University of Cape Town

Faculty of Law

Master of Laws by Dissertation

A Legal Analysis of Multilateral Environmental Agreements dealing with Hazardous Products and Hazardous Waste

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Research dissertation presented for the approval of the Senate in fulfillment of the requirements for the LLM by Dissertation.

I hereby declare that I have read and understood the regulations governing the submission of LLM dissertations, including those relating to length and plagiarism, as contained in the rules of this University, and that this dissertation conforms to those regulations.

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Summary of the contents

The first human activities which were recognized as major environmental threats were industrial production processes. As a result, this field was the first which was subjected to environmental law, initially on a domestic level, and then subsequently also on a regional and global level. As development continued to progress, people realized that there were considerably more human activities that could also have a hazardous impact upon the environment. One of these were hazardous products, products which possess the inherent capacity to cause adverse effects on human health or the environment. This group includes, in particular, certain chemicals, like pesticides, industrial chemicals and pharmaceuticals, as well as many other non-chemical products as diverse as radioactive materials, consumer goods and, in more recent times, genetically modified organisms (GMOs).

As a consequence, many countries have adopted national laws to deal with these products. In addition, states have had to recognize that the issue of hazardous products also has certain international ramifications. This led to the adoption of a special group of international environmental instruments which specifically addressed product related hazards. The present study undertakes to analyze this group of agreements with a view to identifying common characteristics and differences. In order to achieve this, it concentrates on the four Multilateral Environmental Agreements which have been concluded in the field: the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention), the Cartagena Protocol on Biosafety to the Convention on Biological Diversity (Cartagena Protocol), the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol) and the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention). In addition, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention) was also included in the study, in spite of the fact that waste presents certain peculiarities which render its classification as a product contentious.

The study has revealed that all MEAs have been developed on an *ad hoc* basis and according to the specific needs of the different products. Nevertheless, one can clearly divide the agreements into two groups with quite similar features. The first group consists of the Basel and Rotterdam Convention and the Biosafety Protocol, and focuses on trade in these products, in particular by subjecting it to a prior informed consent procedure. The second group is comprised of the Montreal Protocol and the Stockholm Convention, and deals mainly with the domestic management of products by setting out product and use restrictions.

The different groups reflect the different ways in which hazardous products can have transboundary adverse effects. The latter group addresses a situation in which the use of a product, as such, in the territory of one country poses risks to other countries or to the global commons, which the affected countries cannot prevent on their own, as the source of the pollution is situated outside their jurisdiction. This scenario can be considered to be at least very similar to the situations which have traditionally led to the adoption of MEAs. In contrast, the former group addresses a different kind of transboundary pollution which is specific to products: pollution caused by the intentional transfer of these products, that is, by trade. Thus, one can conclude that the different groups of MEAs developed in the field of hazardous products reflect the different "international dimensions" of transboundary pollution, which can be associated with hazardous products, and which require quite different international responses.

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Table of contents

Chapter One: Introduction

A. Hazardous substances: a new source of environmental risks

In the past, the high visibility of polluted air and water led to these environmental factors becoming the first major adverse effects that people were aware of. This type of pollution was mostly derived from production processes. So, huge air and water polluting factories became symbols of an industrialization that only focussed on economic growth, at the expense of the environment and human health. As development continued to progress, people realized that there were considerably more human activities, for example deforestation and mining, that could also have a hazardous impact upon the environment[1]. Not until several decades later, however, had another sub-group of adverse environmental effects been incorporated into human consciousness: those deriving from hazardous products.

The first group of products which came under the broad public scrutiny were chemicals. For thousands of years mankind had exploited naturally occuring chemicals. However, they only came to the fore after World War II when large-scale industrial production was initiated. The 1950s and 1960s, saw a sharp increase in production of chemical products, which came to be used in a growing number of sectors such as agriculture, industry, housing, transport, textiles, the health sector and the home[2]. This period also saw recognition that some of these products also presented risks, both to human health and the environment, which were as varied as the products themselves. Concerns were given a public voice for the first time in Rachel Carson's *Silent Spring*, published in 1962, in particular with regard to pesticides[3]. Subse-

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[1] In the present context, "hazardous" is defined as possessing the inherent capacity to cause adverse effects on human health or the environment, given particular preconditions. For this definition see Halpaap, Achim; Huismans, Jan W., *International Environmental Law: Hazardous Materials and Waste*, UNITAR, Geneva 1998, p. 5.

[2] Krueger, Jonathan, *Information in International Environmental Governance: The Prior Informed Consent Procedure for Trade in Hazardous Chemicals and Pesticides*, New York 2000, p. 3.

[3] Carson, Rachel, *Silent Spring*, reprint, London 2000.

quently, there has been growing acceptance that many other non-chemical products pose severe risks. Dangers that are derived from products as diverse as radioactive materials, consumer goods and, in more recent times, genetically modified organisms (GMOs), have been recognized[4]. Even some of the food products that are consumed could be placed in this category of potentially hazardous products[5].

B. Scope and objective of the study

The risks associated with certain chemical products, particularly pesticides, industrial chemicals and pharmaceuticals, have led many countries to adopt specific national laws to deal with the these products[6]. A similar approach has been followed to deal with the problems presented by the other types of hazardous products, including genetically modified organisms. As a consequence of the fact that many of these problems are not restricted by the borders of countries some states have started to consider international solutions. This has led to the adoption of new international regulations specifically designed to deal with the international challenges presented by this new category of environmental hazards. The overall aim of this study is to specifically analyze these "product related" instruments, with a view to describing the factual background, the regulatory mechanisms and the functions of each agreement and thereafter determining whether there are common patterns, and what the main differences are between the single instruments.

With regard to the term "product related", it is important to note that in the literature, the term "source related" agreements is often used as opposed to "sectoral related" agreements. The latter category describes the international instruments aiming at the protection of certain environmental sectors, for example the deep sea or the air, from various kinds of risks. In contrast, the former category is focussed upon the source of particular risks and theoretically seeks to protect various sectors from

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[4] It should be noted that the capacity of GMOs to cause health or environmental risks is still contentious. Therefore, it seems more adequate to talk about its risk potential. For a further discussion of the risk potential of GMOs see the section on the Cartagena Protocol.

[5] If one considers pesticide residues, or even mad cow disease.

[6] For a more differentiated consideration, especially with regard to different developments in industrialized countries on the one hand and in developing countries on the other hand, see the following chapters.

these risks. Therefore, this classification refers to the regulatory focus of a specific agreement. If one applies this terminology, "product related" agreements are a sub-category of "source related" agreements, as they focus upon various risks derived from a specific source: a particular product.

Given the myriad of product related instruments, an in-depth analysis must necessarily focus on a limited subset of the entire collection of these agreements[7]. The category of instruments chosen for the sake of this study is characterized by three elements: firstly, they consider the issue mainly from an environmental, rather than a health related perspective, even though all the above-mentioned agreements do consider this aspect to some extent. Secondly, these agreements have a global scope, rather than a regional or bilateral one. And, finally, these agreements are legally binding, rather than non-legally binding "soft" law. This category of instruments is generally known as Multilateral Environmental Agreements (MEAs). The advantage of this selection is that it will reveal what kind of measures are globally acceptable in the field of hazardous substances, in terms of hard and therefore enforceable legal norms.

When the three criteria mentioned above are applied, the following four agreements are relevant to this study: the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention[8]), the Cartagena Protocol on Biosafety to the Convention on Biological Diversity (Cartagena Protocol[9]), the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol[10]) and the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention[11]).

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[7] The study will only consider those instruments which specifically deal with the procedural and substantive conditions of trade. Instruments regarding the transport of hazardous goods will, therefore, not be included. For a summary of the above see Kiss, Alexandre; Shelton, Dinah, *International Environmental Law*, 2nd ed, New York 2000, p. 529.

[8] The Rotterdam Convention is also known as the PIC Convention. It was signed in March 1998, but has not yet entered into force.

[9] The Cartagena Protocol deals with living modified organisms (for a definition see page 54 below). It is also known as the Biosafety Protocol. It was signed in January 2000, but has not yet entered into force.

[10] The Montreal Protocol was signed in September 1987 and entered into force in January 1989.

[11] The Stockholm Convention is also known as the POPs Convention. It was signed in May 2001, but

In addition to these four agreements, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention[12]) will also be included in this study. At first glance, this choice may seem to be somewhat unexpected, as wastes, unlike chemicals and genetically modified organisms, are unintentionally generated by-products. On the other hand, they are also traded. Therefore, the contentious question arises whether waste can also legally be defined as products[13]. For this study, it was decided to include wastes only where there is a similarity to (other) types of products[14]. This is the case when trade in wastes is concerned. As will be argued later, this trade poses problems very similar to those encountered with chemicals and genetically modified organisms. As global trade in waste is governed by the Basel Convention, it was decided to include it in this study. For the sake of clarity, hazardous wastes will, however, not be referred to as a hazardous product, but rather as a separate category[15]. When it is necessary to refer to a term that encompasses both of these categories, the term hazardous substances will be used instead.

C. Structure of the study

In anticipation of one of the main results of the analysis, the agreements were divided into two groups, not according to the nature of the regulated products, rather according to their regulatory focus. The Basel Convention, the Rotterdam Convention and the Cartagena Protocol concentrate on regulating trade in the substances that they deal with; they will be dealt with in the second chapter. The Montreal Protocol and the Stockholm Convention, in contrast, mainly establish rules for the domestic management of these products. They will be considered in the third chapter. Both chapters are similarly organized: firstly, each single agreement of the respective group will be analyzed with a view to describing the factual background and the

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has not yet entered into force.

[12] The Basel Convention was signed in March 1989 and entered into force in May 1992.

[13] This aspect is especially important for the question whether wastes are subject to trade instruments, especially the GATT, whose scope is normally limited to "products" or "goods".

[14] In contrast, MEAs whose focus is on waste generation or waste disposal are not considered.

[15] See also the title of the study.

historical development and highlighting the central provisions and their respective functions. Secondly, a conclusion will summarize the most important mechanisms employed by all agreements analyzed in chapter two or three, respectively. It will also serve to emphasize the main differences between the individual agreements of each group and attempt to explain the reasons for these differences.

Finally, chapter four will present the overall conclusions. Its particular focus will be to highlight the different approaches applied by the trade related agreements examined in chapter two and by those concentrating on the domestic management of hazardous products analyzed in chapter three. In addition, it will seek the rationale for the different approaches. It will conclude with a brief consideration of the future perspectives of MEAs in the field of hazardous products and waste.

D. Research Methodology

This is largely a desk bound study which includes a detailed analysis of the relevant international literature. This was essential to understand the initricacies that are generally associated with hazardous substances, and to understand the specific problems that are faced by developing countries in this regard. The literature study aided the author's own analysis of the various MEAs that are discussed in this study. In addition, documents published by international organizations were considered. As far as the Cartagena Protocol was concerned, background information and personal experience was available to the author, who attended the third Meeting of the Intergovernmental Committee for the Cartagena Protocol (ICCP 3) as legal counsel for the German government.

Chapter two: MEAs focussing on trade with hazardous products and hazardous wastes (the Basel Convention, the Rotterdam Convention and the Cartagena Protocol)

As indicated above, chapter two will analyze the Basel Convention, the Rotterdam Convention and the Cartagena Protocol. The common feature of all of the above is that they focus on trade, rather than on the domestic management of the respective substances.

A. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention)

The Basel Convention was signed in March 1989, largely as a consequence of incidents, some of them of quite spectacular character, concerning trade in hazardous wastes between developing and developed countries.

I. Hazardous Waste and its international trade: Factual Background

Even if there is no internationally recognized definition of waste in a legal sense[16], most people would agree that waste can be described as a by-product of industrial or private human activity that has to be disposed[17]. From this definition it becomes clear that in contrast to products, waste is not intentionally generated. The definition of hazardous is still more contentious. The OECD, for example, defines it as waste which, if improperly managed or disposed, could harm man or the environment because it is toxic, corrosive, explosive etc[18]. As a consequence of these properties, very serious health and environmental damage can result from improper management of hazardous wastes. Even if knowledge of the scale of impact is still incomplete, it is clear that problems can range from direct human exposure to poisons and

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[16] OECD, *Trade Measures in the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*, Paris 1998, p. 20.

[17] Krueger, Jonathan, *International Trade and the Basel Convention*, London 1999, p. 7.

[18] OECD, *Monitoring and Control of Transfrontier Movements of Hazardous Wastes, OECD Environmental Monograph No 34*, Paris 1993, p. 12.

carcinogens, to longer term environmental damage from leaching of chemicals in soil and groundwater, and consequent concentrations in the food-chain[19].

Exact data on the quantities of waste generated worldwide is unavailable as waste data was, for many years, only collected by a limited number of states. In addition, definitions on which this data was based, often differed widely[20]. Nevertheless, the OECD estimates a strong rise in waste generation since the 1960s, due to a heavy increase in industrial production, amounting to around 300 million tons of hazardous wastes in OECD countries and around 35 million tons in non-OECD countries in the late 1980s[21].

Even more difficult to obtain is accurate information regarding the transboundary movement of wastes. According to estimates, the share of wastes destined for transboundary movement has been significantly rising, reaching about 10 per cent of generated hazardous wastes in 1984[22]. In light of the above, a wide majority (80%), of the trade took place between OECD countries, 10 – 15 per cent between OECD countries and countries of Eastern Europe and 5 – 10 per cent between OECD countries and developing countries[23]. However, NGOs and others suggested that this data represented only the "tip of the iceberg"[24].

Two aspects can be highlighted as the most prominent causes for trade in wastes[25]. On the one hand, the tightening of environmental rules and standards in combination

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[19] Hilz, Christoph, *The International Toxic Waste Trade*, New York 1992, pp. 54; Batstone, Roger; Smith, James; Wilson, David (eds), *The safe disposal of hazardous wastes: the special needs and problems of developing countries; Worldbank Technical Working Paper No. 93 Vol. 1*, Washington D.C. 1989, pp. 24.

[20] International Maritime Organization, *Global Waste Survey: Final Report*, London 1995; Kummer, Katharina, *International Management of Hazardous Wastes: The Basel Convention and Related Legal Rules*, Oxford 1999, p. 4.

