanding, making provisions specifically embracing the precautionary approach may become easier.

Developments in GMO activities in Kenya may have an impact on other states in the East African region. For example, in Uganda a GM banana has already been developed and is awaiting commercial release,<sup>96</sup> the same way as it is happening in Kenya where GM crops such as maize were ready for commercialisation but awaiting legislation to be in place. Proponents argue that the GM banana will contribute to the alleviation of poverty as well as compliance with the Millennium Development Goals and overall sustainable socio-economic development.<sup>97</sup>

After adoption of the biosafety legislation in Kenya, the attention of USAID, GEF and other proponents of biotechnology is now concentrated on Uganda. The Biosafety Bill 2008 is awaiting Cabinet approval. Critics of the Bill argue that it is almost a duplicate of the Kenyan Act and with no provisions on the precautionary approach.<sup>98</sup> One would conclude that the two were drafted by the same persons.<sup>99</sup> In addition, the Ugandan Bill has little or no resemblance to African Model Law on Biosafety (AML).<sup>100</sup>

Over the years, Tanzania seems to have adopted a 'wait and see' approach in relation to biotechnology pending developments in Kenya.<sup>101</sup> This attitude seems to

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<sup>95</sup> Mbaria J 'Kenya Accused of "Secrecy" on GMO Technology Bill' The East African Newspaper 2-8 July 2007 available at <http://www.nationmedia.com/eastafrican/current/news> (accessed 6 July 2007).

<sup>96</sup> Kikulwe E, Wesseler J and Falck-Zepeda J *et al* 'Introducing a Genetically Modified Banana in Uganda' IFPRI Discussion Paper May (2008):1-29 at 22 available at [www.ifpri.org/sites/default/files/publications/ifridp00767.pdf](http://www.ifpri.org/sites/default/files/publications/ifridp00767.pdf) (accessed 15 July 2010).

<sup>97</sup> Ibid.

<sup>98</sup> Mayet M 'Comments on the National Biotechnology Safety Bill of Uganda' (2009) available at [http://www.liberationafrique.org/IMG/pdf/Uganda\\_brief.pdf](http://www.liberationafrique.org/IMG/pdf/Uganda_brief.pdf) (accessed 13 December 2009).

<sup>99</sup> Ibid.

<sup>100</sup> Ibid.

<sup>101</sup> See 'More African Countries Seen Growing GN Crops' The Namibian Newspaper of 5 April 2011 available at <http://www.namibian.com.na/news/full-story/archive/2011/...> (accessed 6 May 2011).

be changing rapidly, particularly after Kenya adopted its biosafety legislation. In June 2011, a study carried out by the Oakland Institute revealed that proponents are starting large genetically modified (GM) based food projects in Tanzania at refugee camps in Lugufu Kigoma province, and Katumba as well as Mishamo both in Rukwa province. These projects promise increased food production, in which an acre is expected to yield 195 bushels as opposed to non-GM crops that currently yield 17.5 bushels. Apparently, the Local people have not been consulted and have no bargaining power.<sup>102</sup>

Introduction of GMOs into Tanzania in such circumstances, and in the absence of biosafety legislation, raises pertinent issues. Most notable are those pertaining to the ability of African governments to 'regulate, to correct, to protect, to resist...' and leaving biotechnology conglomerates (such as Monsanto and Syngenta) and other proponents to 'redirect flows of finance, knowledge and food to suit themselves'.<sup>103</sup> Within this context, it is no wonder that proponents dictate the terms of involvement of the people and by implication, the government, which is pressurised to enact special laws that permit GMOs.<sup>104</sup> Such developments may easily amount to an abuse of the process which should result in enacting credible biosafety regimes in Sub-Saharan Africa (SSA). The thesis argues that using hunger to push for GMOs in the apparent absence of public involvement is likely to attract a strong backlash from the public. To the contrary, public participation could in the long term be very supportive of the introduction of the appropriate GMOs.

### **7.3.1.3 Namibia**

In 2002, Namibia rejected GM food Aid provided by the USA (unless milled) during the food shortages in southern Africa.<sup>105</sup> This was evidence of the political will to adopt a precautionary approach to biotechnology. However, the country's Biosafety Act enacted 2006 has no specific provisions embracing the precautionary approach. It instead requires the Minister to ensure that the dealings in the GMO or GMO

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<sup>102</sup> 'Understanding Land Investment Deals in Africa' (June 2011) Oakland Institute available at [www.oaklandinstitute.org](http://www.oaklandinstitute.org) (accessed 14 June 2011).

<sup>103</sup> See Bailey R 'Growing a Better Future' (June 2011):7 A Report prepared for Oxfam International available at [www.oxfam.org/grow](http://www.oxfam.org/grow) (accessed 13 June 2011).

<sup>104</sup> See 'Understanding land Investment Deals in Africa' (June 2011) Oakland Institute available at [www.oaklandinstitute.org](http://www.oaklandinstitute.org) (accessed 14 June 2011).

<sup>105</sup> See 'Africa Developing Biosafety Regulations for GMOs' available at <http://www.organicconsumers.org/ge/africa102703.cfm> (accessed 14 July 2010).

product 'will be in the public interest' before the Minister issues a permit. As discussed earlier,<sup>106</sup> public interest is a concept subject to many interpretations, which may complicate regulation. This thesis argues that in the absence of specific provisions on the precautionary approach, considerations of public interest give the decision-maker wide but not unlimited discretion in deciding whether or not to issue a permit.

Overall however, even with such favourable legislation, GMO activities appear to be slow due to many factors, including lack of sufficient institutional and human resource capacity<sup>107</sup> and of funding. The regulations made under s. 49 of the Act are pending approval before the Minister.<sup>108</sup> Based on those factors, it is plausible to argue that having a permissive regime is not a guarantee that GMO activities will flourish in Africa. Sufficient capacity building and investment is needed.

### 7.3.2 Strict Regimes

A classic example of a strict biosafety regimes is one of Zambia. In 2002 there were severe food shortages that threatened the lives of more than 14 million people in southern Africa. The shortages were attributable to a complex web of factors including drought, HIV/AIDS, structural adjustments,<sup>109</sup> debt, collapsing public services and poor governance.<sup>110</sup> Non-governmental organisations (NGOs) and international relief bodies including the World Food Program (WFP) appealed to developed countries for financial assistance.<sup>111</sup>

The USA responded expeditiously and by August 2002, it had provided three quarters of the donations received.<sup>112</sup> It provided the Aid in kind however by way of GM (yellow) maize. That triggered protests from the government of Zambia,<sup>113</sup> which

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<sup>106</sup> Section 25 (b) Biosafety Act no 7 of 2006 Republic of Namibia.

<sup>107</sup> See 'Overview of Biotechnology in Namibia' (2000-2009) African Biotechnology Stakeholders Forum (ABSF) available at <http://www.absfafrica.org> (accessed 2 June 2010).

<sup>108</sup> Email communication with a person in authority, the details of which are in file with this researcher.

<sup>109</sup> Clapp J 'The Political Economy of Food Aid' in Falkner R (ed) *The International Politics of Genetically Modified Food* (2007):85-99 at 89.

<sup>110</sup> Zerbe N 'Feeding the Famine? American Food Aid and the GMO Debate in Southern Africa' 29 *Food Policy* (2004):593-608 at 594.

<sup>111</sup> Ibid at 594.

<sup>112</sup> Bergstrom C 'Looking a Gift Horse in the Mouth: The Case of Zambia's Refusal to Accept American Food Aid' (July 2007):2 Noragric Working Paper No 42 available at <http://www.eldis.org/assets/Docs/33310.html> (accessed 14 August 2009).

<sup>113</sup> Ibid.

in turn, requested that organic food be bought locally, a request the USA rejected on the grounds that it had bought the maize using tax payers money.<sup>114</sup> The Zambian rejection was based a number of reasons including that GMOs would lead to: an increase in herbicide use; dominance of corporate monopoly; reduce emphasis on sustainable agriculture; potential environmental problems and loss of European markets.<sup>115</sup>

Zambia's opposition, even with the 2002 hunger crisis in the country, presents an extreme contrast in the development of biosafety legislation with that in the other selected countries. Opposition from non-governmental organisations and a fact-finding mission to Europe by local civic groups and scientists exacerbated existing scepticism about GMOs.<sup>116</sup> After visiting India, South Africa and Europe the group concluded that 'GMOs are a health hazard'.<sup>117</sup> Taking this view into account and the public debate concerning GMOs, the government decided to embrace the precautionary approach.<sup>118</sup> The then President (Mwanawasa) openly declared that 'we may be poor and experiencing food shortages ... but are not ready to expose people to ill-defined risks... I am not prepared to accept that we should use our people as guinea pigs'<sup>119</sup> no matter the level of hunger in the country.<sup>120</sup>

The hunger debate however 'shifted to focus on socio-political and historical issues, and was marked by the sharp tone of statements concerned with colonial and apartheid legacies, and to some extent with the techno-scientific vulnerability of the region'.<sup>121</sup> Most importantly, the government raised economic concerns arguing that GM crops may subsequently contaminate local non-GM crops and become a

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<sup>114</sup> Mwale N 'The Babelisation of Debate on GM Maize via the Media in Southern Africa in 2002' 36(1) *Social Dynamics* (2010):112-121 at 113.

<sup>115</sup> See 'What is the Impact of GMOs on Sustainable Agriculture in Zambia?' (2002) A Research Study sponsored by kasisi Agricultural Training Centre and Jesuit Centre for Theological Reflection available at <http://www.jctr.org.zm/downloads/GMOreport.pdf> (accessed 15 August 2010).

<sup>116</sup> Manda O 'Controversy rages over 'GM' food aid: Zambia Citing Health Concerns, Bars Genetically Modified Grain' (2003) available at <http://www.un.org/ecosocdev/geninfo/afrec/vol116no4/164food2.htm> (accessed 2 March 2009).

<sup>117</sup> Ibid.

<sup>118</sup> Bergstrom C (n112).

<sup>119</sup> Zerbe N (n110) at 603-604.

<sup>120</sup> Manda O (n 116).

<sup>121</sup> Mwale N (n114) at 113.

barrier to Zambian agricultural exports to Europe<sup>122</sup> which maintained stringent guidelines on GMOs.<sup>123</sup>

Having found itself in a dilemma between international trade and sustainable agriculture, the government rejected the GM maize (including milled maize).<sup>124</sup> It took the view that international trade superseded the urgency of hunger.<sup>125</sup> Its refusal increased tension and accusations between the proponents of GMOs in the USA and the opponents of biotechnology in non-governmental organisations and the EU.<sup>126</sup> In the continuing tension, the USA claimed that the refusal by the EU to certify GM food as safe made the latter culpable in the African food crisis and provided part of the justification<sup>127</sup> for filing the 2003 *Biotech* case<sup>128</sup> before the World Trade Organization (WTO). The USA was further angered by Egypt's withdrawal as a co-complainant in the *Biotech* case due to the need to protect its fresh fruits and vegetable exports to European markets.<sup>129</sup>

On the one hand, by rejecting GMOs, the government of Zambia sought to protect the long-term interests of the country,<sup>130</sup> - international trade in particular. On the other the National Farmers Union of Zambia claimed that the USA was using the famine to expand the market for the American biotechnology industry, thus reframing the debate into 'a theory of collusion between the US and multinationals'.<sup>131</sup> Analysts viewed these claims as a political-economic move that brought into question relations between Western powers, global capital and foreign investment.<sup>132</sup> The American government rejected the claim by the National Farmers Union of Zambia arguing that Zambians should instead appreciate the efforts of the USA government in responding to the crisis. The latter rejected the claim by the National Farmers

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<sup>122</sup> Clapp J (n109) at 90.

<sup>123</sup> Banda F 'Can Beggars be Choosers' (2002) Panos London available at <http://organic.com.au/news//2002.10.01> (accessed 10 July 2009).

<sup>124</sup> Zerbe N (n110) at 603.

<sup>125</sup> Mwale N (114) at 115.

<sup>126</sup> Zerbe N (n110) at 603.

<sup>127</sup> Zerbe N (n110) at 603.

<sup>128</sup> See Panel Report *European Communities – Measures Affecting the Approval and marketing of Biotech Products* WT/DS291/R, WTDS292/R, and WT/DS293/R available at [http://www.wto.org/english/tratop\\_e/dispu\\_e/status\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/status_e.htm)

<sup>129</sup> Clapp (n109) at 91.

<sup>130</sup> Mwale N (n114) at 115.