[21] Hilz, (Fn 19), p. 31.

[22] Smets, Henri, 'Transfrontier Movements of Hazardous Wastes', *Environmental Policy and Law* 14 (1985), p. 16, 17.

[23] Hilz, (Fn 19), p. 21.

[24] Spalding, Heather; Valette, Jim, *The International Trade in Wastes: A Greenpeace Inventory*, 5th ed, Washington D.C. 1990. Note also that this assessment, in turn, is doubted by Montgomery, Mark, 'Reassessing the Waste Trade Crisis: What Do We Really Know?', *Journal of Environment and Development* 4/1 (1995), p. 1, 6.

[25] Kummer, (Fn 20), pp. 6.

with increasing scarcity of disposal facilities due to the "NIMBY syndrome"[26] led to an escalation of disposal costs. The increasing attractiveness of developing states during the 1980s becomes understandable if one realizes that the average disposal cost for one ton of hazardous waste in Africa at this time ranged between US $ 2.50 and US $ 50, with equivalent costs in industrialized countries ranging from US $ 100 to US $ 2000[27]. On the other hand, the import of certain waste is also motivated by its potential value as secondary raw material to be recovered, reused and recycled. In particular, developing countries and countries with an economy in transition consider recycling as a suitable means of covering their need for raw materials at lower costs[28].

II. Specific problems of trade in hazardous wastes from developed to developing countries

The best way to understand why the international trade in hazardous wastes became an issue of concern, and was finally subjected to an international convention is to consider one of the cases that attracted high media attention at the time and spurred the conclusion of the Basel Convention.

One of the most prominent of these incidents took place in 1986, when the ship Khian Sea left the US carrying twenty-eight million pounds of toxic incinerator ash. On the pretence that the ship contained fertilizer ash, the ship docked in Haiti, and then dumped 4000 tons of this waste before the Haitian government became aware of the misinformation and forced the Khian Sea to leave the port. Thereafter, she wandered the oceans for eighteen months, refused of any import permission. Eventually, she anchored in Singapore without her toxic cargo and nobody knew exactly where the freight had ended up[29].

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[26] "Not In My Backyard".

[27] Kummer, (Fn 20), pp. 6.

[28] Krueger, (Fn 17), p. 21.

[29] Rublack, Susanne, 'Fighting Transboundary Waste Streams: Will the Basel Convention Help?', *Verfassung und Recht in Übersee*, 22 (1989), p. 364, 369. An extensive compilation of information on illegal hazardous waste export schemes, including the case mentioned, is also given in Spalding and Valette, (Fn 24), pp.21.

The episode of the Khian Sea is evidence that trade in hazardous wastes is most problematic when wastes are exported from developed countries to developing countries. This derives from the fact that developing countries often lack the capacity to exercise an efficient import control. Therefore, waste may be imported in a clandestine manner, or the government may be misled about the nature of the imported materials or about their possible environmental or health impact[30]. A further important aspect with respect to developing countries importing hazardous wastes, is that the highly differential disposal costs in developed and developing countries may often be traced to different kinds of environmental standards[31]. Whilst in developed countries, since the 1970s, provisions concerning waste generation and disposal have been continuously tightened, developing countries generally only became aware of the related problems very slowly. The lack of awareness and financial resources resulted in an average of very low regulatory standards, that were even less enforced[32]. As a consequence, highly toxic waste that was imported from developed countries, was often stored and disposed of in extremely inadequate places. Hence, waste exports exposed these importing countries to considerable environmental risks. When some of the more spectacular incidents were brought to the attention of a wider public, pressure grew to tackle the problem internationally.

III. Historical development

On a regional level, the OECD was among the first international organizations to take up the problems related to the trade in hazardous waste. The first OECD Decision in this regard ("Movements Decision"[33]) regulated the transport of waste among OECD members. Its binding sections vaguely call on member states to control transfrontier movements, and to provide the importing state with adequate in-

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[30] Vu, Hao-Nhien, 'The Law of Treaties and the Export of Hazardous Waste', *UCLA Journal of Environmental Law & Policy* 12 (1994), p. 389, 390.

[31] Glazewski, Jan, 'Regulating transboundary movement of hazardous waste: international developments and implications for South Africa', *The Comparative and International Law Journal of Southern Africa 26/2* (1993), p. 234.

[32] Kummer, (Fn 20), p. 7.

[33] OECD Council Decision and Recommendation C (83) 180 Final.

formation. Stricter standards were set down by a second decision ("Exports Decision")[34] that applies to trade between members and non-members. It requires essentially the following: firstly, the consent of the importing country; and secondly that the waste be directed to an adequate disposal facility in the importing country. However, the OECD decision fails to specify what kind of consent is necessary, thus leaving a wide margin of discretion to member countries.

In parallel to these OECD initiatives, regulatory actions were also undertaken within the EC with a similar approach to the issue. Spurred by the Seveso incident[35], in 1984 the EC passed a directive regulating the transboundary movement of waste[36]. It was amended in 1986. For trade between member countries, this directive merely provides for a notification scheme. With regard to trade with non-members, the directive, as amended, requires informed consent and the documentation of adequate disposal facilities. While these efforts were directed to *control* trade in wastes, the OAU took another approach when calling, in the Resolution on Dumping of Nuclear and Industrial Waste in Africa, for a total *ban* of trade in hazardous wastes between Northern and Southern countries[37].

On the international level, concern with hazardous waste trade dates back to 1981, when it was set on UNEP's agenda by the work program adopted as the Montevideo Program[38]. In 1984, the "Ad Hoc Working Group of Experts on the Environmentally Sound Management of Hazardous Wastes" was established by UNEP which elaborated on the non-binding "Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes". They were adopted in 1987 by UNEP's Governing Council[39]. While most of the principles are not specifically trade related,

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[34] OECD Council Decision and Recommendation C (86) 64 Final.

[35] Prompted by the explosion of a fertilizer factory, a cloud of dioxin was released in Seveso, Italy. When later on the contaminated earth was collected and was to be disposed, these wastes "disappeared" and could not be found by authorities for more than 10 months. For further information see Vu, (Fn 30), p. 393.

[36] Directive 84/631/EEC.

[37] OAU, Council of Ministers Resolution, May 23, 1988, reprinted in *I.L.M.* 28 (1989), pp. 568.

[38] Bothe, Michael, 'International Regulation of Transboundary Movement of Hazardous Waste', *German Yearbook of International Law* 33 (1990), p. 422, 423.

[39] UNEP Governing Council Decision 14/30, June 17, 1987.

provisions in this regard particularly recommend a prior consent procedure.

Contemporary to the acceptance of the Cairo Guidelines, the Governing Council decided that another Working Group should prepare a global convention specifically focusing on the aspects of transboundary movement of waste[40]. From the beginning, negotiations concentrated on the question of which basic principle should be applied. While OECD countries wanted to further elaborate on OECD drafts focusing on a model of controlled trade as reflected by the principle of prior informed consent, developing countries and NGOs arrived at the negotiations determined to stop what they perceived as a "crime"[41] against themselves[42]. On 22 March 1989, parties managed to adopt a compromise between both these positions and adopted the Basel Convention. It entered into force on 5 May 1992. As of April 2003, 156 states and the EU have ratified or acceded to the Convention.

IV. Central provisions

The following section will describe and analyze the central provisions of the Basel Convention. It is structured in five parts dealing with: the scope of application; measures concerning trade with parties; measures concerning trade with non-parties; supportive measures; and obligations concerning domestic management of waste.

1. Scope of application

According to Art. 1, the Basel Convention applies to "hazardous wastes" and "other wastes", with the exclusion of wastes that are radioactive or that derive from the normal operation of a ship[43]. Thus, the definitions of "hazardous" and "other" "wastes" are crucial for the practical application of the agreement and accordingly generated considerable debate during the negotiations. "Wastes" are defined as sub-

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[40] UNEP, (Fn 38).

[41] See the OAU Resolution, (Fn 36).

[42] Krueger, (Fn 17), p. 52.

[43] Those wastes are subject to special regulations in the framework of the IAEA and IMO respectively, see Kummer, (Fn 20), pp. 51.

stances which are subject to disposal[44]. The term "disposal" is defined by reference to Annex IV[45]. Annex IV comprises of operations that lead to final disposal (Annex IV A) as well as those which lead to recycling (Annex IV B). Therefore, the Convention applies the same rules to both categories. This attracted heavy criticism in view of the substantial differences of both kinds of operations in economic and environmental terms[46].

The category of "hazardous" wastes comprises of those wastes classified in Annexes I and III as well as those which attract classification by one of the countries concerned by a particular movement as hazardous[47]. For "other" wastes the Convention refers to Annex II. It should, however, be noted that the Convention in its original form did not provide for essential differences in the regulation of both categories[48].

2. Trade between parties

Central to the Basel Convention are measures concerning trade between parties. They aim at the protection of importing developing countries. This reflects the negotiation history and in particular the incidents mentioned above.

a) Absolute prohibition of waste transports to Antarctica

Art. 4 (6) establishes an absolute ban for the transfer of hazardous wastes within the area south of 60 degrees South latitude, whether or not such wastes are subject to transboundary movement. This reflects a special protection to be designated to the Antarctica as a global commons.

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[44] Art. 2 (1).

[45] Art. 2 (4).

[46] See Vu, (Fn 30), p. 411; Kummer, (Fn 20), p. 49.

[47] Art. 1 (1) (a) and (b).

[48] Generally speaking, the definition of waste poses a serious problem for the implementation of the Convention as neither the hazardous constituents nor the hazard characteristics are expressed in terms of quantities, concentrations or minimum levels. Therefore, there is a wide margin of judgement resulting in uncertainty for administrators, and in discretion that can be "abused", see OECD, (Fn 16), p. 18.

b) Import prohibition

Art. 4 (1.a) states that any party, exercising its right to prohibit the import of hazardous wastes or other wastes[49], shall inform the other parties of its decision through the Convention Secretariat. Art. 4 (1.a) has to be read in conjunction with Art. 4 (1.b). Accordingly, parties shall prohibit the export of hazardous wastes to those parties that have prohibited the import of such wastes, when notified pursuant to Art. 4 (1.a)[50]. That means that an import ban notified by one country triggers a corresponding export ban of all other parties. At a first glance, both provisions seem a little unusual as, in principle, import prohibitions should be sufficient to stop the waste transfer. The rationale behind these articles, and the reason why some developing countries have pushed for their inclusion lies, however, in the fact that developing countries regarded the implementation and enforcement of import bans on their own as a difficult task[51]. The completion of an import ban of one country by a correspondent export ban of other countries is thus a legal technique to oblige exporting countries to enforce the import ban, or put differently to enforce what has originally been decided by another state[52].

c) Prior informed consent (PIC) procedure

While developing countries pushed for a total ban of transboundary movement of hazardous wastes at least from the Northern to the Southern countries this was not realized in the original version of the Convention[53]. Instead, the prior informed consent procedure was established as the basic principle of the Convention. It governs all transboundary movements that are not prohibited and is based on a procedural approach laid down in Art. 6[54]. In addition, certain paragraphs of Art. 4 are of rele-

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[49] The preamble states that every state has the sovereign right to prohibit the import of hazardous wastes.

[50] An almost identical obligation is set down in Art. 4 (2.e).

[51] OECD, (Fn 16), p. 11.

[52] For a discussion about the classification of Art. 4 (1.a and b) as a ban or as a form of prior informed consent see section D of this chapter.

[53] For a discussion of the further development of the issue of the ban see immediately below.

[54] Even if the ban amendment will enter into force, the PIC procedure will still be the principle to which all transactions that are not prohibited are subjected to.

vance.

aa) Art. 6

The prior informed consent requirement is a procedure consisting of several phases. In the first step, the exporting state has to ensure that all import or transit states are notified of any proposed transboundary movement. This notification must contain the information specified in Annex V A, including the nature of the wastes, their hazardous characteristics, prospected dates of transfer, the intended method of disposal and all involved private agents[55]. This information is to enable the authorities of the state of import to assess the nature and the risks of the planned movement[56]. Based on this information, the country of import or the country of transfer has to decide whether it will consent to the movement with or without any conditions or deny permission for the movement or request additional information. The exporting country will then be notified of this decision[57].

The exporting country may only allow the exporter[58] to commence the transboundary movement if it has received written confirmation that: (a) the notifier has received the written consent of the State of import; and (b) the notifier has received from the State of import confirmation of the existence of a contract between the exporter and the disposer specifying environmentally sound management of the wastes in question[59]. In addition to the consent of the importing country, an export also requires the existence of a written consent of a potential state of transit. However, unlike the state of import, transit states can waive the requirement of prior written consent[60].

While this is the regular procedure provided for by the Convention, Art. 6 (6) – (8)

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[55] See Art. 6 (1) in conjunction with Annex V A.

[56] OECD, (Fn 16), p. 11.

[57] Art. 6 (2).

[58] Under Art. 2 No. 15, "exporter" means any person under the jurisdiction of the State of export who arranges for hazardous wastes or other wastes to be exported.

[59] Art. 6 (3).

[60] Art. 6 (4).

also allow the use of a general notification where hazardous wastes or other wastes having the same physical and chemical characteristics are shipped regularly to the same disposer if the country of import or of transit respectively agrees upon this on writing.

bb) General obligations relevant to the PIC

Apart from Art. 6 (3.b), which requires the existence of a contract between the exporter and the disposer specifying environmentally sound management of the wastes in question, all other requirements of Art. 6 are of a very formal nature. Art. 6 has, however, to be seen as linked to Art. 4, titled as "general obligations" of state parties.

The "most general" obligation might be provided for by Art. 4 (2.d). Under this article, parties have to ensure that the transboundary movement of hazardous wastes is reduced to the "minimum consistent with the environmentally sound and efficient management of such wastes". On the one hand, this article, in an operational provision, explicitly mentions the aim of a reduction. On the other hand, the language is very vague. Moreover, the reference to an "efficient" management may be interpreted as taking into account any circumstances that make disposal abroad easier, thus serving as an economic waiver[61]. The parties failed to include hard criteria that could be quantified, in contrast to provisions included, for example, in the Montreal Protocol[62]. Instead, the Convention merely obliges parties to report annually on their efforts to achieve such a reduction[63].

While Art. 4 (2.d) refers to the overall quantity of transboundary movements, it does not establish specific obligations with regard to a concrete transaction. Those kinds of provisions are, however, contained in Art. 4 (2 e and g) and Art. 4 (9). Art. 4 (9) obliges parties to take measures to ensure that the transboundary movement of hazardous wastes be allowed only if: (a) the State of export does not have the technical

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[61] Rublack, (Fn 29), p. 380.

[62] The mentioned provisions of the Montreal Protocol, however, do not regulate trade, but the domestic management of substances. For an in-depth analysis of the Montreal Protocol see chapter three.

[63] Art. 4 (13).

capacity and the necessary facilities to dispose the wastes in question in an environmentally sound and efficient manner; or if (b) the wastes are required as a raw material for recycling or recovery industries in the State of import.

Under paragraph 2 (e) and 2 (f) of Art. 4, parties are not to allow the export, or prevent the import, of wastes if they have "reason to believe that the wastes in question will not be managed in an environmentally sound manner". The term "environmentally sound", also referred to in several other provisions of the Convention, is defined in Art. 2 No 8 as meaning "taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes". Evidently, this definition is almost as vague as the term "environmentally sound" itself. Therefore, the first Conference of the Parties decided to set up a Technical Working Group that was mandated, among others, to elaborate on Technical Guidelines concerning the environmentally sound management of wastes[64]. Since then, the Conference of the Parties (COP) has adopted various sets of the Guidelines prepared by the Technical Working Group, each of them covering different waste streams or disposal operations, respectively[65].

Even if the shortcomings of the wording of the above articles might raise justified concerns[66], from a more structural perspective these provisions play a prominent role. They supplement the mainly procedural aspects of the prior informed consent with substantive criteria. Another interesting point is that both the exporting and the importing country are entrusted with the obligation to verify the environmentally sound disposal, before permitting the transfer.

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[64] COP Decision I/19.

[65] For more details see COP Decision III/13, Decision IV/23, Decisions VI 20 – 24.

[66] Like Art. 4 (2.d), Art. 4 (2.e) and (2.g) have also raised criticism. The problem of the notion "efficient" has been discussed above. With regard to recycling, some critics point to the risk that this might encourage fake recycling schemes; for details see the discussion on the ban of wastes destined for recycling below.

d) Ban amendment

aa) History and content

As already mentioned, prior to and during the negotiation of the Convention there were strong pressures not merely to regulate waste trade through a PIC procedure, but to adopt absolute restrictions on transboundary movements. However, developing countries and NGOs did not succeed in overcoming opposition of some industrialized countries. Instead, by way of compromise, Art. 15 (7) was introduced which calls upon the Conference of the Parties to consider the future need of a complete ban. Thus discussions continued in the follow-up. At the first meeting of the COP, advocates of a total ban succeeded in reaching a formal decision which requested developed countries to prohibit transboundary movements of hazardous wastes destined for final disposal[67]. In reaction, developing countries which found the result of the Basel Convention unsatisfactory, created the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa (Bamako Convention) which bans the importation of hazardous and radioactive wastes into Africa from all non-parties[68]. Spurred by these developments, the second COP adopted Decision II/12, which mandated states to prohibit immediately all transboundary movements of hazardous wastes destined for final disposal from OECD to non-OECD States, and to phase out by 31 December 1997 all movements destined for recovery or recycling. While the political intent of this decision was clear, its legal status was less so. Therefore, the third COP finally adopted a decision containing an amendment to the Convention. This amendment has, however, not yet entered into force[69]. Once entered into force,

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[67] COP Decision I/22.

[68] Wold, Chris, 'Multilateral Environmental Agreements and the GATT: Conflict and Resolution?', *Environmental Law - Northwestern School of Law of Lewis & Clark College* 26 (1996), p. 841, 868; Glazewski, Jan, *Environmental Law in South Africa*, Durban 2000, p. 57.

[69] As the inclusion of the ban constitutes a formal amendment to the Convention, it will only enter into force after having been ratified by three fourths of the Parties present at the time of the adoption of the amendment (62 Parties). As of March 2003, 36 countries have ratified the amendment.

the amendment would insert a new Art. 4 A incorporating the essence of Decision II/12[70]: According to Art. 4 A (1), each Party listed in Annex VII shall immediately prohibit all movements of *hazardous* wastes[71] destined for final disposal to states not listed in Annex VII; moreover, *hazardous* wastes that are destined for recycling shall be banned as of 1 January 1998. Annex VII comprises of the members of the OECD, the EC and Liechtenstein. In terms of its local coverage, the ban thus does not apply for intra-Annex VII and extra-Annex VII operations, neither for transports from non-Annex VII countries to Annex VII countries[72]. The PIC procedure will therefore remain the key mechanism for these transactions.

bb) Political and economic problems of a total ban

While it seems that in contrast to the time of the negotiations of the original Convention there is now quite a wide international consensus about a total North-South ban with regard to wastes for *final* disposal, a ban for wastes to be recycled still elicits strong opposition. Advocates of a ban mainly point to three kind of risks which are associated with trade in those wastes[73]. The first is that the permissibility of trade in recyclable wastes opens the door for "sham recycling" - listing of wastes as being destined for recycling, but in effect dumping them unsafely. Secondly, most recycling operations can pose a risk to human health and the environment if not conducted in a safe manner. Thirdly, only a part of the hazardous substances can be recycled while the rest remains hazardous waste which then has to be disposed in the importing country[74]. For these reasons, especially environmental NGOs highlighted the need for the ban.

In contrast, in particular the recycling industry has been vocal in its criticism of a

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[70] OECD, (Fn 16), p. 15.

[71] This study generally uses the term "hazardous waste" as a synonym for "hazardous waste" and "other waste" as the Basel Convention in its original version did not provide for essential differences and also does not always use an exact language itself. Therefore, it should be highlighted that, as far as Art. 4 A is concerned, the term "hazardous waste" is meant in a strict sense, that is excluding "other wastes".

[72] In spite of its limited local coverage, the prohibition of exports from Annex VII parties to non-Annex VII parties is often referred to as the "total ban".

[73] Krueger, (Fn 17), p. 87.

[74] Kummer, (Fn 20), p. 10.

ban. They often consider secondary materials as valuable where others regard such materials as hazardous waste. In this context it seems important to closely analyze the attitude of developing countries with regard to the ban. Despite the fact that they were the ones to push the issue forward, there is increasing awareness among some of them that the ban could result in disruption of trade in recyclable goods and could thus hit their recycling economies[75]. This also reflects another aspect of the discussion, namely increasing differences in the category of developing countries between those with recycling industries and those without.

The Conference of the Parties has sought to deal with the problem of recyclable wastes by limiting the ban to those wastes classified as "hazardous" in the sense of the Convention, while "other wastes" are out of the scope of the ban[76]. This renders the delineation of both kinds of wastes, in the original version particularly undertaken by Annexes I and III, much more important than before. However, Annexes I and III only deliver a very imprecise definition, so the Conference decided to adopt the new Annexes VIII and IX. These have been prepared by the Technical Working Group to clarify the delineation[77]. This not only promotes legal certainty, but satisfies political compromise, too. This task was undertaken with a view to including only those items in the scope of the ban with reference to which a related international consensus existed. From the adoption and broad support for the lists at the fourth COP one can draw the conclusion that the classification of various items in either Annex VIII or IX has been successful in removing most of the concerns about trade disruption. In addition, an OECD study comes to the conclusion that the quantitatively important secondary materials traded internationally were put out of the ban[78].

The second aspect that eases opposition can be seen in the efforts to make the country lists more flexible. A possible option in doing so could be to establish substantive criteria based on which state parties are distributed in the Annex, rather than

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[75] Krueger, (Fn 17), pp. 95.

[76] Krueger, (Fn 17), p. 103.

[77] The relationship between the existing Annexes I and III and the new Annexes VIII and IX has still to be clarified.

[78] OECD, (Fn 16), p. 21.

taking very formal criteria like membership in the OECD. One should bear in mind, however, that a country included in the annex gains the advantage of being able to receive wastes from other listed countries. On the other hand it loses the possibility to export to non-listed countries. Thus, a more flexible listing process will not solve all trade related problems.

e) Packaging, labelling and transport requirements

While the previously discussed provisions set out whether a transportation may take place, Art. 4 (7) lays down what specific modalities have to be met once that consent has been given to the transport of waste. It requires in quite a general form that hazardous wastes be packaged, labelled, and transported in conformity with generally accepted and recognized international rules and standards in the field of packaging, labelling, and transport.

f) Re-import of wastes and consequences of illegal traffic

Many incidents during the 1980s, including that of the Khian Sea, bear evidence, that, in practice, the issue of responsibility for wastes once they have left a country has been a very tricky one. In addressing this issue, the Convention differentiates between two sets of situations. Art. 8, re-import, applies where wastes have been transferred to another country according to the rules of the Convention, but cannot be completed in accordance with the terms of the contract. In this case, the exporting state shall ensure that the wastes in question are taken back into the State of export by the exporter if alternative arrangements cannot be made for their disposal in an environmentally sound manner, within 90 days. That means that the entire responsibility is allocated to the exporting state although both governments would have been involved in the transfer. If the transfer has taken place, for various reasons, in breach of one of the provisions of the Convention it is qualified as "illegal traffic". In this case, Art. 9 applies. It provides that responsibility is allocated especially to the state whose private agent's action was the cause for the illegality.

While the question of re-import is thus dealt with quite extensively, it should be mentioned at this point that no consensus could be reached with regard to a different and broader aspect of responsibility, that is liability and compensation. Instead, par-

ties agreed upon Art. 12 requesting the COP to develop rules on this controversial issue.

3. Trade with non-parties

Like the provisions analyzed so far, Art. 4 (5) is also trade related. However, in contrast to the other articles, it does not govern trade between parties, but trade between parties and non-parties. As, in principal, an international treaty may not establish obligations for third parties, such a treaty may only state obligations for parties when dealing with non-parties. In this regard, Art. 4 (5) stipulates that a party shall not permit hazardous wastes to be exported to a non-Party or to be imported from a non-Party. Thus, article 4 (5) applies both to importing and exporting countries.

However, the so-called concept of a limited ban is modified by Art. 11 (1). Accordingly, a party may, principally, enter into bilateral, multilateral, or regional agreements regarding transboundary movement of hazardous wastes. The conclusion of those agreements is qualified by the conditions that such agreements do not derogate from the environmentally sound management of hazardous wastes and other wastes as required by this Convention and that their rules may not be "less environmentally sound" than those provided for by the Basel Convention. In addition, the Secretariat of the Convention must be notified of such agreements. The inclusion of Art. 11 was very contentious during the negotiations. The adopted wording represents a compromise that, on the one hand, opens the door for rules outside the Basel Convention, while, on the other hand, seeks to influence these agreements.

The extent of the degree of discretion which Art. 11 (1) will allow to "weaker" agreements depends heavily on the definition of "environmentally sound management" and on the question of who decides and controls it[79]. Art. 2 No. 8 contains a definition of environmentally sound. As already mentioned above, this definition is, however, similarly vague and general and has yet to be further elaborated on by the Conference of the Parties. Thus, Art. 11 (1) is also an example for a typical "solution" of disputes during the negotiation phase, namely smothering them in vague language and leaving their solution for further work of the Conference of the parties.

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[79] Bothe, (Fn 38), p. 424.

The obligations with regard to trade with non-parties pursue a twofold objective[80]. Firstly, they target states which are parties to the Convention aiming at ensuring that a party can only pursue transactions which are undertaken according to the Convention. Secondly, by excluding non-parties from trade with parties, the provisions are designed to provide an incentive for those countries to accede to the Convention.

4. Domestic management

The trade measures described so far constitute the core of the Basel Convention. However, it already becomes clear from the official title of the Basel Convention, which also mentions the "disposal" of hazardous wastes, that the treaty is not limited to trade aspects. Considering the operational part of the Convention, Art. 4 (2.a – c) are of particular relevance in this regard. They stipulate that each party has to ensure that the generation of wastes within its territory is reduced to a minimum, that adequate disposal facilities are available and that the management of waste shall be such as to prevent pollution[81]. Thus, the Convention not only provides for obligations related to trade, but also considers the domestic management of wastes of each state – and even beyond the stage of disposal. The inclusion, in particular, of the obligation to minimize the generation of wastes, recognizes the fact that the increased generation of wastes was the central cause for the increase of the transboundary movement of wastes.

At the moment, the respective obligations are of a very general character. However, in their 1999 Declaration, countries stated that they wanted to further elaborate on the element of domestic "Environmentally Sound Waste Management", including cleaner technologies, waste reduction and environmentally sound disposal[82].

5. Supportive measures

The Basel Convention contains a further set of provisions which do not regulate

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[80] Kummer, (Fn 20), p. 61.

[81] The preamble also mentions the importance of domestic management of wastes.

[82] See the "Basel Declaration on Environmentally Sound Management", contained in Annex II of the Report of COP 5, pp. 96.

trade, even if they have a strong relation to this aspect. The trade measures described above, in particular the PIC procedure which constituted, at the time of adoption of the Basel Convention, the main regulatory mechanism require an active role of importing developing countries. Most importantly, they have to undertake an assessment whether to consent to the import or not. The implementation of this obligation – and of the domestic management measures – presupposes according capacities which developing countries often lack. Therefore, they sought to include mechanisms into the Convention providing for technology and financial assistance, arguing that the PIC procedure would otherwise fail in its objective of protecting them against unwanted and illegal imports[83]. Provisions designed to this end are contained in Art. 10 (International Cooperation), Article 13 (Transmission of Information), Art. 14 (Training/Financial Aspects) and Article 16 (Secretariat)[84]. In the following discussion they shall be referred to as supportive measures, as they do not themselves lay down obligations with regard to specific trade transactions, but support the implementation of other (trade) measures.