<sup>131</sup> Ibid.

<sup>132</sup> Ibid.

Union on the grounds that it was spending its tax payers money to supply the food.<sup>133</sup>

Zambia's approach was in contrast to Kenya where some MPs (as opposed to Zambia's experts) visited South Africa in 2006 and upon their return, they vigorously supported the passing of the Biosafety Bill 2007. They further urged the Finance Minister to allocate enough funds for bringing the Act into operation in 2008, even as the Bill was undergoing debate.<sup>134</sup> In Zambia, the panel of scientists who went on a fact finding mission to South Africa and other countries in Europe, concluded that GMOs were potentially harmful. Relying on the scientific advice of the panel, the government relied on the precautionary approach to reject GMOs. Another tactic the government seemingly used was to actively marginalise the views of those who sought to promote GMOs.<sup>135</sup>

The government regarded the GM food issue as a matter of national concern in which it apparently played the critical role of leading opposition to such food. Triggered by the hunger crisis in a region that was hitherto a bread basket for the country, the competing interests of proponents and opponents of biotechnology came face to face. Insistence by the American government to provide GM food rather than funds for the purchase of organic foods locally and the risk of losing its European markets if it accepted such food, ultimately placed Zambia at the crossroads between addressing the immediate hunger problem and safeguarding the long-term commercial interests. By giving priority to the commercial interests, it would be reasonable to conclude that Zambia seems to have succumbed to advice (and possibly pressure) from the EU to reject the GM food. Rejection does not necessarily mean that Zambia would be a GM free zone, particularly because neighbouring countries such as Swaziland accepted the whole grain - without being milled,<sup>136</sup> and if planted could be a source of gene flow.

The hunger crisis in Zambia provides a classic example of the manner, extent and success with which protagonists have sought to test the balance of power in the

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<sup>133</sup> Ibid at 117.

<sup>134</sup> Karembu M *et al* (n47) at 19.

<sup>135</sup> Henriot P 'The Zambian Experiment – GM vs. Organic' (2005) available at <http://organic.com.au/news/2005.04.03/...> (accessed 20 July 2009).

<sup>136</sup> Bergstrom C (n112) at 2.

global GMO controversy. The hunger crisis merely triggered emotions about an already contested issue concerning the risks and benefits of biotechnology. The ensuing conflict on whether GM food was potentially harmful or safe exacerbated the hunger crisis. Importantly however, it shifted the focus from the hunger crisis to the underlying fundamental issues that underpin regulation of biotechnology: how to establish and maintain an acceptable balance between safety of GMOs and international trade in general.

Ultimately, the government gave priority to commercial interests and took an early stand, thus leading the opposition by rejecting the GM food. It sought to justify rejection on grounds of potential harm, thereby evading part of the problem, namely the influence by the EU. Zambia's rejection was a win for the opponents of biotechnology. Arguably, the resulting WTO *Biotech* case was partly intended to teach the EU a lesson.

The strict biosafety regime developed by Zambia is therefore a manifestation of the struggle for the balance of power that was triggered by the 2002 hunger crisis. The legislation amounts to overregulation yet there is no guarantee that Zambia is a GM free zone as pollen is not a respecter of political boundaries. Acceptance of GM food by Swaziland and the willingness of Mozambique (which borders Zambia to the North-West and South Africa to the South) to allow such food to be transported through its territory (on condition that it was covered and milled)<sup>137</sup> rules out any guarantee that Zambia is or will remain a GM free zone.

While the government had taken a strict view in favour of regulation, the country seems to be moving slowly towards embracing GMOs. It has developed a GMO laboratory system at Mount Makulu under the auspices of the Ministry of Science Technology and Vocational Training.<sup>138</sup> This suggests that it seeks to build appropriate capacity in the testing of GMOs before allowing their commercial release – a process that seems to have discouraged investments in biotechnology, hence, the slow pace of GM technology in the country.

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<sup>137</sup> Bergstrom C (n112) at 2.

<sup>138</sup> Dodia Y 'GMO Again' (February 2010) available at <http://zecdev.blgspot.com/2010/02/gmo-again.html> (accessed 10 June 2010).

The slow pace of GMO activities in Zambia is an indication of failure on the part of the government to commence capacity building initiatives. This would include empowering local scientists to carry out objective research that would ultimately justify the strict stand taken by government concerning GMOs. Due to the strict stand, not many R&D activities in biotechnology took place during the period 2002 to 2010. At the same time, there is no indication that production of conventional food increased as many of the country's people are still starving as in many other countries in Sub-Saharan Africa. This argument does not nor is it intended to resolve the question whether or not biotechnology would have solved the hunger problem. Rather, capacity building and empowering local scientists could possibly have justified rejection of GMOs on grounds of safety instead of taking sides in the transatlantic divide on GMOs. One of the main reasons is because these issues are not only interlinked but also highly political.<sup>139</sup>

Current developments suggest that the pace of biotechnology development in Zambia may improve soon. In a recent meeting of stakeholders on biotechnology and biosafety held on 8 October 2010 in Zambia, groups such as the Cotton Development Trust, the Cotton Association of Zambia and representatives of smallholder farmers strongly appealed to the Biosafety Authorities to approve trials of Bt cotton. They urged the government to learn from experiences in Uganda and Kenya both of which have been conducting trials of GM crops thus building biosafety capacity in an incremental manner.

The then Deputy Minister for Science and Technology, Lameck Mangani, expressed the view that Zambia needs to rise above the ideological divide on biotechnology and work in partnership with stakeholders towards what is rational and of benefit to the country's future.<sup>140</sup> This leaves the question unanswered as to whether the apparent slight change of attitude is coming too late in much the same way as whether the guinea pig allegations are still valid or not.

The slow approach adopted by Zambia shows a diametric contrast to the rapid development of GM technology in South Africa and Kenya. These varying

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<sup>139</sup> Clapp J (n109) at 98.

<sup>140</sup> Belay G 'Stakeholders in Zambia Push For Bt Cotton Trials' available at <http://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=6830> (accessed 12 July 2010)

approaches are an indication that most African countries are willing to embrace GM technology in their agricultural practices with inevitable differences in the pace they take to achieve the intended objectives. Countries that adopt a precautionary approach such as Zambia go at a slow pace and hardly attract substantial private investment while countries with permissive regimes such as South Africa and Kenya may benefit from such investments and become demonstration centres for GMO activities in the relevant regions.

Arguably, long-term experimentation and consumption of GM food coupled with effective communication of potential risks and benefits may result in more home-grown GMO activities and reduced resistance in SSA.

#### **7.4 Main Findings of the Study**

Having analysed the issues raised and also accounted for the emerging trends in implementation of the precautionary approach in the selected countries, the study makes findings as follows.

##### **7.4.1 The implementation of the precautionary approach is obligatory but it is not a Panacea for Solving the GMO Controversy in SSA**

This thesis finds that while the implementation of the precautionary approach consistent with the Protocol is obligatory, it is not a panacea for solving the GMO controversy in SSA. First, extreme stand points for or against GMOs may not be helpful in this twenty first century, as they take political dimensions that attract entities and multinational companies with varying interests over GMO activities. Moreover, 'such mismatched opponents cannot generate balance, which depends, above all, on equality of knowledge by both parties'.<sup>141</sup> These standpoints may thus delay or even divert attention of many countries from immediate need of making informed decisions on the most suitable way of embracing biotechnology. Moreover, biotechnology cannot solve all the problems of the environment and development,

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<sup>141</sup> Jones S 'BBC Trust Review of Impartiality and Accuracy of the BBC's Coverage of Science' (July 2011) an independent assessment available at [http://www.bbc.co.uk/bbctrust/assets/files/pdf/our\\_work/science\\_impartiality/science\\_impartiality.pdf](http://www.bbc.co.uk/bbctrust/assets/files/pdf/our_work/science_impartiality/science_impartiality.pdf) (accessed 18 August 2011).

thus calling for a realistic approach by governments in seeking to meet peoples' expectations.<sup>142</sup>

Second, to be meaningful, the precautionary approach must effectively be implemented in decision-making. Some of the countries including South Africa, Kenya and Namibia have implicitly reflected it in the risk management procedures. While these countries embrace precaution as part of risk assessment, the irony is that the biosafety legislation in those countries falls short of making specific provisions embracing the approach. Importantly, the relevance of the approach can only be tested within the context of the extent to which it may be used in decision-making in a manner that may achieve an effective balance between safety of the environment and humans on one hand and investment in biotechnology on the other.

#### **7.4.2 Implementation of the precautionary approach or its absence reveals the reality of the global GMO controversy in SSA**

One of the key assumptions that form an integral part of the conceptual framework of this study is that GMOs remain a contentious issue globally. This assertion was based on the historical opposition to GMOs especially in Europe – opposition that immensely influenced negotiations on the Protocol. However, learning about the GMO controversy in distant parts of the developed world in the latter part of the twentieth century is one thing and experiencing how such a controversy manifests itself closer to home in parts of African is another. The former provides the historical, socio-economic and political context within which the Protocol was adopted. The latter reveals the reality of the GMO debate on the ground ie the practical aspects arising from domestic implementation of the Protocol in an African context. These two aspects provide a contrast that serves two important purposes.

First, adoption of the Protocol was dictated by political and diplomatic factors that resulted in a compromise agreement. Second, domestic implementation of the Protocol reveals realistically, the attitude of individual states towards biotechnology. By examining domestic implementation of the precautionary approach from a comparative perspective, this study finds that domestic biosafety legislation is a

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<sup>142</sup> Chapter 16 of Agenda 21 available at [http://www.un.org/esa/dsd/agenda21/res\\_agenda21\\_00.shtml](http://www.un.org/esa/dsd/agenda21/res_agenda21_00.shtml) (accessed 13 July 2009).

powerful tool for assessing not only the functionality of the Protocol, but also how and the extent to which Parties - the developing countries in particular - are willing to comply with it. Quite often at the international level, states are guided by considerations of diplomacy in signing agreements. However, the subsequent ratification of such instruments is an issue that may partly fall within the realm of domestic law, and as such, may be subject to democratic processes in the state that include public accountability. The implementation of such instruments is however obligatory from the perspective of international law. Consequently failure to implement or incorrect implementation will generally be a breach of the states' international obligations.<sup>143</sup>

Public demands for strict biosafety regimes or rejection of GMOs altogether, concerted efforts by scientists and the biotech industry (supported by powerful states led by the USA) to promote GMOs and the almost one sided nature of the emerging permissive or strict biosafety regimes in the selected countries, confirm that the GMO controversy remains as emotive as ever. For example, the proponents of biotechnology aggressively lobbied and succeeded in obtaining a permissive biosafety regime in Kenya while opponents of the technology successfully influenced adoption of a strict Biosafety regime in Zambia. These developments represent the varying attitudes and approaches towards domestic implementation of the precautionary approach and hence the Protocol.

Neglect of the African Model Law (AML) which seeks strict regulation, the skewed approaches to implementation of the precautionary approach and the involvement of UNEP as well as NEPAD strongly suggest that the initiatives towards harmonisation are largely promotional of GMOs.

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<sup>143</sup> The doctrine of impossibility of performance might exonerate the state from culpability in certain circumstances. Article 61 of the Vienna Convention on the Law of Treaties ([http://untreaty.un.org/ilc/texts/instruments/english/conventions/1\\_1\\_1969.pdf](http://untreaty.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf) (accessed 13 January 2009)) makes provision for impossibility of performance by requiring that (1) '[a] party may invoke impossibility of performing a treaty as a ground for termination or withdrawing from it if the impossibility results from the permanent disappearance or destruction of an object indispensable for the execution of the treaty...' (2) 'Impossibility of performance may not be invoked by a party as a ground of terminating or withdrawing from or suspending the operation of a treaty if the impossibility is the result of a breach by that party either of an obligation under the treaty or any other international obligation owed to any party to the treaty'. Thus a party's wrong in failing to embrace the precautionary principle in domestic law amounts to a breach of the Party's obligations under the Protocol. Such a breach cannot be relied upon to exonerate the Party in the wrong from responsibility that may arise from non-performance of its obligations under the treaty.

### 7.4.3 The precautionary approach: varying attitudes and skewed approaches

South Africa and Kenya readily embraced biotechnology since the 1990s. South Africa went further and joined the Miami Group in lobbying for a weak international biosafety regime. Adoption of a permissive biosafety regime by South Africa was therefore expected as American biotechnology companies were the first to introduce GM crops into the country. Thus far, South Africa shares the same views on biotechnology as the USA and other proponents of biotechnology.