Art. 10 (1) lays down a general obligation of the parties to co-operate with each other, in order to improve and achieve environmentally sound management of hazardous wastes. Art. 10 (2) then specifies various forms of this co-operation, like a general information exchange with a view to promoting the environmentally sound management of hazardous wastes and other wastes. This includes harmonization of technical standards and practices, co-operation in the development and implementation of new environmentally sound low-waste technologies, transfer of technology and management systems, and developing the technical capacity among Parties. The needs of developing countries shall be especially taken into consideration. Art. 13 regards transmission of information in addition to the information exchange required by the PIC procedure. Some forms of information can be considered as a specific kind of capacity-building. Art. 14 concerns training and technology transfer. In effect, several regional training centres have been established in the last decade. The financial aspect of such centres is, however, problematic. Art. 14 (1) only calls upon parties to decide on the establishment of appropriate funding mechanisms of a vol-

[83] Report of the Working Group on its 1st session, UNEP/WG.182/3; Report of the Working Group on its 2nd session, UNEP/WG.186/3.

[84] Krueger, (Fn 17), pp. 84.

untary nature. In 1992, such a fund was established, but funding remains difficult. Finally, Art. 16, which deals with the secretariat of the Convention, could be relevant for developing countries in so far as it mentions, apart from the typical secretariat tasks of reporting and co-ordination, also informational assistance to parties[85].

[85] See especially Art. 16 (1 g-j).

B. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention)[86]

Signed in September 1998, the Rotterdam Convention was the second MEA focussing on the trade in hazardous products. It basically transforms the content of the non-legally binding "UNEP London Guidelines for the Exchange of Information on Chemicals in International Trade" and of the "FAO International Code of Conduct for the Distribution and Use of Pesticides" into hard legal obligations.

I. Chemicals and their international trade: factual background

As already mentioned in chapter one, large-scale production of chemicals, or synthesized substances, commenced after World War II and steadily accelerated in the following decades[87]. In 1998, the annual turnover of chemical products was estimated to amount to approximately US $ 1500 billion[88]. Chemicals play a key role in many major sectors such as agriculture, industry, housing, transport, textiles and the health sector and constitute the basis for many comforts of modern life. However, in the late 1950s signs emerged that some chemicals could also have effects dangerous to man and the environment. Serious incidents in the 1960s brought the problem to the international public's attention. Hazardous effects can be especially linked to the following categories of chemicals: pharmaceuticals, pesticides, food additives, industrial chemicals and consumer products[89]. Depending on the specific chemicals in question, hazardous effects range from acute toxicity to long-term damage - including cancer, birth defects or chronical sicknesses.

As a consequence, many industrialized countries started, at the end of the 1960s, to

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[86] Although the Rotterdam Convention was signed two years earlier than the Cartagena Protocol, there is still considerably less literature on this agreement.

[87] Krueger, (Fn 2), p. 3.

[88] OECD, *Environmental Outlook for the Chemical Industry*, Paris 2001, p. 28.

[89] Halpaap/Huismans, (Fn 1), p. 7.

consolidate risk management systems relying mainly on restrictions on domestic marketing. The difficulty of the implementation of a such a system becomes clear if one realizes that some 60.000 – 70.000 chemicals are on the market today[90]. Most developing countries could, initially, not afford such a system. Therefore, the vast majority of developing countries only started in the midst of the 1980s, when the dangers of chemicals could not be ignored any longer, to take actions to protect their citizens from the dangers associated with hazardous chemicals[91].

II. Specific problems of trade in hazardous chemicals from developed to developing countries

According to OECD estimates, chemical products account for around 13 % of world trade, including those with a high risk potential[92]. The problems particularly of the North-South trade, become best tangible if one considers the case of the pesticide "Lephtophos"[93] which was one of the first cases that raised concerns about the practices of international trade in certain substances. In 1975, Velsicol, a Texas based corporation, produced over 3 million pounds of the pesticide "Lephtophos". The pesticide could not be sold in the United States because it had never been registered with the relevant authorities. Nevertheless, during 1975 alone, Velsicol shipped the pesticide to more than 30 different nations, including Egypt, that at this time did not have any procedures for pesticides regulation. Later on, it was discovered that the use of Lephtophos had resulted in the death and illness of many rural farmers and in the killing of over a thousand water buffaloes. Despite these incidences, Velsicol continued to market Lephtophos abroad while proclaiming its safety.

The Lephtophos case is one of the many examples in which hazardous chemicals are imported in a developing country without any controls on behalf of the importing country. The absence of import controls is the logical consequence of the absence of domestic laws with regard to hazardous chemicals, as mentioned above. But even

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[90] Halpaap/Huismans, (Fn 1), p. 6.

[91] Krueger, (Fn 2), p. 2.

[92] OECD, (Fn 88), p. 33.

[93] For more details of this incident see Bryan, Donald, 'International Consumer Protection: Export of Hazardous Products from the United States', *A.S.I.L.S. International Law Journal* 4 (1980), pp. 1.

where legislative measures were established in developing countries, starting in particular from the 1980s, their enforcement still tends to be very poor due to lacking regulatory and administrative capacities[94]. A further specific problem which developing countries face with regard to hazardous chemicals, is that the use of pesticides and industrial chemicals poses specific environmental and health risks in these countries due to lack of resources on which chemical management in developed countries can be based: protective clothing is often too expensive, warnings on the chemicals cannot be understood. As a result of the latter, chemicals are often used and stored improperly, thus causing even more hazards[95].

The Lephtophos case highlights an additional aspect of the trade between developed and developing countries, the so-called problem of dual standards. It means that many of the severely hazardous chemicals that are exported from developed countries to developing countries have been subjected to regulatory actions in their countries of origin. These actions mostly do not prohibit the production, but are merely limited to the prohibition of the domestic marketing. However, only very lax, if any, rules apply to exports. As a consequence, they can still be marketed in countries which lack efficient import controls. For example, in 1995 and 1996, the US alone exported 14 tons of pesticides per day that were not registered for domestic use[96].

As a consequence of the sum of all the factors described above, according to WHO estimates, one million people in developing countries are affected by poisoning annually in the pesticide sector alone, of which 20.000 die - representing a much higher rate of incidents than in developed countries[97]. It should, however, be noted that some of the consequences of the use of pesticides in developing countries affect also developed countries. Much of the millions of tons of food the United States and Europe import each year is tainted by pesticides applied in the developing world.

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[94] UNEP/WG.96/3.

[95] An example of the negligent application methods often employed in rural areas of developing countries when dealing with pesticides is given in Ross, Jenifer, 'Legally Binding Prior Informed Consent', *Colorado Journal of International Environmental Law & Policy* 10 (1999), p. 499, 503.

[96] Ross, (Fn 95), p. 506.

[97] WHO, quoted in Mungai, Naftali, *Environmental News Service*, 14 June 2000, available at: http://lists.isb.sdnpk.org/pipermail/eco-list-old/2000-April/002570.html, (accessed on 11 March 2003).

This form of consumer exposure to pesticides exported by their own country through tainted, imported produce is called the "circle of poison"[98].

However, the complexity of the pesticides and chemicals issue lies in the fact that both offer also a wide range of advantages[99]. Many developing countries benefited from the "Green Revolution" which was based on pesticides and chemicals. It especially enabled them to boost crop production, thus helping them become self sufficient, while attracting foreign currency into the market. Moreover, pesticides also improve public health by killing bacteria and disease-carrying insects[100]. Therefore, in many cases highly toxic chemicals are even subsidized by national governments or the UN. In addition, developing countries often lack the necessary financial resources to apply less hazardous pesticides.

III. Historical development

1. Development of the voluntary prior informed consent procedure

First steps to tackle the above mentioned problems were undertaken in the 1970s by single governments establishing national export control schemes. Their requirements were, however, quite limited[101]. Further efforts took place within the OECD, resulting in mostly informational requirements[102]. On an international level, the World Health Organization established in 1975 the non legally-binding "Certification Scheme on the Quality of Pharmaceuticals Moving in International Commerce" laying down an information exchange system and including a specific form of prior informed consent[103]. In 1976, UNEP set up the International Register for Potentially

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[98] Ross, (Fn 95), p. 506.

[99] For more details see Ross, (Fn 95), pp. 502.

[100] For example, in central Africa, DDT - an insecticide banned in the United States - is used as a primary defense against malaria, which kills 5000 children south of the equator each day, see Levy, Marc A., 'International Co-operation to Combat Acid Rain', *Green Globe Yearbook*, Oxford 1995, p. 59, 60.

[101] Schulberg, Francine, 'United States Exports of Products Banned for Domestic Use', *Harvard International Law Journal* 20 (1979), pp. 331.

[102] Krueger, (Fn 2), p. 4.

[103] WHO Official Records No. 226, Annex 12 (1975). For more details see Handl, Günther and Lutz, Robert, *Transferring Hazardous Technologies and Substances: The International Legal Challenge*,

Toxic Chemicals (IRTPC) in order to circulate information on industrial chemical hazards. Furthermore, an "Ad Hoc Working Group of Experts for the Exchange of Information on Potentially Harmful Chemicals in International Trade" was established in 1982 and mandated with the elaboration of related guidelines[104].

Discussions in this group revealed strongly differing positions. The point which probably caused the most heated debate was whether the guidelines should only include a notification scheme, or whether this scheme should be complemented by a form of prior informed consent. Advocates of this principle could, however, not overcome opposition, particularly from industrialized countries[105]. So, the "UNEP London Guidelines for the Exchange of Information on Chemicals in International Trade", which were adopted in 1987, were confined to an information exchange system[106].

While the London Guidelines were widely limited to industrial chemicals, discussions had concurrently taken place in the FAO with regard to the issue of pesticides chemicals. This led to the adoption in 1985 of the "International Code of Conduct for the Distribution and Use of Pesticides"[107]. Unlike the London Guidelines, the scope of this Code is not limited to trade aspects, but extends to all phases of the life cycle of pesticides. Its trade-related provisions are, however, almost identical to those of the London Guidelines. Similarly, the inclusion of a prior informed consent procedure had also been rejected in this context.

However, several developments on the international scene – among them the adoption by the OECD of a PIC procedure in the related area of hazardous wastes[108] and a PIC system for chemicals unilaterally launched by the Dutch government - made it

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London 1989, pp. 70.

[104] UNEP Governing Council Decision 10/24 of 31 May 1982.

[105] Victor, David, 'Learning by Doing in the Nonbinding International Regime to Manage Trade in Hazardous Chemicals and Pesticides', in: *The Implementation and Effectiveness of International Environmental Commitments*, Victor, David G.; Raustiala, Kal and Skolnikoff, Eugene B. (eds), Cambridge 1998.

[106] UNEP Governing Council Decision 14/27, reprinted in *Environmental Policy and Law* 17 (1987), pp. 66.

[107] FAO Conference Resolution 10/85.

[108] See above.

all the more difficult for industrialized countries to keep PIC in the field of chemicals off the international agenda any longer[109]. Thus, following further work in working groups, in 1989 UNEP and FAO decided to change their instruments by including an almost identical mechanism of prior informed consent[110].

2. Development of the legally binding Rotterdam Convention

Though it had taken several years to build up an international consensus with regard to even a non legally-binding prior informed consent procedure the G-77 and some NGOs immediately undertook a call to make the London Guidelines and the Code of Conduct legally binding[111]. Advocates argued that the voluntary procedures present significant problems regarding compliance. Furthermore they pointed to some vague provisions, and criticized the lack of funding mechanisms[112]. The issue was raised in the FAO itself, at UNEP, and in the so-called FAO/UNEP Joint Meeting on PIC (JMPIC) established to implement the voluntary PIC procedures of the London Guidelines and the Code of Conduct. At the second meeting of the JMPIC it was decided, after lengthy debates, that scarce resources should be devoted to the implementation of the existing instruments, rather than the development of legally binding agreements[113]. However once on the international agenda, the issue was raised again from time to time in different international fora. Finally, in 1995, the UNEP Governing Council authorized the Executive Director to convene, in co-operation with the FAO, a so-called Intergovernmental Negotiating Committee (INC). Thus, the mandate for the elaboration of the Rotterdam Convention was based on separate, but co-ordinated decisions of the two organizations. As far as the terms of reference are concerned, the mandate was limited to preparing an interna-

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[109] Krueger, (Fn 2), p. 4.

[110] UNEP Governing Council Decision 15/30 of 25 May 1989. FAO Conference Resolution 6/89 of November 1989.

[111] Krueger, (Fn 2), p. 5.

[112] Ross, (Fn 95) pp. 515.

[113] UNEP/FAO, Report of the Second FAO/UNEP Joint Meeting on Prior Informed Consent 3-7 June 1991, Rome, p. 22.

tional legally binding instrument for the application of the PIC procedure[114].

The NIC held 5 sessions between 1996 and 1998. In spite of the fact that the negotiation process was based on the amended UNEP London Guidelines and the amended FAO Code of Conduct, negotiations proved to be very difficult. Interestingly there was, as it is common in MEA negotiations, a division of opinion between developed countries and developing countries about funds. Unlike most other global environmental negotiating processes, the fundamental differences did not, however, emerge between the North and the South, but between the US and the EU[115]. On NIC 5, a final compromise was then reached so that the Rotterdam Convention was signed in September 1998. For its entry into force, 50 ratifications are required. As of March 2003 there were 40 ratifications.

IV. Central provisions

In the next section, the central provisions of this Convention shall be looked at, following the same structure used with regard to the Basel Convention.

1. Scope of application

According to Art. 3 (1), the Rotterdam Convention applies to two groups of chemicals: (a) to banned or severely restricted chemicals, and (b) to severely hazardous pesticide formulations[116]. Under Art. 2 (b) ("Definitions"), a "banned chemical" means a chemical, all uses of which within one or more categories have been prohibited by a so-called final regulatory action of any party[117]. This includes those chemicals that have been refused approval or have been withdrawn by industry, if the latter action has been taken in order to protect human health or the environ-

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[114] UNEP Governing Council Decision 18/12.

[115] Kummer, Katharina, 'Prior Informed Consent for Chemicals in International Trade, *Review of European Community and International Environmental Law* 8/3 (1999), p. 322, 324.

[116] Under Art. 3 (1), the term "chemicals" as such does not encompass all chemicals, but only of two categories of chemicals: pesticides (including severely hazardous pesticide formulations) and industrial chemicals.