Being the first country to sign the Protocol, Kenya demonstrated its support for it and set a good example for African states and other proponents of a strong biosafety regime in general. However, adoption of a similar (or even weaker) biosafety regime in Kenya raises more questions than answers. This study found that adoption of a permissive regime in Kenya is seemingly attributable to external factors that include the influence of huge multinational companies and powerful states such as the USA.

As a result, South Africa, Kenya and Namibia adopted biosafety legislation that does not specifically provide for the precautionary approach in the wording of the Protocol. The risk management strategies in the legislation may reduce uncertainty, (which reduction is a precautionary measure<sup>144</sup>). However, to avoid any ambiguity and also promote the development of a jurisprudence on implementation of the precautionary approach, incorporation of the approach in the wording of the Protocol would enhance compliance with it and improve the credibility of such legislation. Section 25 (4) (b) of the Namibian biosafety Act requires that the public interest be satisfied before granting a permit. This may be an indirect way of restricting GMOs but the term is subject to conflicting interpretations and purpose.

Indirect implementation of the precautionary approach may serve a meaningful purpose where strict liability penalties are imposed and insurance mechanisms put in place, in addition to environmental impact assessments, risk assessments, environmental audits and life-cycle analyses.<sup>145</sup> However, the

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<sup>144</sup> Deville A and Harding R *Applying the Precautionary Principle* (1997):36.

<sup>145</sup> Barton C 'The Status of the Precautionary Principle in Australia: Its Emergence in Legislation and a Common Law Doctrine' 22 *Harvard Environmental Law Review* (1998):509-558 at 513.

Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety<sup>146</sup> and the biosafety legislation in South Africa, Kenya and Namibia are based on fault liability. Furthermore, these regimes are silent on insurance. On penalties for example, the Regulations under the Biosafety Act in Kenya, prescribe a heavy penalty of twenty million Kenya shillings (the equivalent of approximately \$200, 000) or imprisonment for a term not exceeding ten years or both.<sup>147</sup> However, the regime is so flexible to the extent that the NBA has discretion to allow (conditionally) the use of GMOs brought into the country without authorization. Such loopholes defeat the otherwise deterrent punishment.

Zambia remains sceptical of biotechnology. Its strict approach explains why it had no problems embracing the precautionary approach. Namibia took some time before allowing field trials for GM crops. This thesis submits that the varying attitudes and approaches indicate a lack of understanding or deliberate attempts by some of the selected countries to downplay the requirements of the Protocol on what appropriate legislative measures would entail.

#### **7.4.4 Scepticism on the role of the precautionary approach persists and is growing**

As discussed in chapter four, by adopting the precautionary approach as the guiding criterion for the regulation, parties to the Protocol were keen to ensure that a cautious approach was adopted. Recognition of the sovereign rights of states to take more protective measures to conserve their biodiversity (subject to their other obligations under international law),<sup>148</sup> implies that parties are at liberty to adopt higher thresholds than those provided by the Protocol. Accordingly, it is reasonable to assert that the precautionary approach provides minimum criterion for regulation.

By failing to specifically provide for the precautionary approach in their biosafety legislation, South Africa, Kenya and Namibia have failed to comply with this minimum criterion. In addition, such failure is a clear indication that the scepticism

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<sup>146</sup> Adopted on 16 October 2010 at Nagoya Japan but not yet in force available at available at [www.cbd.org](http://www.cbd.org) (accessed 8 March 2011).

<sup>147</sup> Regulation 16 of the Regulations made under Section 51 of the Biosafety Act No 2 of 2009 Republic of Kenya.

<sup>148</sup> Article 2(4) of the Cartagena Protocol (n18).

concerning the precautionary approach that complicated negotiations on the Protocol, still persists. Two examples may suffice.

On the one hand, the proponents of biotechnology including industry, and countries such as the USA and South Africa, are determined to ensure that, as far as possible, African countries minimise barriers on the adoption of permissive regimes. Kenya is a classic example where proponents working with local scientists seem to have largely influenced adoption of such a regime. They used tactics that included delay in adoption of legislation, indirectly influencing sections of Parliament by taking them on a trip to South Africa (whose biotechnology companies have vested interests in Kenya<sup>149</sup>), allegedly operating in secrecy, and seeking to promote uniform permissive regimes in the region. Uganda is a case in point where the tactics used in Kenya are currently being applied.

On the other hand, countries such as Zambia that have close agricultural export ties with the EU, embraced the approach in its strongest formulation. Attempts by the USA to impose GM food on Zambians during the hunger crisis of 2002, seems to have strengthened the case for the adoption of the precautionary approach in Zambia and the requirement to satisfy the public interest criterion before issuing a permit. In developing its biosafety legislation however, Kenya ignored what happened in Zambia, possibly because it needs to address the hunger crisis and GMOs might provide part of the solution. Hence, developments in the regulation of biotechnology in Kenya and Zambia create a paradox which may confuse other countries on how best to regulate GMOs. This may hinder adoption of holistic biosafety regimes in SSA.

#### **7.4.5 Lack of access to the GM food technology may threaten global food security**

Unless relevant to local needs, patenting of GM food crops may make people almost entirely dependent on such crops. The associated monopoly by huge biotechnology companies (and powerful states that promote GMOs) could endow these entities with immense economic power, which they could use to dominate food markets (and politics globally) for commercial advantage. Furthermore, the adventitious presence

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<sup>149</sup> See the discussion in chapter seven

of GM food could 'corrupt' and ultimately eliminate or replace conventional foods. Biotechnology has already changed agriculture and the food many of us eat.<sup>150</sup> A combination of these factors could plunge the world into an unprecedented global food security crisis. The establishment by Norway of a world seed bank in the frozen Arctic with the capacity to store over 4.5 million seeds from around the world to shield such seeds from man-made and natural disasters<sup>151</sup> was imperative.

#### **7.4.6 The precautionary approach and public involvement are interdependent**

Implementation of the approach serves many purposes, including implementing states' obligations under international law. However, for such implementation to translate into reality, transparent decision-making institutions and processes are required. Currently information concerning biotechnology is 'misdirected, misinterpreted, and often borders on scare-mongering by its critics and naive optimism by its proponents... a communication strategy that brings all stakeholders together is lacking'.<sup>152</sup> Hence, transparency can hardly be achieved unless there is open and effective involvement of all stakeholders and the public as well as meaningful access to information.

The public may freely provide information that is not within the knowledge of experts as it is not subject to the professional ethics such as confidentiality of such experts. Public participation could gradually enable the government and the people to make informed decisions and enhance the legitimacy of the decision-making process. Furthermore, the study finds that in order to inform and educate the public about risk effectively, the risk communicator must know the level of trust enjoyed by the regulator as well as be aware of the public perception of the risks.<sup>153</sup> Thus, implementation of the precautionary approach in legislation and transparency in

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<sup>150</sup> Makoni N, and katerere J, 'Genetically Modified Crops' in *Africa Environmental Outlook* No 2 (2006): IUCN 300-330 at 316 available at [www.unep.org/dewa/africa/docs/en/AEO2\\_Our\\_Environ\\_Our\\_Wealth.pdf](http://www.unep.org/dewa/africa/docs/en/AEO2_Our_Environ_Our_Wealth.pdf) (accessed 14 May 2010).

<sup>151</sup> See 'Seeds of Hope' *The Economist* 24-30 June (2006) p.92. Also see 'Seedbank' available at <http://www.instructable.com/community/seedbank--Arctic-Bunker/...> (accessed 12 July 2010).

<sup>152</sup> Kisamba-Mugerwa 'Agricultural Biotechnology case for Developing Countries' in Sengooba T *et al* (eds) (2005):10 'Regulatory Cooperation, Using Information, Regional Policies, and National Expertise' Proceedings of an East Africa Biosafety Policy Roundtable April 18-20 2005 Entebbe, Uganda available at <http://www.biovisioneastfrica.com/publications...> (accessed 27 June 2009).

<sup>153</sup> Zander J *The Application of the Precautionary principle in Practice* (2010):21.

decision-making that encompasses meaningful public participation and access to information are interdependent.

The study finds that effective and functional institutions - that embrace good governance, acceptable levels of access to information and public participation - will seek to ensure that the approach is applied in a manner that recognises and reflects priorities, aspirations and legitimate expectations of the people in relation to biotechnology.

#### **7.4.7 The precautionary approach is not and should not be an impediment to the promotion of GMOs**

By adopting the approach as a pillar in regulation, parties to the Protocol intended that it be used as a guiding criterion for balancing conservation of biodiversity and human health with trade. Article 1 of the Protocol limits such a balance to the threshold of 'ensuring an adequate level of protection'. This means that once such a level has been achieved, the objective of the Protocol has been realised. Arguably on the one hand, the negative perceptions concerning the approach that culminated in its exclusion or incorrect implementation in South Africa, Kenya and Namibia, seem to be embedded in considerations that include political expediency. This thesis submits that such negative attitudes to the approach is contrary to the objective and spirit of the Protocol.

On the other hand, Zambia has adopted the approach in strict terms yet it is still making some progress in R&D in biotechnology, albeit at a slow pace due to many factors including lack of human and institutional capacity. The pace is no different from that in Namibia which does not embrace the approach in the wording of the Protocol. One may conclude that implementation of the approach is not and should not be an impediment to the promotion of biotechnology. Moreover, stringent regulation would in fact offend the precautionary approach.<sup>154</sup> A co-evolutionary

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<sup>154</sup> Sunstein C 'Precautions Against What? Perceptions, Heuristics and Culture' in Wiener J Rogers M and Hammitt J *et al The Reality of Precaution* (2011):492-515 at 497.RFF Press London

approach that balances environmental protection with developments in biotechnology is instead most suited for African counties.<sup>155</sup>

#### **7.4.8 Whether, and the extent to which, governments are *players, referees, linesmen or spectators* in the regulation of GMOs remains uncertain.**

In South Africa, leading American biotechnology companies, such as Monsanto, and scientists played a significant role in the adoption of a permissive biosafety regime. In the process of enacting the GMO Act,<sup>156</sup> the government seems to have played merely an administrative role: endorsement.

In Kenya and Zambia, the development of biosafety legislation provided *playgrounds* where opposing views came 'face to face'. In Kenya local scientists working with huge multinational companies including Monsanto, state agencies including USAID and other agencies, including UNEP were all involved in the process leading to adoption of the National Biotechnology Policy on Biotechnology and the Biosafety Act.<sup>157</sup> These actors seem to have influenced or dictated, at least to some extent, adoption of a permissive regime. These developments may have placed the government in a somewhat precarious position in relation to its role as the public trustee of the environment and the health of the population. Currently, government action in allowing commencement of the Biosafety Act in the absence of regulations (that were published six weeks later) could suggest that it was less able to resist undue pressure from industry. The latter had hitherto invested in R&D activities and was therefore keen to release GM crops into the environment, even as the public is yet to know much about such crops.. The then absence of regulations tended to diminish transparency in decision-making and could negatively impact on implementation of the precautionary approach.

By way of contrast, in Zambia the government took the lead in rejecting GM food. Owing to the influence of the EU, Zambia vehemently opposed introduction of GMOs. The government's open and firm stand was instrumental in the adoption of a

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<sup>155</sup> Juma C and Serageldin I *et al* 'Freedom to Innovate: Biotechnology in Africa's Development' (2007):11 A Report of the High-level African Panel on Biotechnology for the African Union (AU) and the New Partnership for Africa's Development (NEPAD) Addis Ababa available at [www.nepadst.org](http://www.nepadst.org) (accessed 12 August 2010).

<sup>156</sup> No 15 of 1997 Republic of South Africa.

<sup>157</sup> No 2 of 2009 Republic of Kenya.

strict biosafety regime that essentially says *yes for NO* to GMOs, with the effect that introduction of GMOs into the country is rather cumbersome. These differing roles of government raise many questions, some of which remain unanswered, such as was the government a *player, referee, linesman or spectator* in the development of biosafety legislation.