[117] According to Art. 2 (e), a "final regulatory action" means an action taken by a party, that does not require subsequent regulatory action by that party.

ment.[118] A "severely restricted chemical" is one virtually all uses of which within one or more categories have been prohibited by national regulation of any party, but for which certain specific uses remain allowed. It includes those chemicals which have, for virtually all uses, been refused approval or been withdrawn by industry for human health or environmental reasons. In terms of Art. 2 (d), a "severely hazardous pesticide formulation" is a chemical formulated for pesticidal use that produces severe health or environmental effects, observable within a short period of time after exposure under conditions of use.

The categories of banned and severely restricted chemicals on the one hand, and for severely hazardous pesticide formulation on the other hand are both meant to specify chemicals with a high hazard potential. However, they use different kinds of criteria to this end: while the first category refers to national regulatory actions, and thus tends to use a formal criteria as an indication of the hazard potential, the second one applies a rather substantive criteria. The purpose of the inclusion of the second category must be seen in the context of the practical situation of developing countries and countries with an economy in transition: it is meant to also cover those chemicals which have severe adverse effects, but for which regulatory actions have not been taken by developing countries, due to a lack of relevant capacities[119].

2. Trade between parties

Regulations concerning trade between parties constitute the central focus of the Rotterdam Convention.

a) Prior informed consent procedure, Art. 5 – 11

The core regulatory mechanism of the Rotterdam Convention is the prior informed consent procedure which is contained in Art. 10 and 11[120]. This procedure, however,

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[118] Art. 2 (b).

[119] The specific relevance of this category for the situation of developing countries becomes clear if considered in the context of Art. 6 (described below) which states that only developing countries may propose chemicals of this category for inclusion into Annex III.

[120] At the commencement of the negotiations, some delegations had proposed the inclusion of a ban

does not apply to all chemicals falling within the scope of the Convention, but only to those listed in Annex III. With the signature of the Convention, parties agreed to initially include 22 pesticide formulations and five industrial chemicals in this Annex. In addition, the Convention provides for quite an elaborate procedure for the further listing of chemicals in the Annex. These obligations which constitute one of the cornerstones of the Convention and are specified in Art. 5 – 9 shall examined in the first part of the following section. The second part will then deal with Art. 10 and Art. 11.

aa) Procedures for placing chemicals on and for removing them from Annex III

Art. 5 –9 lay down under which conditions chemicals are placed on, or removed from, Annex III. With regard to the first aspect, the Convention partly differentiates between banned or severely restricted chemicals and severely hazardous pesticide formulations.

aaa) Procedures for banned or severely restricted chemicals, Art. 5[121]

With regard to banned and severely restricted chemicals, Art. 5 (1) establishes that each party that has adopted a regulatory action shall notify the secretariat. The notification has to be accompanied by information as specified in Annex I. Annex I requires information about properties, identification and use of the chemical as well as information about the regulatory action, including its content, data on which the action was based, its reasons, and the possible relevance of the action to other states.

If the secretariat has received at least one notification from each of two Prior Informed Consent regions[122] regarding a particular chemical, it shall forward them to

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of the export of domestically prohibited chemicals from OECD countries to non-OECD countries. These proposals were, however, dropped later on due to the strong opposition of certain developed countries.

[121] While the following description focuses on the function of Art. 5 (1) in the context of the prior informed consent procedure, Art. 5 also serves a second purpose. This will be considered under bb.) below.

[122] According to Art. 5 (5), the composition of these regions shall be defined in a decision to be adopted by consensus at the first COP.

the so called Chemical Review Committee[123]. This Committee is a special subsidiary body of the Convention, which consists of a limited number of government-designated experts in chemical management, who will be appointed by the Conference of the Parties[124]. The Committee will review the information provided in the notifications and will recommend to the Conference of the Parties whether the chemical in question should be made subject to the prior informed consent procedure and, accordingly, be listed in Annex III. Its recommendation shall be in accordance with the criteria set out in Annex II.

These criteria can be roughly divided into four different sets. Annex II (a) requires the Committee to confirm that the regulatory actions that triggered the process have been taken in order to protect human health or the environment. According to Annex II (b), the Committee has to ascertain that the regulatory actions have been taken as a consequence of a risk evaluation. For this purpose, the documentation provided shall demonstrate that data has been generated according to scientifically recognized methods and that data reviews have been performed according to generally recognized principles. In sum, (b) establishes the requirement that the regulatory action was based on a scientifically sound risk assessment. While (a) and (b) require a revision of the regulatory actions themselves under the perspective of their intention and their basis, under (c) the Committee has to consider whether the action provides a sufficient broad basis to merit listing of the chemical in Annex III. To do so it must consider: whether the action led to, or is expected to lead to, a significant decrease in the quantity of the chemical used and a reduction of risk in the country that has undertaken the action; whether the considerations that led to the action are applicable only in a limited geographical area; and whether there is evidence of ongoing international trade in the chemical in question. Finally, (d) states that intentional misuse is not in itself an adequate reason to list a chemical in Annex III.

bbb) Procedures for severely hazardous pesticide formulations, Art. 6

Art. 6 provides for a different procedure for the listing of "severely hazardous pesticides" in the sense of Art. 3 (1.b). According to Art. 6 (1), a developing country or a

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[123] Art. 5 (5).

[124] Art. 18 (6).

country with an economy in transition, that is experiencing problems caused by a severely hazardous pesticide formulation may propose to the secretariat the listing of the severely hazardous pesticide formulation in Annex III. The proposal shall contain the information as stated in part 1 of Annex IV, that is information about the name of the formulation, common patterns of use within the proposing country, a clear description of the incidents and the way in which the formulation was used, and any measure taken by the proposing party in response to such incidents.

Once the secretariat has received this information, it shall collect the additional information required under part 2 of Annex IV[125]. Part 2 of Annex IV includes toxicological properties of the pesticide; incidents, regulatory actions or risk assessments in other states and alternative pest-control practices. Afterwards, the secretariat will forward the proposal and the related information to the Chemical Review Committee. This will review the information and will recommend to the Conference of the Parties the inclusion or not of the pesticide in Annex III. Its recommendation shall be guided by the criteria set out in Part 3 of Annex IV, namely: the reliability of the evidence indicating that use of the formulation, in accordance with common or recognized practices within the proposing party, resulted in the reported evidence; the relevance of such incidents to other states with similar conditions; the existence of restrictions involving techniques that may not be applied in states lacking the necessary infrastructure; and the significance of reported effects in relation to the quantity of the formulation used.

ccc) Procedures applying to both kinds of chemicals, Art. 7[126]

If the Chemical Review Committee decides to recommend a banned or severely restricted chemical or a severely hazardous pesticide formulation for listing in Annex III, it shall prepare a so-called draft decision guidance document outlining the reasons for its decision. This draft will be forwarded to the Conference of the Parties, which then has to take the final decision about the listing of the chemical or not. Thus, while a lot of the prepatory work is undertaken by a "scientific body", final

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[125] Art. 6 (3).

[126] Art. 8 is dealing with those chemicals which have already been included in the voluntary prior informed consent procedure of the London Guidelines or the Code of Conduct.

decision rests with the Conference of the Party as the highest organ of the Convention. In the case of approval of a draft, this decision and the related decision guidance document will be forwarded to all parties[127].

The function of the (draft) Decision Guidance Documents is twofold: firstly, they constitute the basis for the decision of the COP to list or not the chemical in Annex III. Secondly, they aim at helping governments analyze the potential hazards associated with a certain chemical, in order to assist them to form an informed decision. They thus constitute a specific institutionalized and formalized decision-making guidance.

ddd) Removal of chemicals from Annex III, Art. 9

If new information emerges that was not available at the time of the decision to list a chemical and that indicates that a listing is no longer justified, any party may submit such information to the secretariat. Information will then be forwarded to the Chemical Review Committee which will prepare a revised draft decision guidance document, based on which the Conference of the Parties will take a final decision whether to remove the chemical or not.

eee) Analysis of the described procedures

The articles described above lay down procedural and substantive criteria to single out those of the chemicals covered by the overall scope of application of the Convention, which as a result of their high risk potential merit listing in Annex III and thus the application of the PIC procedure. If one compares the criteria used for "prohibited and severely restricted chemicals" in Annex I and II, and the criteria used for "severely hazardous pesticide formulations" in Annex IV, one can clearly see that the requirements for a proposal for pesticides are less stringent than those for a regulatory action. In particular, there is no need for a risk evaluation on behalf of the proposing country. This difference is intended to take into account the special needs of developing countries, in that they may not be in possession of a chemical management system so as to allow them to conduct a proper risk assessment.

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[127] Art. 7 (3).

Apart from establishing the chemicals to be added to Annex III the respective procedure has also a second function[128]: it constitutes a multilateral tool of generating and disseminating information (in particular in form of the decision guidance document) going beyond the traditional form of information exchange which is merely based on information provided by the party of export.

bb) Obligations with regard to chemicals listed in Annex III

Chemicals listed in Annex III are subject to a prior consent procedure. Before considering the concrete provisions it should be pointed out that in contrast to the prior informed consent procedure under the Basel Convention, the Rotterdam procedure is not triggered by a single transboundary movement. Rather it is the placing of a chemical in Annex III that constitutes the beginning of the procedure.

The obligations applying to importing countries are set out in Art. 10, those applying to exporting countries in Art. 11. Both articles are worded in a neutral way and impose obligations on all parties. Nevertheless, the rationale and the history of the Convention indicate that they have been designed on the understanding, that the rules of import will usually be important apply to developing countries or to countries with an economy in transition, while those on export will in most cases apply to developed countries[129].

aaa) Obligations in relation to import, Art. 10

In terms of Art. 10 (2), each party shall as soon as possible, but no later than nine months after having received the decision guidance document, transmit to the secretariat a response regarding how to deal with future imports of a certain chemical[130]. This response may consist either of a final decision stating the consent or not to import the chemical or of an "interim response". This in turn, can be an "interim decision" (an indication that a final decision is under active consideration), a request for

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[128] This function was already mentioned with regard to the decision guidance document.

[129] Kummer, (Fn 115), p. 327.

[130] The implementation of appropriate measures which ensure timely decisions with respect to the import of chemicals listed in Annex III constitutes an obligation of importing countries, Art. 10 (1).

further information, or a request to the secretariat for assistance in evaluating the chemical[131]. It is important to note that the Convention does not state any substantive criteria for the decision procedure. Therefore, the decision is absolutely in the discretion of every single country.

In the case that a developing country fails to submit an answer, Art. 10 (3) mandates the secretariat not only to forthwith address to a party that has not provided such a response, but also to help this party in providing a response. This provision takes account of the fact that a respective failure will often result from a lack in adequate capacities.

Art. 10 (9) further provides a trade related clause. It requires importing parties, that take the decision not to consent to an import, to simultaneously prohibit, or make subject to the same conditions: (a) the import of the chemical from any source[132] and (b) domestic production for domestic use[133]. This provision resembles two GATT-principles: the principle of most favored nation treatment and the principle of non-discrimination between imported products and domestic "like products". The clause is, however, "reverse" in the sense that it does not require like treatment with regard to advantages, but with regard to disadvantages.

bbb) Obligations in relation to export, Art. 11

While the obligations of the importing countries are essentially limited to taking a decision about the import, exporting countries' duties focus on the enforcement of these decisions. Accordingly, Art. 11 (1.b) stipulates that exporting countries have to take measures to ensure that exporters comply with the decisions as laid down by importing countries. In terms of Art. 11 (1.c) (i), exporting countries shall, in addition, advise and assist importing countries "upon request and as appropriate" to obtain further information needed to take a PIC decision. This obligation is rather un-

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[131] Art. 10 (4).

[132] The language of "any source" is not absolutely clear. One may not be sure whether to read the language narrowly as prohibiting the import from any party or broadly as prohibiting the import from any source including a non-party, see Emory, Richard W., 'Trade and the Environment: Probing the Protections in the Rotterdam Convention on Prior Informed Consent', *Colorado Journal of International Law and Policy* Yearbook 2000, p. 47, 56.

[133] A respective obligation applies, if import is granted only under specified conditions.

usual as it brings a kind of bilateral element into the multilateral PIC procedure of the Convention. However, the respective provision is very generic and leaves a wide margin of flexibility to exporting countries as to how to implement this obligation.

Art. 11 (2) deals with the very important question of how to proceed if an importing country – "in exceptional circumstances" – fails to communicate any response to the import of a chemical that has been listed in Annex III, or has only transmitted an interim response that does not contain an interim decision[134]. Put differently, the function of the provision is to regulate who bears the burden of "no response" on behalf of importing countries. As a general principle, Art. 11 (2) states that the exporting state shall ensure that this chemical is not exported from its territory. However, this rule applies only for one year. Thereafter unrestricted export may presumably take place. Moreover, the duty to prohibit exports does not apply at all in three cases[135]: (a) if the chemical in question is registered as a chemical in the importing country; (b) if evidence exists that the chemical in question has previously been used in, or imported into, the importing country and if no regulatory action has been taken to prohibit its use or (c) if explicit consent to the import has been sought and received by the exporter through a national authority that has especially been authorized to act on behalf of a country in the performance of the administrative functions required by the Rotterdam Convention[136].

In practice, especially the limitation of the obligation under Art. 11 (2) to a period of one year means that for importing parties in such a chronic state of governmental chaos that in routine or non-"exceptional circumstances" they are unable to respond regarding consent, the Rotterdam Convention is silent. Where governments collapse, dangerous chemicals may thus be imported without consent of the importing party.

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[134] As already mentioned, an interim decision does not have to include an interim response, but may also merely consist of a request for further information, a request for assistance or a statement that a final decision is under active consideration.

[135] With regard especially to option (a) and (b), it seems to be a mere theoretical question whether they should be interpreted as an assumption of tacit consent, or just as an overall exemption from the requirement of consent.

[136] A so called "designated national authority". The importing country shall respond to such a request within sixty days.

b) Obligations with regard to banned or severely restricted chemicals not (yet) listed in Annex III

As described above, the mere fact that a chemical is banned or severely restricted in one country does not automatically imply its listing in Annex III. However, the Convention provides also for obligations that apply to those banned or severely restricted chemicals which have not (yet) been listed in Annex III. This includes an information exchange system and export notifications.

aa) Notification of regulatory action, Art. 5

As was already mentioned in the context of the prior informed consent procedure, Art. 5 (1) establishes that each party that has adopted a regulatory action, usually with regard to domestic use, shall notify the secretariat, accompanied by information as specified in Annex I. While Art. 5 (1) serves, firstly, as a trigger for the procedure for listing chemicals in Annex III, it also constitutes an information exchange mechanism as Art. 5 (3) provides that the secretariat shall forward to all parties a summary of the information received. Thus, Art. 5 functions as a means of transfer of knowledge in that it provides developing countries with essential information. This aspect gains special importance in the case that the chemical in question will eventually not be listed in Annex III. The notification itself could then serve developing countries as a basic means to take domestic action outside the framework of the Rotterdam Convention.

bb) Export notification, Art. 12

While Art. 5 (1) applies independently from whether a chemical is exported or not, Art. 12 establishes a specifically trade related rule with regard to chemicals that are banned or severely restricted by a party. According to Art. 12 (1), where such a chemical is exported from the territory of a party, this party shall provide an export notification to the importing party, including the information set out in Annex V[137].

[137] Note also that the requirement of export notification may be waved by the importing country un-

Annex V requires, inter alia, information about the expected date of export, the name of the chemical and a summary of the information specified in Annex I[138], that is information about possible precautionary measures to reduce exposure to the chemical. The notification shall be provided prior to the first export following the adoption of the corresponding (domestic) regulatory action, thereafter before the first export in any calendar year[139]. The importing country in turn shall acknowledge receipt of the export notifications. If this does not happen, the export country shall submit a second notification making "reasonable efforts to ensure that the importing party receives the second notification"[140]. Put differently, the export notification procedure is a mere means of information exchange, no consent of any kind is necessary before export is permissible. Finally, it has to be pointed out that obligations under Art. 12 cease if a chemical is listed in Annex III and if the prior informed consent procedure as set out by Art. 5 – 11 has been completed[141].

c) Labelling requirements

Art. 13 provides for different kinds of labelling requirements, for chemicals listed in Annex III, for chemicals banned or severly restricted as well as for chemicals that are subject to labelling requirements in the exporting country.

According to Art. 13 (1), every party shall require that the shipping document for a chemical listed in Annex III bears the respective code of the World Customs Organization, if such a code exists. Art. 13 (2) requires exporting parties to ensure that both chemicals listed in Annex III and chemicals banned or severely restricted in its territory (but not yet listed in Annex III) are, when exported, subject to labelling requirements that ensure adequate availability of information with regard to risks to human health or the environment, taking into account relevant international stan-

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der Art. 12 (2).

[138] These information have to be delivered to the secretariat under Art. 5 (1).

[139] Art. 12 (2). In the course of the negotiations, developing countries had hoped to achieve the inclusion of a shipment-by-shipment notification requirement. However, they were not successful as industrialized countries feared the introduction of burdensome and costly procedures, see Kummer, (Fn 115), p. 324.

[140] Art. 12 (4).

[141] Art. 12 (5).

dards. The same obligation applies for those chemicals that are neither listed in Annex III nor prohibited or severely restricted, but which are nevertheless subject to environmental or health labelling requirements in the country of origin[142]. The latter provision is interesting in that it takes domestic regulations as a point of reference. Its provisions fall short of calling for the application of the same standards, though. By way of compromise, reference is instead made to international standards.

3. Trade with non-parties

Measures concerning trade with non-parties were discussed during the negotiations, but could not be finally agreed upon[143].

4. Domestic management

During the first session of the International Negotiating Committee, the European Union raised the possibility of a dynamic legal framework offering measures reaching beyond a prior informed consent procedure, including measures with regard to domestic management[144]. There were even ideas to create an integrated international legal instrument in the field of hazardous chemicals including the PIC procedure, the phasing out of POPs and other additional measures[145]. However, these proposals met strong opposition from the US, Canada and Australia, as well as from developing countries. The latter ones preferred to focus on the PIC procedure and on the inclusion of new provisions for technical assistance, financial aid and capacity-building in the Convention. Eventually, the debate was settled in favour of the narrow approach. As a result, the final negotiations of the Rotterdam Convention centered

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[142] Art. 13 (3). In these cases, the domestic regulatory actions do not reach the threshold marked by the requirement "severely restricted".

[143] Kummer, (Fn 115), p. 325.

[144] UNEP/FAO, Report of the Intergovernmental Negotiating Committee on the Work of its First Session, UNEP/FAO/PIC/INC.1/10. From a procedural point of view, the point of reference for these discussions was the interpretation of the mandate of the UNEP and FAO decisions, see Kummer, (Fn 115), p. 324.

[145] Pallemaerts, Marc, 'Regulating Exports of Hazardous Chemicals: The EU's external chemical safety policy', in: Golub, Jonathan (ed), *Global Competition and EU Environmental Policy*, London 1998, p. 76.

around the PIC procedure[146].

As eventually adopted, the Rotterdam Convention contains only few indications regarding the domestic management of hazardous chemicals. Particularly, Art. 16 calls upon parties to provide technical assistance related to chemical management "throughout the life-cycle"[147]. In addition, Art. 15 (2) requires parties to "ensure, to the extent practicable, that the public has appropriate access to information on chemical handling and accident management and on alternatives that are safer for human health of the environment". Both provisions are of a very general and hardly enforceable nature.

5. Supportive measures

Art. 14 and 16 of the Rotterdam Convention regard supportive measures. Art. 14 provides for information exchange provisions. Art. 14 (1.a) states quite broadly that parties shall facilitate the exchange of any kind of information with regard to chemicals within the scope of the Convention. Art. 14 (1.c) is more detailed, establishing the duty of parties to provide information on domestic regulatory actions that substantially restrict one or more uses of the chemical. In contrast to Art. 14 (1.a), the latter provision extends the obligation of information sharing to chemicals outside the scope of the Convention. Information requirements in this regard are, however, limited to domestic regulatory actions.

Art. 16 simply calls upon parties to co-operate in promoting technical assistance necessary to implement the provisions of the Convention. Moreover, parties with "more advanced programmes" should "provide technical assistance to other parties in developing their overall capacity to manage chemicals throughout their life-cycle". Art. 16, however, falls equally short of any kind of concrete obligation. In addition, it can be noted that the Rotterdam Convention does not contain provisions

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[146] This did not mean, however, that the issue of international measures going beyond a mere PIC procedure was off the international agenda. The POPs negotiations that started later on are evidence of the fact that an international consensus was about to emerge that a limitation on a prior informed consent procedure was not sufficient.

[147] For further description of Art. 16 see immediately below.

regarding financial aspects[148]. As with the Basel Convention, the Rotterdam Convention too provides for quite an active role of the secretariat, as has been outlined during the description of the PIC procedure. The obligation of the secretariat to assist parties in taking a decision should be highlighted as the most prominent example of the secretariat's strong position. However, the capacity of the secretariat to fulfill its functions properly will largely depend on its own funding. It remains to be seen what kind of role the secretariat will be able to perform in practical terms.

[148] The introduction of a financial mechanism was supported by the majority of developing countries while most developed countries were skeptical. At INC 5, it was then decide to remove all financial aspects from the draft text to be able to finalize the Convention, see Kummer, (Fn 115), p. 325.

C. Cartagena Protocol on Biosafety to the Convention on Biological Diversity (Cartagena Protocol)

The Biosafety Protocol is the most recent of the agreements analyzed in this section. It was negotiated in the framework of the Convention on Biological Diversity and signed in January 2001. It concentrates on regulating trade in genetically modified organisms with a view to protecting developing countries.

I. Genetically modified organisms and their international trade: factual background

Biological processes have been used for centuries to modify food in order to improve taste, palatability and safety, especially by using the technique of selective breeding. This technique relied on the genetic variation already available in the population or naturally generated spontaneous mutations. In the 1950s, scientists discovered the structure of the DNA. This discovery paved the way for a new technique by which the genetic coding of organisms could be altered to give them new characteristics that natural evolution or selective breeding could not produce[149].

Practical applications deriving from this discovery became possible two decades later, when science reached a new breakthrough by finding out how to isolate individual genes, refashion them and copy them in cells. First commercial applications were developed in the field of medicine, soon followed by technologies using so called genetically modified organisms (GMOs) to produce new fine chemicals. However, not until 1994, when the Flav'r Sav'r tomatoes came on the market in the US, had whole food been genetically altered[150].

The technique of genetic modification differs from selective breeding mainly in that it removes genes directly from one organism and inserts them into the DNA of the cells of another. Thus, it is faster and more exact than the generally random based

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[149] Teel, Julie, 'Regulating Genetically Modified Products and Processes: An Overview of Approaches', *New York University Environmental Law Journal* 8 (2000), p. 649.

[150] Royal Commission on Genetic Modification – New Zealand, *Report of the Royal Commission on Genetic Modification – New Zealand*, Auckland 2001, pp. 362.

approach applied in selective breeding. Importantly, it also opens the possibility of transferring genes across natural borders between different organisms[151]. In the field of agriculture, this has meant the opportunity to add genes to transgenic crops that can express such traits as pesticide resistance, herbicide resistance, increased viability in harsh environments and added nutritional content[152]. Thus, agricultural outputs could be immensely raised in terms of quantity and quality, for example, in the form of more nutritious foods, which offered wider economic margins. In addition, by avoiding or minimizing the use of pesticides, environmental and human health purposes could be served. As a consequence, genetically modified products in the field of agriculture have mushroomed since 1994. For example, the global area devoted worldwide to grow transgenic crops has increased by 44% to 39.9 million hectares in 1999 alone[153].

However, this development has also raised serious concerns. These range from ethical and religious considerations about mankind's role in the world, to various socio-economic issues (for example disruption of small scale farming systems). Concerns also encompass potential risks for human health and the environment[154]. With regard to human health, problems like enhanced allergies and resistance to antibiotics are feared. As regards the environment, concerns center on risks to biological diversity[155]. This concern is heightened if genetically modified organisms are released into the environment, for example for the growing of genetically modified crops or the growing of fish in aquaculture projects, as these organisms might become invasive. Moreover, transfer of the inserted genetic material could occur or non-target species might be adversely effected by crops that were designed to be resistant to insect pests. Given the relatively small amount of experience with the applications

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[151] Katz, Deborah, 'The Mismatch Between the Biosafety Protocol and the Precautionary Principle', *Georgetown International Environmental Law Review* 13 (2001), p. 940, 949.

[152] Katz, (Fn 151), p. 953.

[153] Hagen, Paul E. and Weiner, John Barlow, 'The Cartagena Protocol on Biosafety: New Rules for International Trade in Living Modified Organisms', *Georgetown International Environmental Law Review* 12 (2000), p. 697, 698.

[154] For these both aspects see the detailed analysis of Katz, (Fn 151), pp. 967.

[155] The definition of biological diversity is still contentious. Art. 2 of the Convention on Biological Diversity defines it as the „variability among living organisms from all sources ... and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems".

of biotechnology to date, the potential of these effects is, however, still a heated issue of scientific debate[156].

II. Specific problems of trade in GMOs from developed to developing countries

The potential risks posed by genetically modified organisms led in most OECD countries to the promulgation of respective regulations which, however, differed widely from country to country, mostly reflecting the differing cost-benefit assessments that the various societies undertook. As far as developing countries are concerned, some of them – especially those which engaged themselves in the development and growing of genetically modified agricultural crops, i.e. Brazil and India – have regulations dating back to the beginning of the 1990s. The majority of them, however, lacked experience in this technology and started only recently to develop domestic biosafety regulations[157]. The problems specifically associated with trade between countries of so widely differing capacity and standards were relatively early brought to the attention of the broader public. In 1986 it was discovered that genetically altered rabies vaccine had been field tested by a US institute on an Argentinean farm without the knowledge or consent of the Argentinean government[158]. However, thereafter no major similar incidents seem to be reported[159]. Neither does specific data exist with regard to the extent of authorized trade in GMOs between developed and developing countries. It appears, however, reasonable to presume that developing countries are, due to their wide-spread lack of import regulations and assessment capacity, potentially as vulnerable with regard to trade in GMOs as with regard to wastes and chemicals, but that, in practice, this danger has not yet realized to a similar extent.

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[156] Teel, (Fn 149), p. 650.

[157] Hagen and Weiner, (Fn 153), p. 700.

[158] Rajan, Mukund Govind, *Global Environmental Politics: India and the North-South Politics of Global Environmental Issues*, New Delhi 1997, p. 179.

[159] One could, however, – as in the case of trade in hazardous wastes –easily argue that the reported incident was only the tip of the iceberg.

III. Historical development

The regulation of biotechnology with a view to preventing adverse effects is often referred to as biosafety or biosecurity. On the regional level, international attempts in this regard were firstly undertaken by the EU[160]. On the global level, the non-legally binding Agenda 21, adopted at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro (Rio Summit), addressed the issue of biotechnology in Chapter 16. It recognizes the promise of biotechnology and calls upon the international community to ensure that biotechnology is developed and applied in an ecologically sound manner. Later global efforts include the Voluntary Code of Conduct for Environmental Release of Genetically Modified Organisms, elaborated in the framework of the UNIDO, and the UNEP International Technical Guidelines for Safety in Biotechnology, which are both of non-legally binding nature.

The issue of biosafety emerged for the first time in the context of a global legally binding instrument during the negotiations of the Convention on Biological Diversity (CBD). The CBD was adopted in 1992 with the aim of conserving biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of utilization of genetic resources[161]. As GMOs constitute a potential risk to the biological diversity[162], negotiators agreed, after lengthy debate, to include language addressing this aspect, but only in very vague terms[163]. In addition, the CBD calls upon parties to consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement, in the field of GMOs[164].

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[160] For an intensive discussion see MacKenzie, Ruth; Francesconi, Silvia, 'The Regulation of Genetically Modified Foods in the European Union: An Overview', *New York University School of Law Environmental Law Journal* 8 (2000), pp. 530.

[161] Art. 1 CBD.

[162] As described above.

[163] According to Art. 8 (g) CBD, every party shall, as far as possible and as appropriate, "establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health".

[164] Art. 19 (3) CBD.