#### **7.4.9 The interplay between biosafety and trade still tilts in favour of the latter**

The Protocol was adopted at a time when the World Trade Organisation's (WTO) trade regime was already well established. The WTO regime<sup>158</sup> seeks to safeguard international trade by minimising barriers to such trade, among other things. Its policies and actions are largely influenced by the powerful developed countries such as the USA. In accordance with the precautionary approach, the Protocol seeks to ensure safety in the transfer, handling and use of LMOs in the transboundary movement of such organisms.<sup>159</sup>

By adopting the precautionary approach, the Protocol itself seems to have become a trade barrier under the WTO regime. The WTO's Disputes Resolution Panel's rejection that the precautionary approach had attained the status of a principle of customary international law and its ruling in favour of the USA in the *Biotech* case,<sup>160</sup> indicate an overriding interest to safeguard trade as against safety in respect to regulation of biotechnology. It is therefore apparent that while the WTO is trying to integrate protection of the environment in its mandate, the interplay between biosafety under the Cartagena Protocol and trade under the WTO regime still seems to tilt in favour of the latter.

#### **7.4.10 Reconciling the cross roads in relation to the regulation of GMOs is possible but for political factors that go beyond legal jurisprudence**

Proponents of the precautionary approach view it as one that offers hope of avoiding serious, and possibly irreversible harm to human health and the environment while

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<sup>158</sup> Reference here is mainly to the Sanitary and Phytosanitary (SPS) Agreement discussed in chapter four

<sup>159</sup> Article 1 of the Cartagena Protocol (n18).

<sup>160</sup> See Panel Report *European Communities – Measures Affecting the Approval and marketing of Biotech Products* WT/DS291/R, WTDS292/R, and WT/DS293/R (n128).

opponents view it as an assault on science, reason, free trade and commerce.<sup>161</sup>

The selected countries belong to the two camps that hold opposing views on the precautionary approach. Such approaches may not stand the test of time in the evolving jurisprudence on the approach. Two considerations support this. First is the 2000 Communication of the EU that

‘Recourse to the precautionary principle presupposes that potentially dangerous effects deriving from a phenomenon, product or process have been identified, and that scientific evaluation does not allow the risk to be determined with sufficient certainty’.<sup>162</sup>

The EU guidelines clearly illustrate that the precautionary principle has fundamental elements that include identification and evaluation of risks, both of which together trigger implementation of the principle in decision-making. This contrasts with the claims of opponents that it is an assault on science.

The second consideration is the concept of proportionality in the implementation of the precautionary principle. The EU Communication on the precautionary principle mentioned earlier requires that:

- measures envisaged must make it possible to achieve the appropriate level of protection.
- Measures based on the precautionary principle must not be disproportionate to the desired level of protection and must not aim at zero risk, something that rarely exists
- An incomplete assessment of the risk may considerably limit the number of options
- Measures must be non-discriminatory in their implementation and subject to review in the light of new scientific data

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<sup>161</sup> Ragnar E, Fischhoff B and Fischhoff I ‘Precautionary Principles: General Definitions and Specific Applications to Genetically Modified Organisms’ 21(3) *Journal of Policy Analysis and Management* (2002):381-407 at 395-396.

<sup>162</sup> Communication from the European Communities (2 February 2000) Brussels available at [http://ec.europa.eu/dgs/health\\_consumer/library...](http://ec.europa.eu/dgs/health_consumer/library...) (accessed 14 August 2010).

Community law requires that measures adopted should not exceed the limits of what is appropriate and necessary to attain the legitimate objectives pursued by the relevant legislation; where there is a choice between several appropriate measures, recourse must be had to the least onerous; and the disadvantages caused must not be disproportionate to the aims pursued.<sup>163</sup> The costs of some of the measures may vary significantly depending on the economic and social importance of the issue at stake and whether invocation of the precautionary principle would interfere with planned activities or would involve varying degrees of remediation.<sup>164</sup>

Further, Justice Preston notes that the concept of proportionality 'introduces a bias to conventional cost-benefit analysis to include a weighing function of ignorance, and for the likely greater dangers for future generations if life support capacities are undermined when such risks could consciously be avoided'.<sup>165</sup> The concept of proportionality therefore requires the weighing of the available options and seeks to enhance rationality in the application of the precautionary approach. Apparently, the usefulness of the proportionality criterion is dependent upon functional decision-making authorities that have sufficient infrastructural, financial and appropriate human capacity.

This thesis finds that the strict approach of Zambia in implementing the approach and the remote implication by South Africa, Kenya and Namibia cause confusion. This unnecessarily complicates regulation of biotechnology.

It is submitted that claims by the proponents of biotechnology discussed in chapter four that the approach may be used as a political tool to restrict trade unnecessarily, are not legally supportable. The claims are issues of governance that must be dealt with at the domestic level. They seem to be founded on the belief that

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<sup>163</sup> Schomberg R 'The Precautionary Principle and its Normative Challenges' in Fisher *et al* *Implementing the Precautionary Principle: Perspectives and Prospects* (2006):19-41 at 27.

<sup>164</sup> Schomberg R 'The Precautionary principle and its Normative Challenges' in Fisher E, Jones J and Schomberg R *Implementing the Precautionary Principle: Perspectives and Prospects* (2006):19-41 at 27.

<sup>165</sup> Preston J 'The Role of the Judiciary in Promoting Sustainable Development: The Experience of Asia and the Pacific' (2006) A Paper presented to the Kenya Judicial Colloquium on Environmental Law Mombasa Kenya 10-13 January 2006 available at [www.lawlink.nsw.gov.au/...Preston/Speech\\_10jan06\\_Preston.pdf](http://www.lawlink.nsw.gov.au/...Preston/Speech_10jan06_Preston.pdf) (accessed 16 August 2010).

the precautionary approach is ‘... not law but politics-smuggled into law’.<sup>166</sup> While this claim is rebuttable, the thesis argues that in cases where the approach may be used to unnecessarily restrict trade, this should be treated as abuse of law or discretion, the same way scientific risk assessment may be manipulated to *achieve politically induced uncertainty* discussed at (3.3.4) to serve narrow political ends.

Abuse of law is a practice that is as old as the law itself. Such abuses are worsened by the simultaneous and increasing intensity of the forces pulling law towards and away from politics with almost equal strength, thereby creating tension within legal jurisprudence.<sup>167</sup>

This thesis submits that African countries should not allow themselves to be misled or succumb to external forces either to neglecting the precautionary approach or adopting its extremist strict versions. Rather, they should view the approach as a tool that is essential in GMO governance and capable of being applied within permissible limits.

The approach is flexible enough to accommodate the legitimate interests of stakeholders. This requires a paradigm shift in favour of honesty. Part of what is lacking appears to be failure by African political leaders to revisit issues concerning GMOs, and with vigour, adopt a common stand that may ultimately help the continent to take decisive action. Current trends have left most countries vulnerable, thereby providing a playground for testing the relative balance of power between proponents and opponents of biotechnology.

The apparent ‘tug of war’ between proponents and opponents about introduction of GMOs in Kenya and Zambia has persuaded this researcher to borrow the words of Stengel, who in May 2010, made an attempt to identify the 100 most powerful people globally. He found that it was not the influence of power but the power of influence that counted.<sup>168</sup> Likewise, this thesis finds that, in the regulation of GMOs in the selected countries, it is the winning side in

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<sup>166</sup> *United States v Virginia* (1996) 518 US 515 at 569 as per the dissenting judgment of Justice Scalia who argued that the decision of the United States Supreme Court to abolish exclusively men military schools was based on political rather than legal considerations and concluded that the rules upon which the Court relied on were not law but politics-smuggled into law.

<sup>167</sup> Zamboni M *The Policy of Law* (2007):3

<sup>168</sup> Stengel R (n1).

the contest between powerful actors pulling in opposite directions that may largely define the quality of legislation. For this reason, the thesis finds that the factors in favour of implementation of the precautionary approach are outweighed by political considerations that may go beyond legal jurisprudence.

## **7.5 Conclusion**

Domestic implementation of the precautionary approach provides an *acid test* in assessing the credibility, and in turn, the transparency of the biosafety regimes in the selected countries. This is mainly because the objective of and by implication, consequent activities under the Protocol are founded on the precautionary approach. Owing to scientific uncertainty concerning the safety of GMOs, it is essential that biosafety regimes be credible, and thus workable. Credibility is a notion founded upon many factors key among which is transparency of both the legislation that constitute the theoretical aspects of regulation and the decision-making process that implements such legislation. A combination of these two aspects is intended to ensure that theory translates into reality in seeking to reconcile the various interests that underpin the regulation of GMOs.

This study finds that the relative struggle for the balance of power in the regulation of GMOs between the proponents and opponents in the selected countries has deprived governments (and hence the people) an opportunity to genuinely accept or reject GMOs. The conclusion that follows informs the way forward, which is a credible source of workable suggestions on how regulation of GMOs and implementation of the precautionary approach may become more relevant in SSA.

## Chapter Eight

### CONCLUSION

[t]he real “power” lies with the one who is able to impose his/her definition of the problem at hand, because together with the problem definition, the available scope for the solution finding is “smuggled” furtively into the decision-making process’.<sup>1</sup>

#### 8.1 Highlighting the Key Issues

The introduction of genetically modified crops and food into global agriculture in the last quarter of the twentieth century gave rise to controversy rooted in fear, suspicion and distortions concerning the safety of the environment and humans. In 2000, the Cartagena Protocol (the Protocol)<sup>2</sup> was adopted to provide minimum thresholds for regulation of transboundary movement of GMOs, one of which is the precautionary approach. Opponents of GMOs view the approach as an important risk management tool that addresses scientific uncertainty, the latter being inherent in scientific innovation. Proponents are sceptical as the approach may be used to restrict trade unnecessarily.<sup>3</sup> Being parties to the Protocol, the selected countries are under an international law obligation to domesticate the Protocol, which they claim to have done by enacting biosafety legislation. However, implementation of the precautionary approach remains problematic as there is confusion as to its meaning and purpose.<sup>4</sup>

By discussing the intertwined socio-economic, environmental, ethical and political interests relevant to biotechnology, the thesis found that these often conflicting interests interact in a globalised economy, thus complicating regulation.<sup>5</sup> In an attempt to resolve the controversy, the Protocol is founded on the precautionary approach in order to ensure adequate protection of biological diversity and the safe use of biotechnology.<sup>6</sup> However, the selected countries have adopted

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<sup>1</sup> Laes E, D’haeseleer W and Weiler R ‘Addressing Uncertainty and Inequality in Nuclear Policy’ *The Journal of Enterprise Information Management* 18:3 (2005) 357-376 at 359.

<sup>2</sup> See the discussion at (4.3).

<sup>3</sup> See the discussion at (1.2).

<sup>4</sup> See the discussion at (1.2 and 3.3.2).

<sup>5</sup> Discussed in chapter two.

<sup>6</sup> See the discussion at (4.2).

varying attitudes to implementation of the approach thus raising concern about whether or not a jurisprudence can be developed in them and across SSA.

An assessment of biosafety legislation revealed that South Africa and Kenya do not specifically provide for the precautionary approach, but imply that it will be implemented in decision-making. Namibia does not specifically embrace it, but it requires the Minister to be satisfied that GMO activities will be in the public interest before issuing a permit.<sup>7</sup> By way of contrast, Zambia has taken a strict view of regulation. It specifically provides for the precautionary approach, but also requires that public interest is taken into account in decision-making. The study argues that by merely implying the precautionary approach in their legislation, South African, Kenyan and Namibian legislation amounts to incorrect implementation and is thus a breach of their international obligations. At the same time, while Zambia embraces the precautionary approach, inclusion of the public interest criterion falls outside the thresholds provided by the Protocol, resulting in overregulation.

The seemingly heavy presence of proponents (particularly giant multinational biotechnology companies) in South Africa and Kenya and their increasing interest in Tanzania and Uganda, strongly suggest that regulation in SSA has tilted towards permissive biosafety regimes. This has frustrated efforts by the African Union to adopt a seemingly strict stand on regulation, culminating in ongoing initiatives to adopt a revised African Model Law (AML). The intention is to reflect international trends and align the AML with reality on the ground while retaining a cautious approach to regulation of GMOs.

The thesis found that the influence of huge multinational biotechnology companies, their monopoly over GMO activities, including patenting, and their partnership with scientists and government, has tilted the balance in regulation towards permissive regimes.<sup>8</sup> The spreading of that trend to other countries in SSA is an indication that governments need to take a more active role to ensure that the precautionary approach is adopted in GMO regulation. Moreover, the thesis argues that implementation of the approach does not impede promotion of biotechnology.

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<sup>7</sup> Section 25 (1) (4) (b) of the Biosafety Act No 7 of 2006 Republic of Namibia. See the discussion at (5.3.4).

<sup>8</sup> See the discussion at (7.3).

## 8.2 Conclusion

Biotechnology presents opportunities and challenges which require African countries to be realistic in making decisions about GMO activities. Extremist standpoints for or against GMOs may not be helpful in this twenty first century. The many social and economic problems, including hunger and malnourishment, have created a need that should make African countries reconsider their views on GMOs. Moreover, for many of the hungry and undernourished, *food is food*. Should the food be safe, sufficient and nutritious, the better. GM food may satisfy the last two attributes, but safety remains contentious—an issue the intensity of which should be weighed against consumption of such food for more than fifteen years, apparently with no potential harm reported.

Apparently GM food is here to stay, in much the same way as its traditional breeding counterpart. Once the former is properly entrenched in the food chain and accepted by consumers as well as the public in many countries in Africa, opposition to it may significantly reduce. In the mean time however, we can only learn how best we may live with GM food and this should be reflected in legislation. To be credible, jurisprudence on biosafety legislation must therefore take into account developments in biotechnology since the 1970s and the current socio-economic and environmental problems Africa is facing. An effective balance between these imperatives is needed. Stakeholders must be prepared to change their attitudes and be flexible, if they are to be realistic. Legislation should also be workable.

However, the transatlantic divide between proponents and opponents of GM food is unfolding in Africa, raising questions such as for whom and in whose interest they should be introduced. Proponents rely on anticipated increases in farm yields to promote them. For them biotechnology presents opportunities for solving the hunger problem in Africa. They are keen to ensure that as many countries as possible embrace it. They view such food as safe until proved unsafe, arguing that in some cases it may be substantially equivalent to food produced by traditional methods.<sup>9</sup>

Efforts to promote GMOs are hampered by resistance from opponents, including environmentalists and civil society. They perceive GM food as being

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<sup>9</sup> See the discussion at (2.6.1).

potentially harmful to the environment and humans, claiming that it is unsafe until proved safe. Public demands for safety are therefore justifiable on those grounds. In addition, ethical issues relating to the patenting of living organisms and the associated monopoly over seeds, question the real intentions of proponents and the interests that biotechnology seeks to serve, particularly in Africa.

Most African governments are grappling with whether they should accept or reject GM crops. Their introduction into African agriculture presents both opportunities and challenges, which require decisive government action to benefit the majority of the people. The challenge is how African countries can develop workable biosafety regimes that safeguard the continent's rich biodiversity and the health of its people, while at the same time supporting the introduction of GM food that may alleviate starvation.<sup>10</sup> For example, the current food crisis in the Horn of Africa is a major concern for the international community.<sup>11</sup> It demonstrates the need for improved or new methods of food production. Biotechnology may provide part of the solution.

Regulation of biotechnology must be done in compliance within the thresholds established by the Protocol. It provides for the precautionary approach as the guiding criterion for regulation. The Protocol also recognises the sovereign right of states to take more protective action to safeguard their biodiversity.<sup>12</sup> The functionality of the Protocol is dependent on effective domestic implementation. By enacting biosafety legislation, the selected countries sought to domesticate the Protocol, but their implementation of the approach remains problematic. Further, except for Zambia, the other three countries developed legislation that has no resemblance to the non-binding African Model Law (AML). The AML was founded on the precautionary approach which is intended to be a benchmark in the development of biosafety legislation. These and other factors were the rationale for this study<sup>13</sup>, as apparently little or no research had been carried out regarding regulation of GMOs in the selected countries.

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<sup>10</sup> See the discussion at (2.2 and 2.6.4.2).

<sup>11</sup> See the discussion at (1.1).

<sup>12</sup> See the discussion at (4.2).

<sup>13</sup> See the discussion at (1.4)

As indicated earlier,<sup>14</sup> the objective of the thesis was to investigate whether, and if so, how a jurisprudence relating to the precautionary approach can be developed in the regulation of biotechnology in an African context. To achieve this goal, the study sought to answer three sets of questions. First, what makes GMOs controversial globally and how does the controversy impact the development of biosafety legislation in the selected countries? Second, what are the emerging trends in implementation of the precautionary approach and what accounts for such trends? Third, from the perspective of the precautionary approach, how may regulation be made more relevant in addressing the needs, priorities and interests of the key stakeholders?

### **8.2.1 The GMO controversy and its impact on the development of biosafety regimes**

The debate about GM crops and foods arose at a time when the international community was beginning to address environmental threats associated with climate change and loss of biodiversity. To date, neither scientists nor policymakers have established with certainty the potential harm of GMOs. Due to the inherent uncertainty of scientific innovations, principally by reason of being based on experiments, the safety of GMOs remains a contentious issue globally.

The Protocol provides binding criteria for regulation of LMOs, key of which is the precautionary approach. In the negotiations, African states sought a strict regime embracing the precautionary approach. Only Zambia has specifically embraced the precautionary approach but the other three countries have implicitly reflected it in their biosafety legislation. Consistent with the principle of *pacta sunt servanda* contained in Art. 26 of the Vienna Convention on the Law of Treaties, 'every treaty in force is binding upon the parties to it and must be performed by them in good faith'.

Impliedly reflecting, rather than specifically providing for the precautionary approach in domestic legislation may amount to less than good faith. In theory, African states sought strict regimes. In practice they do otherwise. Thus, the thesis submits that it is untenable to argue that implying the precautionary approach

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<sup>14</sup> At (1.3 and 8.1).

satisfies the requirements of the Protocol. It amounts instead to a breach of international law.

The study found that competing socio-economic, environmental, ethical and political interests remain at the centre of the debate. Increased interest by proponents to invest in biotechnology in Africa and the varying responses of the selected countries, reveal that the controversy is unfolding in Africa. In South Africa and Kenya for example proponents, including Monsanto, engaged in research and development (R&D) activities, including field trials, long before biosafety legislation was enacted. At the time of enactment, multinational biotechnology companies already had GM crops, such as GM cotton, that were ready for commercialisation.<sup>15</sup> These developments took place in the context of a globalised economy in which commercial interests must be reconciled with environmental protection. The thesis concludes that once there are GMOs that are ready for deliberate release into the environment in the absence of substantive legislation, the later introduction of strict laws could be seen as a discouragement for continuing investment in biotechnology. This could negatively affect food production.

### **8.2.2 Emerging trends**

Apparent increased presence of proponents of GMOs, particularly in South Africa and Kenya, working closely with government, may have contributed to the development of permissive GMO regimes. Thus, multinational biotechnology companies may be sufficiently powerful to influence indirectly even the functioning of parliaments in some African governments.<sup>16</sup> Conversely (or in the alternative), one may argue that permissive regimes could have attracted increased investment in the three countries. Furthermore, the influence of the United Nations Environmental Programme (UNEP) and the Global Environmental Facility (GEF, funded by the World Bank), also played a significant role in the development of biosafety legislation in South Africa, Kenya and Namibia.

The thesis takes the view that the ongoing GMO activities in Tanzania and Uganda in the absence of substantive biosafety legislation, confirm that proponents

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<sup>15</sup> See the discussion at (7.3).

<sup>16</sup> See the discussion at (7.3.1.2).

have developed a somewhat uniform approach to promoting biotechnology in SSA. The approach entails starting investment in biotechnology in the absence of substantive legislation, which makes it difficult for the country to adopt a credible biosafety regime once the investors are ready to commercialise GM crops. They have successfully used this approach in South Africa and Kenya. Such approaches are likely to be used to secure permissive legislation elsewhere. In contrast Zambia rejected introduction of GM food in the absence of legislation. While this was partly intended to safeguard its organic markets in Europe, the rejection culminated in the adoption of a strict biosafety regime. This thesis submits that this amounts to overregulation and is thus out of touch with reality. Even the AML is being revised by the AU to reflect emerging trends in the regulation of GMOs.

The thesis concludes that the process of adopting biosafety legislation in the selected countries, notably Kenya and Zambia, provided a forum for testing the relative power of the opponents and proponents, most notably, the EU and the USA respectively. The prize in this contest is control of global agriculture, and, by implication, international trade in food. Within that scenario, and as stated earlier, the real power lies with the one who may impose his /her definition of the problem, thereby influencing the development of favourable legislation.<sup>17</sup> While the GM controversy persists African countries need to consider how best they may responsibly embrace biotechnology without succumbing to undue (and possibly unnecessary) pressure from entities and groups with vested interests. A home grown practice on both the GM technology and the development of a jurisprudence for its regulation may enhance public acceptance of GMOs. This is essential and desirable.

### **8.2.3 The Precautionary approach and the credibility of biosafety legislation**

Implementation of the precautionary approach in whatever formulation, remains theoretical unless it translates into reality in decision-making. To achieve this goal, the objectivity, and thus the credibility, of decision-making bodies become critical. The other element is meaningful public participation. The thesis argues that such participation may act as an external force that provides checks and balances in the

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<sup>17</sup> Laes E, D'haeseleer W and Weiler R 'Addressing Uncertainty and Inequality in Nuclear Policy' *The Journal of Enterprise Information Management* 18(3) (2005):357-376 at 359.

decision-making processes. That may be achieved through access to information and presentations made by the general public or both. The thesis concludes that, although embracing the precautionary approach in biosafety legislation by African countries is imperative, its implementation requires transparency in decision-making and public participation, so much so that these two may even serve as incentives for effective implementation of the approach and may reinforce it. Courts will also play a key role in developing a jurisprudence relating to implementation of the approach.

### **8.3 The Way Forward: Taming the ‘Dragon’**

The conceptual framework of the thesis<sup>18</sup> was inspired mainly by the sentiments expressed by Justice Holmes, who in 1897, equated law to a *dragon*. He argued that it could either be *killed* (neglected) or be *tamed* (embraced) and become a *useful animal*. Applying Holmes’ views to the precautionary approach, this researcher concluded that the precautionary approach is a useful tool in the regulation of biotechnology but states need to tame it.

The way forward is informed by the conceptual framework, the analysis of the issues raised, the findings and conclusions. It suggests how the precautionary approach could, figuratively, be *tamed* and become a *useful animal* (tool) in the regulation of biotechnology in the selected countries and other countries in SSA. These recommendations provide practical ways on how to minimise the barriers that hamper implementation of the precautionary approach and credibility of legislation. Where applicable, the thesis identifies the duty bearer or bearers ie the person or persons responsible for the implementation of the recommendations made.

#### **8.3.1 The need for reforms to biosafety legislation is compelling in the selected countries**

The rationale for reform cannot be put better than in the words of Justice Scalia in his dissenting judgement in *United States v Virginia*<sup>19</sup> in which he noted that ‘[t]he virtue of a democratic system... is that it readily enables the people, over time, to be persuaded that what they took for granted is not so, and to change their laws

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<sup>18</sup> See the discussion at (2.8).

<sup>19</sup> *United States v Virginia* 518 US 515

accordingly'.<sup>20</sup> Thus, South Africa, Kenya and Namibia need to reconsider their position in relation to domestic implementation of the precautionary approach. Neglect to implement the approach, amounts to conduct that is inconsistent with their obligations under the Protocol, hence, a breach of international law. Moreover, the sovereign right of states is clearly recognised under the Protocol, a right that empowers parties to take more protective measures to conserve biodiversity.<sup>21</sup> By limiting the exercise of the sovereign right to taking more protective measures, the Protocol intended to ensure that parties do not use the right to undermine its objective.

Equally important, is the need to enhance transparency in decision-making domestically which is largely characterised by exercise of discretion. Absence of specific provisions on the precautionary approach may constitute a lack of legislative guidance for those exercising discretions. Effective implementation of the precautionary approach will ensure achieving a balance between potential risks and benefits of introducing GMOs. Such implementation may not necessarily change the attitudes of all opponents. The thesis argues that it only needs to satisfy essential jurisprudential attributes of the rule of law, in particular, reasonableness.

Within the parameters of such reasonableness, there is a need for reform of biosafety legislation in South Africa, Kenya and Namibia. This should enable them to comply with their international law obligations, especially in respect to implementation of the precautionary approach as enshrined in the Protocol. This will also enhance transparency in decision-making. The strict approach to regulation by Zambia may amount to overregulation. To be workable, it needs elements of flexibility in decision-making, especially in relation to requirements relating to public interest. Academics, civil society and the general public can play important roles in relation to reform of biosafety legislation. The draft revised AML discussed at (4.4), seeks to promote flexibility for the purpose of making regulation realistic. It is a useful benchmark for adoption of credible legislation. Courts are also useful as they may make decisions that trigger amendments to legislation. Since judges man the courts it is important to address the role they should play in developing a jurisprudence relating to the precautionary approach.

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<sup>20</sup> Ibid United States v Virginia 518 US 515 at 567

<sup>21</sup> Article 2 (4) of the Cartagena Protocol 39 *International Legal Materials* (2000):1027.