In 1994, at the first meeting of the Conference of the Parties, preparatory works were authorized in this regard. Based on these findings, the second COP set up the Open-ended Ad Hoc Working Group on Biosafety with a view to draft a Protocol which should especially focus on the transboundary movement of GMOs[165]. The Working Group was scheduled to forward a draft to the First Extraordinary Meeting of the Conference of the Parties to the CBD (ExCOP) immediately after its sixth meeting, held in 1999 in Cartagena. However, negotiators failed to reach a compromise at this meeting. Thus, the meeting had to be suspended. After informal meetings the ExCOP was eventually resumed in January 2000 in Montreal where the protocol could be adopted. The Protocol will enter into force on the ninetieth day after the date of deposit of the fiftieth instrument of ratification. As of March 2003, 43 countries have ratified the Protocol.

IV. Central provisions

1. Scope of application

The scope of the Cartagena Protocol is established in Art. 4 which has to be read in conjunction with Art. 3 and 5. According to Art. 4, the Cartagena Protocol shall apply to the transboundary movement, transit, handling and use of all living modified organisms (LMOs) that may have adverse effects on the biological diversity, taking also into account risks to human health. The terms "modified" and "living" are further specified by Art. 3. According to Art. 3 (g), a living *modified* organism means "any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology"[166]. As a consequence of the reference to modern biotechnology, the term LMO effectively equals to what is generally known as a GMO. The first drafts of the Protocol still contained the term "genetically modified organism". The substitution with "living modified organisms" was established at the end of the negotiations in response to US claims that the latter ex-

[165] COP Decision II/5, which establishes the so-called Jakarta Mandate.

[166] Modern biotechnology, in turn, is defined in Art. 3 (i).

pression was more neutral than the slightly negatively perceived term of GMOs[167].

A *living* organism means any biological entity capable of replicating genetical material[168]. The intention of this qualification was especially to exclude the so-called "products thereof", that are processed materials of LMO origin containing detectable novel combinations of genetic material, for example cereals deriving from genetically modified crops, from the scope of application. Moreover, Art. 5 exempts, under certain conditions, one specific category of LMOs, that is pharmaceuticals for humans, from the applicability of the Protocol[169].

2. Trade between parties

a) Advance informed agreement (AIA)

The key mechanism of the Cartagena Protocol is the advance informed agreement procedure. This is, in fact, a form of a prior informed consent procedure as used in the Basel and Rotterdam Conventions. Some industrialized countries were, however, concerned that the use of the term "prior informed consent" could induce the perception that LMOs were as dangerous as hazardous wastes or chemicals and, therefore, pushed for a replacement of this term by "advance informed agreement"[170].

Before describing the functioning of this procedure, its scope as defined by Art. 6 and 7 shall be outlined as it differs, like in the case of the Rotterdam Convention, from the scope of the Protocol as such. This is the result of a compromise between developing countries, which favored an inclusion of all LMOs in the scope of the Protocol, and developed countries, which generally pushed for a more limited appli-

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[167] Gupta, Aarti, *Framing "Biosafety" in an International Context: The Biosafety Protocol Negotiations*, New York 1999, p. 5.

[168] Art. 3 (h).

[169] Note that, strictly speaking, Art. 5 (1) refers only to the *transboundary movement* of LMOs which are pharmaceuticals for humans. Therefore, one could argue that general provisions, for example with regard to capacity-building, apply also to this category of LMOs.

[170] Gupta, (Fn 167), p. 6. Thus, the rationale for using this wording is similar to what was said with regard to the term "living modified organisms".

cability[171].

aa) Scope of application

The scope of the AIA procedure, i.e. which transboundary movements are subjected to this procedure, is regulated in Art. 6 and 7 in quite a complicated way that seems to reflect the underlying political controversy. The general principle is laid down in Art. 7 (1) and (2). Under Art. 7 (1), the AIA procedure shall apply prior to the first intentional transboundary movement of LMOs for "intentional introduction into the environment". This phrase is, however, not defined in the Protocol. Instead, Art. 7 (2) specifies – negatively – that the term "intentional introduction" does not refer to LMOs intended for direct us as food or feed, or for processing, like for example grains from modified crops. Art. 6 and Art. 7 (4) then contain different kinds of exceptions from this principle regarding LMOs in transit, LMOs destined for contained use and LMOs identified in a decision of the Conference of the Parties as being not likely to have adverse effects. In practical terms, the AIA procedure will apply particularly to the growing of agricultural crops, release of fish and of modified micro-organisms.

bb) Applicable obligations

The obligations which are applicable to those LMOs covered by the scope of the AIA are mainly contained in Art. 8, 9, 10, 12 and Art. 15 and Annex III.

aaa) Notification, Art. 8

According to Art. 8 (1), the procedure starts by a notification by the exporting country or the exporter to the importing country prior to the first intentional transboundary movement of an LMO that falls within the scope of the procedure[172]. The notification shall, at a minimum, contain the information as specified in Annex I. Annex I covers a wide range of information, which may be loosely grouped into three cate-

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[171] Gupta, Aarti, 'Governing Trade in Genetically Modified Organisms: The Cartagena Protocol on Biosafety', *Environment* 42/4 2001, p. 23, 25.

[172] The limitation of the procedure to the *first* intentional transboundary movement is not explicitly stated in Art. 8 (1), but results from Art. 7 (1).

gories: information concerning the LMO itself aimed at providing the importing country with factual information[173]; regulatory status in the exporting party intended to inform the country of import about the cost-benefit assessment of the state of origin; and suggested methods for the safe handling and use. Even if the kind of information required by Annex I varies considerably, they all aim at assisting the importing country to take an informed decision about the import of a specific LMO[174].

bbb) Acknowledgement of receipt, Art. 9

As a second step of the AIA procedure, Art. 9 requires the importing state to acknowledge receipt of the information to the notifier within ninety days of its receipt. The acknowledgement shall include information whether to proceed according to the procedure specified in Art. 10, or according to the domestic regulatory framework of the party of import that shall be consistent with the Protocol. This latter aspect may be interpreted in a way that it allows those parties which have already established regulatory systems in place to continue using them, thus not being forced to enact new laws in order to comply with the Protocol, as long as they serve the purpose of the Protocol. Finally, Art. 9 (4) explicitly states that a failure by the party of import to acknowledge receipt shall not imply its consent.

ccc) Decision procedure, Art. 10

Art. 10, then, is concerned with the decision-making stage. It contains procedural and substantive requirements and also provides some specific supportive measures.

(i) Procedural aspects and enforcement of the decision of the importing country

With regard to the procedure to be followed, Art. 10 (2) provides that the importing state shall, together with the acknowledgement of receipt, notify to the exporting

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[173] This information includes, inter alia, the name and identity of the LMO in question, centers of origin of the recipient organisms, description of the modification and intended use.

[174] While the first category can be said to assist in the risk analysis, category two and three tend to address the stage of risk assessment.

state as to whether the transaction shall proceed only after the party of import has given written consent or after no less than 90 days without a written consent. That means that it is up to every importing country to decide, on the merits of each single case, whether it wishes the application of the consent requirement. Furthermore, Art. 13 provides the possibility for importing countries to specify in advance to the Biosafety Clearing-House (a) cases in which the transboundary movement may take place at the same time as the movement is notified to the party of import and (b) imports of LMOs to be exempted from the AIA procedure[175].

If the importing state opts for written consent, Art. 10 (3) provides that the importing country has to communicate within 270 days whether or not consent is granted, whether the period of 270 days shall be extended, or whether additional information is required. Except in a case in which consent is unconditional, the importing country shall also disclose the reasons on which its decision is based, as per Art. 10 (4). Like in the Basel and Rotterdam Conventions, negotiators of the Cartagena Protocol were too forced to face the question of which rules to apply, if the importing party fails to communicate its decision. Art. 10 (5) states that such a failure "shall not imply its consent" to the transboundary movement. Thus, Art. 10 (5) states negatively how the case of no-answer may not be interpreted. However, it does not specify which rules will apply in this case. An interpretation of Art. 10 (5) should, firstly, consider the above-mentioned Art. 10 (2). It seems to provide that in any case in which a country does not communicate that written consent is unnecessary, this consent is a precondition of every transboundary movement. This interpretation is, secondly, supported by a comparative analysis of Art. 10 (5) with Art. 11 (7). This provision is relevant in the case that an importing country fails to communicate its decision with regard to LMOs destined for food, feed or processing. It provides that such a failure shall not imply its "consent *or refusal* to the import". From the different wording of this provision, one can conclude that Art. 10 (5) must be read as requiring explicit consent before any transboundary movement may commence.

Another important aspect is equally not explicitly provided in the Protocol, that is

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[175] Art. 14 offers an additional possibility for parties to deviate from the requirements of the AIA procedure by entering into bilateral, regional and multilateral agreements "consistent with the objective of this Protocol and provided that such agreements do not result in a lower level of protection than that provided for by the Protocol".

the question whether exporting countries are bound to enforce the consent requirement, i.e. to allow the export only in case that written consent has been notified by the importing country. The Protocol does not contain an explicit obligation in this regard. Nevertheless, as one of the main purposes of any procedure of prior informed consent is that exporting countries have to enforce importing countries' decisions, one might argue that the same applies also in the case of the Cartagena Protocol. Methodically, it seems, however, questionable whether it is justifiable to draw conclusions from the general principle of "prior informed consent". Therefore, clarification on this aspect seems necessary, and desirably on behalf of the Conference of the Parties.

(ii) Substantive aspects

The Cartagena Protocol does not only stipulate procedural requirements for the decision-making phase, but also refers to substantive criteria which means that it lays down criteria which the importing state has to take into consideration when making its decision. For this sake, the Cartagena Protocol distinguishes, basically, between risk assessment and the broader notion of risk management.

(α) Risk assessment

Art. 10 (1) merely states that decisions taken by the importing party "shall be in accordance with Art. 15". The main requirement of Art. 15 (1), in turn, is that risk assessments be carried out in a scientifically sound manner and must be aimed at evaluating the possible adverse effects of LMOs. Moreover, the risk assessment must be in accordance with Annex III and take into account recognized risk assessment technologies. Annex III further specifies the modalities of this risk assessment. Accordingly, risks associated with LMOs should be considered in the context of the risks posed by non-modified recipients. Annex III, furthermore, sets out the methodology for the risk assessment as well as aspects which have to be taken into account. Thus, Annex III does not only point to the requirement of scientific soundness, but also provides a point of reference for the risk assessment technique.

One important and hotly debated question in the context of risk assessment was what kind of adverse effects should be taken into account: should the assessment be

limited to adverse effects on the biological diversity or should those on human health also be considered. The origin of this debate can be traced to the text of the Convention on Biological Diversity. Art. 19 (3) of the Convention calls upon parties to consider the need for a Protocol, but makes no reference to human health. In contrast, Art. 8 (g) of this Convention requires parties to control risks resulting from adverse effects of LMOs to the biological diversity, "taking into account the risks to human health". By way of compromise, negotiators agreed on language stating that human health issues are to be "taken into account". However, the very meaning of this phrase is as contentious as its inclusion, and reflects the fact that the compromise was more a linguistic, than a substantive one.

(β) Risk management

Risk assessment aims at the gathering of information that is to be considered. The actual process of deciding as such can be characterized as a weighing of policy alternatives (in concrete terms with regard to the import decision) in the light of considering the risk assessment and possibly other factors[176]. In the Protocol, this process is referred to in Art. 16 as risk management[177]. While the Protocol does not comprehensively regulate this process, it deals, however, with three related issues in this context, i.e. scientific uncertainty, "socio-economic considerations" and "necessity".

A scientifically operated risk assessment can easily reveal scientific uncertainty with regard to specific adverse effects, or disagreement at a scientific level can occur[178], in particular in an emerging technique like biotechnology. This raises the question of how to cope with these situations in the context of the (import) decision – which,

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[176] See for this definition, among many others, the "Codex General Standard for Contaminants and Toxins in Foods" of the Codex Alimentarius Commission, available at: www.who.int/fsf/Codexreview/GENERALSTANDARDCONTAMINANTSANDTOXINSInFOODS.pdf. (accessed on 10 March 2003). Note, however, that the Protocol itself does not contain a definition neither of risk assessment nor of risk management.

[177] While Art. 16 is entitled as "Risk management", respective criteria are also embodied in other provisions as will be argued below. On the other hand, Art. 16 does not only incorporate certain criteria to be considered in the risk management, but also contains the obligation for parties to undertake such a risk management. For further details see below.

[178] For example, there is still disagreement about the probability that antibiotic resistance will be enhanced by the consumption of food based on LMOs.

hence, was amongst the most contentious issues during the negotiations[179]. The Protocol touches on this issue at various points. With specific regard to decision-making in the context of the AIA procedure, Art. 10 (6) establishes that lack of scientific certainty due to insufficient relevant scientific information and knowledge shall not prevent parties from taking a decision in order to avoid or minimize such potential adverse effects. Hence, the Protocol explicitly grants parties protective measures beyond clear scientific justification in reaching their decisions on import. Thus, it explicitly introduces the so-called precautionary approach[180].

Whereas the issue of precautionary measures remains within the overall context of decision-making according to scientific criteria, the question arises whether countries should, in taking a decision, only consider (scientifically based) risks to biodiversity and human health or whether other aspects could also be taken into account. During the negotiations, this issue was heavily debated with regard to the so-called "socio-economic considerations". Developing countries feared the socio-economic impact of LMOs and biotechnology, especially on indigenous communities, and therefore pushed for inclusion of these aspects in the decision-making process of the Protocol. Developed countries, instead, were afraid that this could open the door to mere protectionist measures[181]. Art. 26 now states that parties may take into account socio-economic considerations arising from the impact of LMOs on the biological diversity, but only in so far as consistent with their international obligations. The last qualification will likely limit the relevance of Art. 26 as it seems, at the time being, unclear how science-based WTO obligations and socio-economic aspects can be reconciled[182].

A third substantive criteria with regard to the decision-making process is incorpo-

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[179] Adler, Jonathan, 'More Sorry Than Safe: Assessing the Precautionary Principle and the Proposed International Biosafety Protocol', *Texas International Law Journal*, 35 (2000), p. 173, 194.