### 8.3.2 Judges should play key roles in developing a jurisprudence relating to the implementation of the precautionary approach

Changing public values require shifts in the day-to-day interpretation of environmental and other laws to address such changes. Judicial attitudes are critical here.<sup>22</sup> In *Fuel Retailers*,<sup>23</sup> the Constitutional Court of South Africa noted that:

[t]he role of courts is especially important in the context of the protection of the environment and giving effect to the principle of sustainable development... the present generation holds the earth in trust for the next generations. This trusteeship carries with it the responsibility to look after the environment. It is the duty of the court to ensure that this responsibility is carried out'.<sup>24</sup>

The reasoning of the court in the above case, it is submitted, is equally applicable to the precautionary approach. As discussed previously,<sup>25</sup> judicial law-making can play a key role in making the precautionary approach an effective tool for the regulation of biotechnology. Judges may adopt a conservative approach and eschew the approach until given clear direction by the legislature or they may adopt a creative approach and enhance the development of the precautionary approach.<sup>26</sup> For example, using the precautionary principle as a tool of interpretation in evidence<sup>27</sup>, they may modify the meaning 'even of a relatively clear text in favour of greater environmental protection in the face of uncertainty'.<sup>28</sup> This necessarily implies that in jurisdictions such as South Africa and Kenya, which do not have substantive provisions on the precautionary approach in their biosafety legislation, courts may use their inherent judicial discretion to apply the precautionary approach in the cases before them on account of scientific uncertainty.

<sup>22</sup> Bell S and McGillivray D *Environmental Law* (6<sup>th</sup> ed 2006):49 Oxford University Press New York.

<sup>23</sup> *Fuel Retailers Association of Southern Africa v Director-General: Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga province and others* 2007 (6) SA 4.

<sup>24</sup> *Fuel Retailers Association of Southern Africa v Director-General: Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga province and others* 2007 (6) SA 4 at 39 par. 102.

<sup>25</sup> See (7.3).

<sup>26</sup> Justice Stein 'A cautious Application of the precautionary principle' *Env'tal L. Rev.* 2:1 (2000) 1 -10 at 2.

<sup>27</sup> *A.P Pollution Control Board v Prof. M.V. Nayudu and others* (1999) 2 SCC 718 at 732 par 30.

Making reference to the precautionary principle and principles, the Supreme Court of India stated thus 'It is the ... uncertainty of science in the environmental law context, that has led international conferences to formulate new legal theories and rules of evidence'

<sup>28</sup> Sadeleer 'The Precautionary Principle as a Device for Greater Environmental Protection: Lessons from EU Courts' *Review of European Community and International Environmental Law* 18:1 (2009)3-10 at 9.

In *Leatch*<sup>29</sup> Stein J considered absence of the precautionary principle in the governing legislation and took the view that it was a principle of common sense. He held that:

'It is clear that the purpose of these provisions is the protection and care of endangered fauna ... While there is no express provision requiring consideration of the "precautionary principle", consideration of the state of knowledge or uncertainty regarding a species, the potential for serious or irreversible harm to an endangered fauna and the adoption of a cautious approach in the protection of endangered fauna is clearly consistent with the subject matter, scope and purpose of the Act'<sup>30</sup>

In *Vellore*,<sup>31</sup> the Supreme Court of India held that the precautionary principle and the polluter pays principle are part of the law of the land.<sup>32</sup> The Court further noted that the precautionary principle in the context of municipal law means that '...Environmental measures – by the State Government and the statutory authorities – must anticipate, prevent and attack the causes of environmental degradation... the "onus of proof" is on the actor or the developer/industrialist to show that his action is environmentally benign'.<sup>33</sup> In *A.P Pollution Control Board*,<sup>34</sup> Jagannadha Rao J, citing *Vellore*, took the view that while the precautionary principle and polluter pays principle had briefly been referred to (in *Vellore*), 'it is necessary to explain their meaning in more detail, so that courts and tribunals or environmental authorities can properly apply the said principles in the matters which come before them'.<sup>35</sup>

In these three cases (*Leatch*, *Vellore* *A.P Control Board*) courts made a significant contribution towards the emerging jurisprudence on the precautionary principle by apply the principle in domestic courts prior to the principles' statutory enactment. In *Vellore* for instance, Kuldip Singh J was guided by the consideration that the precautionary principle and the polluter pays principle were essential

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<sup>29</sup> *Leatch v National Parks & Wildlife Service* (1993) 81 LGERA 270 at 282-283.

<sup>30</sup> *Ibid.*

<sup>31</sup> *Vellore Citizens' Welfare Forum v Union of India and Others* (1996) 5 SCC 647.

<sup>32</sup> *Ibid* at 14.

<sup>33</sup> *Ibid* at 11.

<sup>34</sup> *A.P Pollution Control Board v Prof. M.V. Nayudu and others* (1999) 2 SCC 718.

<sup>35</sup> *Ibid* at 733 para 32.

features of sustainable development.<sup>36</sup> Thus, the court emphasised the need to strike a balance between the economy and the environment.<sup>37</sup>

In the area of human rights also, courts have sought to take a more proactive approach in safeguarding such rights where the law is inadequate or inequitable. In *Grootboom*<sup>38</sup> the Constitutional Court of South Africa held that 'rights must be understood in their social and historical context ... socio-economic rights must all be read together in the setting of the Constitution as a whole'.<sup>39</sup>

Courts also play a crucial role in the interpretation of domestic law so as to conform to international instruments. Prior to the United Kingdom incorporating the European Convention of Human Rights in the form of the Human Rights Protection Act 1998, the House of Lords, in *KD (A Minor) (Termination of Access) Re*<sup>40</sup>, endorsed the proposition that 'it is at least desirable that the domestic law of the United Kingdom should accord with the decisions of the European Court of Human Rights under the Convention'. In *Derbyshire CC v Times Newspapers Ltd*,<sup>41</sup> the Court of Appeal took the view that 'where the law is uncertain, it must be right for the court to approach the issue before it with a predilection to ensure that our law should not involve breach...' of the Convention.

Independent courts require both an independent judiciary and judges who think pragmatically and independently. Pragmatic judges are hardly interested in 'whether the facts of a case bring it within the semantic scope of the rule agreed to govern the case than in what the purpose of the rule is – what consequences it seeks to induce or block – and how that purpose, those consequences, would be affected by deciding the case one way or the other'.<sup>42</sup> Pragmatic thinking was illustrated in *Save the Vaal*,<sup>43</sup> in which the Supreme Court of Appeal of South Africa

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<sup>36</sup> *Vellore Citizens' Welfare Forum v Union of India and Others* (n31) at 658 par 11.

<sup>37</sup> Preston J 'The Role of the Judiciary in Promoting Sustainable Development: The Experience of Asia and the Pacific' (2006) available at [www.lawlink.nsw.gov.au/...Preston.../Speech\\_10jan06\\_Preston.pdf](http://www.lawlink.nsw.gov.au/...Preston.../Speech_10jan06_Preston.pdf) (accessed 16 August 2010).

<sup>38</sup> *Government of the Republic of South Africa and Others v Grootboom and Others* (2001) (1) SA 46 CC.

<sup>39</sup> *Ibid* para 22-24.

<sup>40</sup> (1988) A.C 806.

<sup>41</sup> (1992) Q.B 770 at 812.

<sup>42</sup> Posner R *How Judges Think* (2008):243.

<sup>43</sup> *Gauteng: Mineral Development, Gauteng Region and another v Save the Vaal and others* (1999) 2 ALL SA 381 (A). 'Save the Vaal' was an unincorporated association whose members were concerned

(Olivier JA) held that 'by including environmental rights as fundamental Justiciable human rights, by necessary implication requires that environmental considerations be accorded appropriate recognition and respect in the administrative processes in the country'.<sup>44</sup> Thus the interpretative power of Judges gives them an opportunity to decide matters over which there is often a high degree of consensus in both society and the judiciary.<sup>45</sup> Often, such decisions, as that in *Save the Vaal*, may confirm or constitute public policy.

Independent judges are those whose thinking and judgements are devoid of deference to the government or any other persons. Such independence was recently illustrated in the *International Commission of Jurists (Kenya Section) case*<sup>46</sup> in which the High Court (Ombija J) gave orders in favour of the applicant for the issuance of a provisional warrant for the arrest of Omar Al Bashir, President of Sudan. In effect the order compels the Government of Kenya to execute an existing warrant of arrest issued by the International Criminal Court. In respect to the independence of judges, the reverse would be that in situations of legal uncertainty, their decisions may be dictated by emotion, personality, policy intuitions, ideology, politics, background and experience.<sup>47</sup>

Thus independent judges should analyse things from a broader perspective especially in the developing countries, which have limited options in relation to such technologies, otherwise these countries will 'sink or swim'.<sup>48</sup> Hence, in common law systems (like Kenya) where courts develop law on a case-by-case basis in step with the changes in public policy and conceptual development,<sup>49</sup> courts play a key role in striking a balance between the benefits and potential risks of new technologies – biotechnology in particular. As noted most recently by the Chief Justice of South

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people who owned property and lived along the Vaal River. Its object was to protect and maintain the environmental integrity of the Vaal River and its environs. See the editor's summary.

<sup>44</sup> *Gauteng Mineral Development, Gauteng Region and another v Save the Vaal and others* (n43) at 383.

<sup>45</sup> Posner R *How Judges Think* (2008):84.

<sup>46</sup> *The Kenya Section of the International Commission of Jurists v. Attorney General and Another* HCCCA No 685 of 2010 (unreported). Copy in file with this researcher.

<sup>47</sup> Posner R (note 45) at 84.

<sup>48</sup> Weeramantry J 'Challenges Facing Developing Countries – Keynote Address of the 2004 ILSA Fall Conference' 1 *Columbia Journal of International Law and Policy* (2005):1-20 at 6-9.

<sup>49</sup> Cheadle H 'When and How Domestic Judges and Lawyers can Use International labour Law' a paper presented at the International Labour Standards for Judges, Lawyers and Legal Educators held in Turin (Italy) 1-2 September 2009 (copy in file with this researcher)

Africa, Sandile Ngcobo, 'courts have a duty, in an appropriate case, to identify defects in legislation or executive action, and may indicate how these defects may be cured.'<sup>50</sup>

This thesis recommends that once scientific uncertainty becomes apparent in the pleadings, courts should infer application of the precautionary approach from biosafety legislation, in countries such as South Africa and Kenya which reflect the approach in legislation or from the environmental right as enshrined in the relevant constitutions. Judges in common law jurisdictions in particular, need to be more proactive in interpreting the precautionary approach (including where no specific provisions on the principle exist in domestic biosafety legislation). Hence they would contribute to the development of a jurisprudence on the implementation of the precautionary approach in decision-making.

Specialist Environment Courts such as those in New South Wales – Australia, which are responsible for interpreting and enforcing environmental law,<sup>51</sup> should be established in each of the selected countries. In *A. P Pollution Control Board*, the Supreme Court of India noted that the Environment Court in New South Wales was ideal in environmental matters as it is composed of Judges and technical and conciliatory assessors 'rather than leaving complicated disputes regarding environmental pollution to officers drawn from the executive'.<sup>52</sup> If implementation is to be effective, its success will in turn depend on good institutional governance and capacity building.

### **8.3.3 Good institutional governance and capacity building are needed in order to enhance transparency**

As discussed in chapter six, good governance entails effective state institutions, transparency and accountability in public affairs. These attributes should be reflected in biosafety governing authorities that perform administrative functions associated with GMOs. The decisions of the GMO governing bodies affect the interests of many

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<sup>50</sup> See 'Constitutional Dialogue: A Framework for Understanding Co-operative Governance' (2011):23 - a key note address by the Hon. Sandile Ngcobo, Chief Justice Republic of South Africa, at the Democratic Governance and Rights Unit's Constitution Week, 4 April 2011, Faculty of Law, University of Cape Town (Copy in file with this researcher).

<sup>51</sup> See 'Land and Environment Court' New South Wales available at <http://www.lawlink.nsw.gov.au/lec> accessed 14 October 2010. These are specialist

<sup>52</sup> *A.P Pollution Control Board v Prof. M.V. Nayudu and others* (n34) at 736 pars 42-44.

stakeholders including the general public. Moreover, the practical value of the precautionary approach may significantly be realised depending on how far it becomes effective in legislative, administrative and judicial law-making at the domestic and regional levels.<sup>53</sup> Hence, the composition of such bodies and the decision-making processes need to be transparent. Appointment and the expertise of people appointed to serve on these bodies as well as financial, infrastructural and human capacity are material factors that impact on the legitimacy, and hence, effectiveness of the decision-making processes.

Often, biosafety governing bodies provide advice, including expert advice concerning GMOs to the government. Such advice often forms the basis of policy and ultimately law. The authorities may also be a useful source of persuasive technical and expert opinion for courts. For example, in *A.P Pollution Control Board*,<sup>54</sup> Jagannadha Rao J of the Supreme Court of India held that:

‘to ensure that there is neither danger to the environment nor to the ecology and, at the same time, ensuring sustainable development, it has to be held that the Supreme Court can refer scientific and technical aspects for investigation and opinion to the expert bodies...The authority comprises... members having technical expertise in environmental matters whose investigation, analysis of facts and opinion on objections raised by parties, could give adequate help to the Supreme Court or the High Courts and also *the needed assurance*’.<sup>55</sup>

Further, good institutional governance and acceptable levels of capacity building serve many other purposes, including contributing to public opinion concerning GMOs. Should stakeholders and the public view such bodies as ‘rubber stamp’ instruments for approving or rejecting GMOs, governance will remain a complex area. Thus, good institutional governance and capacity building are essential in ensuring transparency and accountability in decision-making. Capacity building requires expert personnel and financial resources, among other things. However, attainment of acceptable levels of good governance and the necessary capacity building are largely dependent upon favourable political will.

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<sup>53</sup> Stallworthy M *Environmental Law* (2008):157 Sweet and Maxwell Ltd London.

<sup>54</sup> *A.P Pollution Control Board v Prof. M.V. Nayudu and others* (n34).

<sup>55</sup> *Ibid* at 719-720. The italics that denote emphasis were inserted by this researcher.

### **8.3.4 Requisite political will is essential in accelerating reform: education makes a decisive difference**

Favourable political will is essential in developing holistic biosafety regimes in Africa. This may however remain abstract unless suggestions are professed on how such political will may be achieved in practice. There are many factors that contribute to lack of political will and many more that may enhance such a will. Education makes a difference. It has the potential to improve the understanding of and minimising the extreme conflicts in biotechnology.<sup>56</sup>

The need to educate policy and lawmakers in matters relevant to biotechnology cannot be overemphasised. As discussed in chapter seven, during the parliamentary debate on the Biosafety Bill 2007 of Kenya, one of the members of parliament, told the august House that he had eaten raw transgenic maize to prove that there was nothing to fear about the technology.<sup>57</sup> Needless to say, this assertion was not only misconceived, it misled parliamentarians as well as the general public on issues concerning safety of GMOs. It created the impression that once a person eats transgenic foods, the adverse effects were to be felt on the spot and if not, the food would be safe and have no adverse effects. This was not true as issues in question remained contentious globally. Further, the assertion arguably offends precaution.

Thus, policy and lawmakers need an average knowledge (not necessarily university education or a doctorate) to enable them have a broader understanding of such issues. This may enhance understanding and appreciation of the science, the power dynamics, the policy and ultimately the legislation that underpin regulation of biotechnology. As Leopold a conservation expert asserts, education must precede rules.<sup>58</sup>

The foundation of such knowledge lies in the teaching of environmental protection from the earliest age in formal education. People in developing countries need to understand the environment to enable them to change their ways of thinking,

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<sup>56</sup> Bananuka J 'Biotechnology Capacity Building Needs In Eastern Africa' (2008) available at [http://ictsd.net/downloads/2008/04/biotech\\_eastern...](http://ictsd.net/downloads/2008/04/biotech_eastern...) (accessed 4 July 2009).

<sup>57</sup> Karembu M, Otunga D and Wafula D 'Developing a Biosafety Law: Lessons from the Kenyan Experience' (2010):1-61 at 18 available at [www.isaaa.org](http://www.isaaa.org) (accessed 22 March 2011).

<sup>58</sup> Leopold A *A sand County Almanac: with Essays on Conservation from Round River* (1970):245.

attitudes and values concerning interaction between humans and nature.<sup>59</sup> It is therefore incumbent upon governments to put in place the relevant curriculum and emphasis on environmental protection, and as far as practicable, make the subject compulsory up to an appropriate level.

The ultimate goal will be to inculcate a sense of responsibility towards protection of the environment in all people, especially the youth,<sup>60</sup> who are both future leaders and beneficiaries of a clean and healthy environment. The responsibility will, in turn, give rise to a sense of *loyalty* towards the environment. This inherent loyalty will go a long way towards building up the necessary political will for increased environmental protection.

Organising seminars and taking parliamentarians on tours in other countries may be useful. However, they merely provide a form of *first aid* in a complex field. Moreover, parliamentarianism in most African countries seems to have largely turned into a form of employment. Members are increasingly being viewed by the general public as serving selfish interests rather than the public. For this reason, public involvement is a material factor that may contribute towards achievement of the required political will.

### **8.3.5 Public participation should be tailored to suit local circumstances**

The Protocol provides umbrella provisions relating to public awareness and participation. The study argues that it is the duty of each party to take into account its individual local circumstances and determine how best they may be served. The situation in many African countries requires more effort and may even be costly due to many factors including poor infrastructure, language constraints and lack of financial and human capacity. Such barriers need to be addressed if people are to be empowered to participate meaningfully.<sup>61</sup>

In many countries, poor governance exacerbates the problem. Apparently, there is the general belief, especially in the biotechnology industry, that the greater

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<sup>59</sup> See 'The Precautionary Principle: Between Research and Politics' (2004):85 A report of the National Research Ethical Committee for Natural Science and technology (Norway) available at <http://www.etikkom.no/Documents/English-Pub...> (accessed 22 August 2010).

<sup>60</sup> In South Africa and Kenya the age of 35 is the upper limit for youths.

<sup>61</sup> Deville A and Harding R *Applying the Precautionary Principle* (1997):37.

the awareness on the part of the public, the greater the resistance to biotechnology. The history of such resistance globally has aggravated the situation. This may be true to some extent, but with increased knowledge about biotechnology and transparency in GMO governance structures, such resistance may, in the long term slowly translate into acceptance. This is a formidable but surmountable task.

The ultimate test for the success of the biotechnology industry is whether the public trusts the decision-makers who interpret scientific information and use it to assess and manage risks.<sup>62</sup> Distrust raises questions about the motives of the decision-makers, resulting in little face-to-face dialogue.<sup>63</sup> The previous practice of experts and policymakers formulating decisions behind closed doors needs to be changed into an open public forum involving interested and affected stakeholders, including the general public.<sup>64</sup> Decision-making must be rejected especially where there are complaints about partiality and irrationality among other things.<sup>65</sup>

Public awareness and involvement should be commensurate to the level of knowledge of GMOs in each country. Hence, the more the ignorance there is about GMOs, the higher the level of awareness and education is required on the part of the public. Information in newspapers and arranging symposiums may work for the elite. However, for peasants and other communities who may be interested in or affected by the technology, some of which may be illiterate (or semi-illiterate), a pragmatic approach is needed. This may include holding joint stakeholders meetings.

One of the ways of advancing awareness and public participation is to hold joint stakeholders meetings, with sufficient notice given at grass root level. In those gatherings, the relevant communities may be informed about the essence of biotechnology and the relevant activities to be undertaken in a language of their own choice. The peasants will be able to exchange ideas and raise concerns that may be relevant to decision-making. Some of the concerns may attract application of the precautionary approach, and thus make participation meaningful. In such

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<sup>62</sup> McGarity T and Hansen P 'Breeding Distrust: An Assessment and Recommendations for IMPROVING Regulation of Plant Derived Genetically Modified Foods' (2001):7 A Report prepared for the Food Policy Institute of the Consumer Federation of America available at <http://www.biotech.info.net/breeding...> (accessed 18 June 2009)

<sup>63</sup> Ibid.

<sup>64</sup> Street P, 'Constructing Risks: GMOs, Biosafety and Environmental Decision-making' in Somsen Hans *The Regulatory Challenge of Biotechnology* (2007):95-117 at 98.

<sup>65</sup> Ibid.

circumstances, the use of a language full of technical terms is a barrier to administrative transparency.<sup>66</sup>

In practice, public participation in the selected countries with respect to GMOs seems to be limited to a few people and favoured target groups to the detriment of the general public. Public awareness and participation in the regulation of biotechnology should be promoted in a language people understand and in ways that are suited to local circumstances. However, (as discussed in chapter six and seven) lack of access to or insufficient information is an impediment to meaningful public participation.

### **8.3.6 Barriers to access to information should be minimised**

Existing legislation in the selected countries governs access to information within the parameters of pending applications. Moreover the information required by law, especially in permissive regimes is scanty and essentially formal. It includes the name of the applicant and non-contentious basic information about the GMO in question. Even with such scanty information, a copy of the application should be provided in an efficiently managed website in addition to obtaining it from the relevant authority.

The thesis suggests that information about GMOs should be provided to the general public on a regular basis by the representative of the Biosafety Clearing House. Environmental law is an interdisciplinary subject.<sup>67</sup> Hence reliable information and analysis is also required in the fields of biology, ecology, law, economics, ecosystem management and social policy.<sup>68</sup> Such information should be published not only in papers of wide circulation (which would, in many of the selected countries, be English) but also in other local papers or other forms of media that may easily be accessible to the people concerned.

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<sup>66</sup> Machado A 'Information and Environment: The Evolution of Environmental Law' *37(2-3) Environmental Policy and Law* (2007):198-200 at 198.

<sup>67</sup> Fisher E, Lange B and Scotford E 'Maturity and Methodology: Starting a Debate about Environmental Law Scholarship' *Journal of Environmental Law* 21(2) (2009):213-250 at 213.

<sup>68</sup> Young T 'Genetically Modified organisms and Biosafety: background paper for decision-makers and Others to Assist in Consideration of GMO issues' (2004):5 The World Conservation Union (IUCN) available at <http://data.iucn.org/dbtw-wpd/edocs/PGC-001.pdf> (accessed 23 October 2009).

Establishment of reliable and a regularly up dated database run by the independent commission or other appropriate body discussed below (at 8.4.7) may also be a useful source of information, at least for the elite. In India the government has made public most of the information relating to GMOs (and other environmental issues) by establishing a website ([www.moef.gov.in](http://www.moef.gov.in)) with a section 'Contact the Minister'. In that section the Minister invites public comments. The section reads in part 'I welcome your feedback and suggestions... your comments are important to us... I assure you that every one of your comments and questions will be duly looked into'.<sup>69</sup>

Thus, access to information in respect to GMOs in African countries should be tailored in a manner that minimises barriers to such access, including government bureaucracy. In this respect, formulation of guide-lines on application of the precautionary approach would be a step in the right direction.

### **8.3.7 Guidelines on application of the precautionary approach should be developed**

Governments should draw up guidelines on application of the precautionary approach in decision-making. Such guidelines would be an indispensable point of reference for both decision-makers and the public in general. They should be in the form of a handbook or other simplified manual that explains how, when and the circumstances in which the approach may be applied by giving examples. They should be based on two criteria: first, reasonable scientific possibility based on scientific data (as opposed to mere hypothesis, speculation or intuition); second, reasonable scientific probability or likelihood derived from general agreement among scientists that the available data and methods used to interpret the data are valid and reliable.<sup>70</sup>

In 1997 New South Wales published a handbook - *applying the precautionary principle*, meant for tertiary level students taking courses in ecological sustainable development and members of the public who want to understand the precautionary

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<sup>69</sup> 'Contact the Minister' available at [http://moef.nic.in/modules/contact-ministry/contact-ministry/...](http://moef.nic.in/modules/contact-ministry/contact-ministry/) Accessed 20 July 2010. (check the website in the citation)

<sup>70</sup> Hickey and Walker 'Refining the Precautionary Principle in International Environmental Law' 14 *Virginia Environmental Law Journal* (1995):423-454 at 449.

approach and its influence in decision-making.<sup>71</sup> In relation to how to reach consensus when assessing the seriousness or irreversibility of a threat, the handbook provides detailed guidelines under each of these three criteria: (i) involve a range of views in assessing whether threats are serious or irreversible (ii) Try to define types of threats that most people would see as serious or irreversible (iii) consider all aspects of the threat to determine its overall significance.<sup>72</sup> Such guidelines will enhance application of the approach, hence, transparency in decision-making. The guidelines may be drawn in consultation with the independent commission that the discussion now turns to.

### **8.3.8 An all encompassing independent commission that is accountable to parliament is needed.**

Currently in the selected countries GMO governance is largely under the control of the government. Decision-making bodies oversee public participation, and make final decisions regarding risk assessment –a material source of determining whether or not precautionary measures should be taken, how and by whom. Each of the governments in the selected countries should establish an independent commission with a specific mandate in respect to GMO governance in addition to other responsibilities. For example, the commission may be mandated to ensure that public participation is arranged by people who have a neutral stand on GMOs. In addition, the commission may be required to ensure that information is disseminated to the right audiences, at the right time and in the right places. It could carry out an independent verification of risk assessment reports and act as a watch dog on consumer protection.

In the long run, the commission would improve GMO governance as issues of policy would be discussed freely, as opposed to in decision-making bodies that primarily deal with applications relating to GMO activities. In essence, the commission would provide checks and balances in the decision-making processes.<sup>73</sup> It could oversee the monitoring of GMO activities.

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<sup>71</sup> Deville A and Harding R (n61) at 7.

<sup>72</sup> Ibid at 26.

<sup>73</sup> In Kenya for example where administration of justice has been a perennial problem, there is an ongoing process to establish the National Council for the Administration of Justice – a body that will

The commission should be national in its composition bringing together most of the stakeholders in biotechnology. These would include representatives from the relevant departments of government, scientists, the biotech industry, civil society, farmers, the general public, religious and other interested or affected groups. Scientific bodies such as the Council for Scientific and Industrial Research (CSIR) of South Africa<sup>74</sup> and the National Council for Science and Technology in Kenya<sup>75</sup> serve the important purpose of advising the government on matters of science and technology. In countries such as South Africa, Namibia and Kenya, such advice is biased in favour of industry in the area of biotechnology as evidenced (at least) by the kind biosafety legislation that has been adopted in these countries. Such bodies are apparently agents of government, with no specific mandate to represent the interests of the people and the various stakeholders in biotechnology. The commission should be accountable to parliament.

### **8.3.9 Partnerships between government and the actors should be improved**

Financial aspects however raise critical issues concerning the funding of R&D activities, most of which are dominated by the private sector in Africa. Considering that the biotechnology industry has inherent commercial interests to protect, its research agenda is therefore geared to maximization of profits. The high costs of research and its application have made many African countries develop research that primarily serves the interests of developed countries.<sup>76</sup>

Creating knowledge through research is one thing; translating such knowledge into products and processes is another.<sup>77</sup> Thus, research findings in

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bring together all stakeholders concerned with broader issues on the administration of justice. This Council will leave the Judicial Service Commission with the mandate of making recommendations for appointment of Judges among other functions. See The Standard on line 'What Bill to create 'clean' Judiciary says' available at [www.eastandard.net](http://www.eastandard.net) (accessed 3 October 2010).

<sup>74</sup> The CSIR was founded on 5 October 1945 under the Scientific Council Act (Act No 33 of 1945) and was constituted as a science Council by the Scientific Research Act (Act No 46 of 1988 as amended by Act No 71 of 1990). See <http://www.csir.co.za> accessed 3 October 2010.

<sup>75</sup> The Council is a statutory body established on 1 July 1977 under The Science and Technology Act Chapter 250 of the Laws of Kenya. Its primary role is to advise the government on matters of science and technology.

<sup>76</sup> Makoni N, and katerere J, 'Genetically Modified Crops' in *Africa Environmental Outlook No 2* (2006): IUCN 300-330 at 308 available at [www.unep.org/dewa/africa/docs/en/AEO2\\_Our\\_Environ\\_Our\\_Wealth.pdf](http://www.unep.org/dewa/africa/docs/en/AEO2_Our_Environ_Our_Wealth.pdf) (accessed 14 May 2010).

<sup>77</sup> Juma C and Serageldin I *et al* 'Freedom to Innovate: Biotechnology in Africa's Development' (2007):11 A Report of the High-level African Panel on Biotechnology for the African Union (AU) and

public institutions such as universities are not easily accessible and hardly used by local small and medium sized entrepreneurs.<sup>78</sup> By providing most of the resources for R&D, it is easy to influence, and even dictate adoption of favourable policies and legislation in developing countries. As a result the funders determine the kind of research to be carried out and the crops upon which R&D activities should focus. In India for example, the government has well developed scientific man-power and several R&D institutions and infrastructure for the conduct of research.<sup>79</sup> It provides a good model that may be emulated by countries in Sub-Saharan Africa.

Globally, the private sector is the major player in R&D activities in biotechnology.<sup>80</sup> As long as these activities are dominated by the private sector, it will dominate trends in regulation that neglects adoption of the approach. In future, the situation may get worse as public funding of R&D activities requires huge resources that may impact negatively on national government expenditure. In many African countries areas of government expenditure such as education, health, infrastructure (including transport, energy and water) and security, compete for resources with agriculture, environmental protection and other departments.

Thus, there is an increasing need to have meaningful partnerships between government and the private sector in R&D activities within an environment that promotes meaningful public involvement, acceptable levels of transparency and public accountability. This is necessary because overreliance on donor-sponsored capacity building initiatives is not a sustainable approach of strengthening and maintaining a workable and credible biosafety regime.<sup>81</sup> Moreover, the traditional 'pipeline' approach of promoting development in which researchers develop new

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the New Partnership for Africa's Development (NEPAD) Addis Ababa available at [www.nepadst.org](http://www.nepadst.org) accessed 12 August 2010.

<sup>78</sup> Makinde D *et al* 'Status of biotechnology in Africa: Challenges and Opportunities' *Asian Biotechnology and Development Review* 11:3 (2009) 1-10 at 3.

<sup>79</sup> 'Risk Assessment and Risk management in Implementing the Cartagena Protocol: proceedings of Asia Regional Workshop' May 22-24 New Delhi (2002):183 IUCN available at [http://www.preventionweb.net/files/2481\\_2003058.pdf](http://www.preventionweb.net/files/2481_2003058.pdf) accessed 18 July 2010.

<sup>80</sup> Khush 'Biotechnology: Public-private partnerships and Intellectual Property Rights in the Context of Developing Countries' in McManis *Biodiversity and the Law* (2008) 188-191 at 181 Earthscan London.

<sup>81</sup> Traynor and Macharia 'An analysis of the Biosafety system for Biotechnology in Kenya: Application of a Conceptual Framework' (2003):25 A Report prepared for the International Service for National Agricultural Research (ISNAR) ISBN 92-9118-073-4 available at [www.bio-earn.org/Content/.../biosafety/2003-kenyabiosafety.pdf](http://www.bio-earn.org/Content/.../biosafety/2003-kenyabiosafety.pdf) accessed 20 October 2010.

technologies and requiring agents to convince farmers to adopt such technologies is outdated and must be abandoned in favour of inclusive and holistic approaches.<sup>82</sup>

Even if biotechnology may be regarded as a significant strategy for sustainable development, its full potential cannot be realised unless accompanied by effective government action to provide incentives, research and regulation.<sup>83</sup> One of the ways of doing this is to involve all actors and provide adequate support to institutions such as universities that are involved in agricultural innovation, and to use the information these institutions provide to improve decision-making at all levels.<sup>84</sup> These actions by government should not go hand in hand with permissive or weak biosafety regimes.

Government action must be based on objective criteria that promote transparency in matters concerning biotechnology. Inevitably, domination of regulation by the private sector (which owns the technologies<sup>85</sup>) partly by reason of control in funding, may have a negative impact on knowledge generation and the flow of information.

#### **8.3.10 Knowledge generation and the flow of information: the need for transparency**

Biotechnology is a highly scientific field where knowledge creation is mainly the hands of scientists, many of whom may have vested interests. These interests largely emanate from innovations and patenting from which financial benefits could accrue. By reason of being experts, scientists also legitimately dominate the decision-making processes. These attributes places them in an advantageous position (in contrast to the public) with regard to knowledge creation and information flow. Questions such as what knowledge, by whom, for what purpose and in whose

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<sup>82</sup> Jones M, 'Key Challenges for Technology Development and Agricultural Research in Africa' *IDS Bulletin* 36:2 (June 2005) 46-51 at 48.

<sup>83</sup> Ibid 'Biotechnology: Eastern African Perspectives on Sustainable Development and Trade Policy (2007):30 ICTSD

<sup>84</sup> Jones M, 'Key Challenges for Technology Development and Agricultural Research in Africa' *IDS Bulletin* 36(2) (2005):46-51 at 48.

<sup>85</sup> Young T 'Genetically Modified organisms and Biosafety: background paper for decision-makers and Others to Assist in Consideration of GMO issues' (2004):35 The World Conservation Union (IUCN) available at <http://data.iucn.org/dbtw-wpd/edocs/PGC-001.pdf> accessed 23 October 2009.

interest are critical in determining what information may be made public and what information may be regarded as confidential in decision-making.

In the selected countries, the applicant controls public participation, meaning that such an applicant arguably creates knowledge and determines the flow of information. Should such information be disseminated to audiences that are sympathetic to biotechnology, there will be lack of objectivity in knowledge generation and the flow of information. This is mainly because the scientists (whether local or foreign) involved in innovations are under an implied obligation to comply with their terms of reference, which terms cannot be expected to contradict both the disclosed and undisclosed underlying objectives of the funders.

Thus the funding of R&D activities has a direct impact on the type of knowledge to be generated, what information is to be disseminated to whom and by whom. As discussed earlier<sup>86</sup> governments have significantly lost the ability to control the flow of money in and out of their country and are increasingly finding it difficult to control the flow of ideas, technology, goods and people.<sup>87</sup> There is a need for the government to ensure transparency in the generation and flow of information especially with regard to the potential harm of GMOs. This is an area where the independent commission discussed earlier may play a key role.

### **8.3.11 Further Research on GMO Activities in SSA is Imperative**

Biosafety (and environmental law for that matter), is an interdisciplinary regime that is still evolving. Only a few countries in SSA such as South Africa, Kenya, Zambia, Namibia, Burkina Faso and Cameroon have biosafety legislation in place. Regulation of biotechnology entails consideration of a wide range of socio-economic, environmental, political and other interests in decision-making. Thus the need for further research on GMO activities in developing countries is compelling so as to promote transparency in legislation in SSA.

Areas where further research is needed include socio-economic considerations, risk assessment, the role of international bodies in the development of legislation and the relationship between biosafety under the Protocol and trade under the WTO regime.

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<sup>86</sup> See the discussion at (2.6.7).

<sup>87</sup> Huntington S *The Clash of Civilizations and the Remaking of World Order* (1996):35.

Further, research that may include fieldwork in these and other relevant areas will provide indispensable information that may be used to objectively analyse the credibility of emerging biosafety legislation and the interests such legislation serve in Africa.

#### 8.4 Concluding Remarks

This thesis has demonstrated that a jurisprudence relating to the precautionary approach can be developed in order to enhance the credibility of biosafety legislation in the selected countries. Extreme standpoints towards the approach are, in varying degrees, barriers to the development of such jurisprudence. These standpoints may still be used by proponents or opponents to influence African countries in making decisions about GMOs.<sup>88</sup> A more participatory approach to regulation will instead enable countries in SSA to increasingly adopt workable biosafety regimes. Such regimes may objectively address the interests of stakeholders consistent with the requirements of the Protocol and the increasingly changing realities that seem to favour biotechnology. Ultimately, predictability and transparency in decision-making would be enhanced.

The outcome is that countries in SSA would achieve an effective balance between safety of the environment and humans on the one hand and investment in biotechnology on the other hand. The findings, conclusions and suggestions are intended to be used by governments, policymakers, scholars, the public, investors and other stakeholders.

Finally, it suffices to note that 'a dream is the place where a wish and a fear meet. *When the wish and the fear are exactly the same... we call the dream a nightmare*'.<sup>89</sup> In essence, people want to have food but some are scared of having it. Whereas this assertion could have been true in the 1970s in respect of GMOs, Mehez, a diet expert most recently observed that concerning food, 'the era of myth and marketing is at last giving way to an era of hard fact'.<sup>90</sup> The consumption of

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<sup>88</sup> Laes E *et al* (n1).

<sup>89</sup> Roberts G *Shantaram* (2003):150.

<sup>90</sup> Mehez OZ 'No More Myths. No More Fads. What you should Eat-and Why' 178 (10) TIME Magazine of 12 September (2011) p.38.

GMOs over the last twenty years may constitute a hard fact in favour of safety, which in the long run could possibly relax strict regulation.

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