[180] Stoll, Tobias, 'Controlling the Risks of Genetically Modified Organisms: The Cartagena Protocol on Biosafety and the SPS Agreement', *Yearbook of International Environmental Law* 10 (1999), p. 82, 98. Further references to the precautionary approach are contained in the preamble, in Art. 1, Art. 11 (8) and in Annex III. The term "precautionary approach" itself is, however, used only once, in the preamble of the Protocol. The reference to "approach" rather than to "principle" is due to opposition from some developed countries which, during the negotiations, denied the actual existence of a respective principle or considered existing expressions as too nebulous to name it a principle.

[181] Gupta, (Fn 167), pp. 17.

[182] Stoll, (Fn 180), p. 97.

rated into Art. 16 (2). Accordingly, measures "shall be imposed to the extent necessary to prevent adverse effects" within the territory of the importing party. In practical terms, this provision allows for a wide margin of discretion on behalf of each party and does not give specific guidance. Nevertheless, it is interesting from a structural point of view as the term "necessary" could also be interpreted as not only to oblige parties, but also to limit their control measures to the extent to which they are necessary. This limitation would strive to prevent unnecessary hurdles to international trade and thus to prevent a conflict between the Cartagena Protocol and WTO law.

(iii) Concrete supportive measures

According to the rules of the Cartagena Protocol, the risk assessment and the risk management with regard to each import decision are in the responsibility solely of the importing country. To assist importing countries in this process the Protocol does not only provide for general supportive measures in form of generic capacity-building[183], but includes regulations specifically designed to facilitate concrete transactions.

While the first sentence of Art. 15 (2) confirms that the party of import shall ensure that risk assessments are carried out before a decision is taken, the second sentence stipulates that the importing state may require the exporter to carry out the risk assessment. Moreover, as regards the cost of risk assessment, Art. 15 (3) establishes that this shall be borne by the notifier if the importing state so requires. Put differently, the importing state is responsible for the fact that a risk assessment will be conducted, but does not have to conduct it on its own and does not have to bear the costs. The latter two aspects seem to be an expression of the "polluter pays" principle.

As mentioned before, risk assessment is only one step of the decision procedure. The decision procedure itself, or the risk management, equally requires related capacities. To assist parties that lack these capacities, Art. 10 (7) provides that the Conference of the Parties shall, at its first meeting, decide upon appropriate mecha-

[183] For details in this regard see below.

nisms to facilitate decision-making by importing parties. As this provision is very vague, ICCP I and ICCP II have addressed the issue and have made recommendations of how to implement the article. Accordingly, the COP shall develop guidelines for the decision process as well as for procedures to seek external consultation[184].

b) Procedure according to Art. 11

As mentioned above, exporting countries managed during negotiations to have the scope of the AIA procedure limited to LMOs destined for intentional introduction into the environment. However, this was only accepted by other countries under the condition that another procedure was established for those LMOs not intended for intentional introduction, i.e. LMOs intended for direct use as food or feed or for processing (LMO-FFPs), for example genetically modified fruits for human consumption or genetically modified soya destined for processing into edible oils. This procedure is contained in Art. 11.

aa) Notification of national regulations

According to Art. 11 (1), a party that makes a final decision regarding domestic use of a LMO-FFP, i.e. the commercial growing or the placing on the market, that may be subject to transboundary movement shall inform the parties through the Biosafety Clearing-House[185]. This notification shall contain the information as set out in Annex II[186]. Thus, Art. 11 (1) functions as a means of information sharing with respect to domestic regulations in the field of LMOs.

bb) Import decisions under domestic regulatory frameworks

While Art. 11 (1) regards national decisions related to the domestic use of LMO-FFPs, Art. 11 (4) refers to national decisions on imports. It does not contain an obli-

[184] UNEP/CBD/ICCP/2/15, Annex I, Recommendation 2/7.

[185] The Biosafety Clearing House is the key mechanism of the Cartagena Protocol for centralized information exchange.

[186] These information are similar to those required in Annex I for LMOs destined for deliberate release into the environment, but are not so extensive.

gation, but asserts parties' right to make a decision for import of LMO-FFPs under its domestic regulatory framework that is "consistent with the objective of the Protocol". In this regard, it resembles Art. 2 (1.a) of the Basel Convention, which also confirms the right of parties to restrict imports. However, the question of what kind of import restrictions may be imposed seems to be much more contentious with regard to LMOs than with regard to hazardous wastes. Therefore, Art. 11 (4) and particularly its reference to the "objectives of the Protocol", which include the substantive criteria for import restrictions as discussed in the context of the AIA procedure, could gain considerable importance.

The related Art. 11 (5) requires parties to make such decisions, laws and regulations available to the Biosafety Clearing-House. While this information could also serve as a source of information for other countries that consider import decisions, its main purpose lies in promoting transparency and predictability for those who intend to export LMO-FFPs[187].

cc) Assistance for developing countries with regard to import decisions

Art. 11 (6) addresses specific needs of developing countries or countries that have an economy in transition. If one of these countries lacks a domestic regulatory framework for imports of LMO-FFPs it can declare through the Biosafety Clearing-House that its decision prior to the first import of a LMO-FFP, on which information has been provided under Art. 11 (1), will be taken according to (a) a risk assessment in accordance with Annex III and (b) a decision made within a predictable timeframe, not exceeding 270 days. While it seems evident that the provision is meant to constitute a kind of procedural assistance for developing countries it remains largely unclear which specific obligations on behalf of exporting countries result from a respective declaration of a developing country. In particular, it still has to be clarified whether the declaration has only the function to establish a legal framework for the importing country which has to be obeyed by the private agents acting as exporters, or whether it also imposes any kind of obligation on exporting countries to en-

[187] In this regard, the provision is quite similar to notification requirements as prescribed by WTO agreements.

sure that their private agents follow this procedure. The latter interpretation would be much more in line with the traditional aim of a prior informed consent procedure, not only to provide importing countries with respective regulations on the import, but to assist them also in enforcing these rules and the individual import decisions. However, it was already objected that drawing conclusions from the general principle of prior informed consent raises considerable methodical concerns. Therefore, a clarifying interpretation of the COP seems desirable with regard to this essential aspect.

One difference with regard to the AIA procedure as set out by Art. 7 – 10 is explicitly established by Art. 11 (7), under which a failure of an importing country to communicate its decision whether to permit or not the import of a specific LLM-FFP in the context of a procedure under Art. 11 (6) shall not imply "its consent *or refusal*". As already noted, Art. 10 (5), which addresses the situation of non response in the context of the AIA procedure, simply states that this does "not imply its consent". The additional wording of "or refusal" can, therefore, only be interpreted in the sense that export may also take place in the absence of an explicit consent.

If one compares the procedure for LMO-FFPs under Art. 11 to that of LMOs destined for intentional introduction into the environment under the AIA, two main differences can be observed: Firstly, while the Protocol itself mandates a specific procedure to be followed for LMOs of the latter category (the AIA procedure), it does not do the same for LMO-FFPs, but only offers developing countries the possibility to declare a specific procedure as applicable under the Protocol. So, the importing party has to trigger off the procedure by a specific declaration and, thus, carries the relevant burden. Secondly, while the AIA provides for the requirement of consent before a transaction may take place, under Art. 11 (6), exports may also take place without the explicit consent of the importing country. Summing up, it can easily be noticed that the procedural protection which is offered especially to developing countries by Art. 11 is far lower than that presented by the AIA procedure.

While the preceding analysis has revealed considerable differences between the procedure to be followed under Art. 11 (6) and the one of the AIA, it should be noted that the same substantive criteria to be applied are the same in both cases. In particu-

lar, Art. 11 (6.a) also requires a risk assessment to be undertaken in accordance with Annex III and Art. 11 (8) explicitly allows parties to take a precautionary approach to decision-making on imports. In addition, the general rules concerning risk management and socio-economic considerations are also applicable.

c) Handling, transport, packaging and identification

Art. 18 considers handling, transport, packaging and identification of LMOs. Art. 18 (1) deals with the first three. Accordingly, each party shall take necessary measures to require that LMOs destined for transboundary movement are handled, packaged and transported under conditions of safety, taking into consideration relevant international rules and standards. Art. 18 (2) provides for very vague identification requirements. In addition, Art. 18 (3) states that the Conference of the Parties shall consider the need for, and modalities of, developing standards with regard to identification, handling, transport and packaging. The vagueness of Art. 18 (1 and 2) gives evidence of the fact that parties could not arrive at greater compromise during negotiations. Instead, they postponed further measures to the Conference of the Parties[188].

d) Illegal transboundary movement and its consequences

Art. 25 (1) calls upon parties to prevent illegal transboundary movements of LMOs. More importantly, Art. 25 (2) regulates the consequences of such an illegal transfer obliging parties, upon request, to dispose, at its own expense, of the LMOs illegally transferred by repatriation or destruction.

3. Trade with non-parties

As it is the case with the Basel Convention, the Cartagena Protocol addresses not only trade between parties, but also trade with non-parties. Art. 24 (1) establishes that this trade shall be consistent with the objective of the Protocol[189]. With regard to

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[188] Goldman, Karen A., 'Labeling of Genetically Modified Foods: Legal and Scientific Issues', *Georgetown International Environmental Law Review* 12 (2000), p. 717, 721.

[189] In addition, Art. 24 (1) allows parties to enter into agreements with non-parties.

the Basel Convention it was already pointed out that regulations of trade with non-parties generally are supposed to serve two different ends: firstly to ensure that parties of a treaty do not get involved in transactions which take place under lower environmental conditions than laid down in the treaty; and secondly to encourage access of non-parties. By generally banning this trade, the Basel Convention served both purposes in a similar way. However, given the far less stringent approach of the Cartagena Protocol, simply requiring in Art. 24 (1) a trade consistent with the objectives, there is little (negative) incentive for non-parties to join the agreement. Therefore, a second paragraph was deemed to be necessary calling upon parties to encourage non-parties to adhere to the Protocol. Given its vagueness, the practical impact of the whole Art. 24 may, however, be doubted.

4. Domestic management

The Cartagena Protocol also contains provisions concerning the domestic management of LMOs. According to Art. 2 (2)[190], the parties shall ensure that the development, handling, transport, use, transfer and release of any LMO "are undertaken in a manner that prevents or reduces the risks to biological diversity, taking also into account risks to human health". In addition, Art. 16 (risk management) contains some respective obligations. Art. 16 (1) states that parties shall establish and maintain appropriate measures to regulate and control risks associated with the use, handling and transboundary movement of LMOs. More specifically, Art. 16 (4) calls upon parties to "endeavor to ensure that any living modified organism, whether imported or locally developed, has undergone an appropriate period of observation that is commensurate with its life-cycle or generation time before it is put into use". Thus, on the one hand, the Cartagena Protocol also addresses the domestic management of LMOs. On the other hand, all respective obligations are very vague. This is evident for the first two mentioned provisions, but also Art. 16 (4) which could be seen as a specification of the general obligations is watered down by the use of the term "endeavor". The relevance of the respective provisions is further more questionable, as they add little new substance compared to what was already provided by

[190] Art. 2 is entitled "general obligations".

the Convention on Biological Diversity[191].

5. Supportive measures

The Cartagena Protocol contains two different kinds of supportive measures: first, provisions specifically related to an import decision within the context of the AIA procedure or within the context of Art. 11 which have already been discussed above[192]; and second, those related to general assistance. Provisions in this regard are contained in Art. 20 (Information Sharing and Biosafety Clearing-House), Art. 22 (Capacity-building) and Art. 28 (Financial Mechanisms and Resources). All of them make reference to the need of assistance for developing countries, often particularly highlighting least developed countries and small island states. None of them, however, contains specific commitments. Nevertheless, it should be stressed that Art. 28 states that the financial mechanism established in Art. 21 of the Convention on Biodiversity – that is the Global Environmental Facility (GEF) - shall also be the financial mechanism for the Protocol. As the GEF seems, at the time being, to provide of sufficient funds, this will ensure at least a certain level of financial resources. This hope is underlined by the fact that GEF has already provided financial resources for capacity-building in the form of a project on biosafety frameworks to be implemented by UNEP[193]. In addition, the Intergovernmental Committee on the Cartagena Protocol (ICCP) in its second meeting endorsed the "Action Plan for Building Capacities for the Effective Implementation of the Cartagena Protocol", with a view to facilitate and support the development of capacity to effectively implement the Protocol[194].

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[191] Stoll, (Fn 180), p. 88. For the exact wording of Art. 8 (g) see Fn 163 above.

[192] See Art. 10 (7) and Art. 11 (9), respectively.

[193] The UNEP-GEF Global Project on the Development of National Biosafety Frameworks began in June 2001. This three year project is designed to assist up to 100 countries to develop their National Biosafety Frameworks so that they can comply with the Cartagena Protocol on Biosafety. The project will also promote regional and sub-regional cooperation on biosafety. For details see http://www.unep.ch/biosafety/index.htm (accessed on 28 April 2003).

[194] Report of the Intergovernmental Committee for the Cartagena Protocol, Second Meeting, Nairobi 1-5 October 2001, UNEP/CBD/ICCP/2/15.

6. Unintentional transboundary movements

According to Art. 16 (3), each party shall take appropriate measures to prevent unintentional transboundary movements of LMOs. If such a kind of movement nevertheless occurs, Art. 17 specifies which notifications a party has to undertake to inform neighboring states of this movement to enable them to take appropriate countermeasures. This set of obligations does not exactly fit into the categorization of trade, domestic and supportive measures as it requires domestic measures, but only to the extent that neighboring states might be affected.

D. Analysis and comparison of the key mechanisms of the Basel Convention, the Rotterdam Convention and the Cartagena Protocol

In the preceding three sections, each treaty was looked at individually. The following section, instead, will seek to identify the elements which characterize the whole sub-set of these treaties as well as to point to the main differences between the agreements.

I. The factual background

1. Focus on trade

If one looks at the factual background and the history of all three agreements, a similar pattern becomes visible. The domestic production and use of products like hazardous chemicals and LMOs as well as the generation and disposal of waste pose considerable environmental and health risks. When awareness of these risks widened, developed countries started to build up corresponding management systems to counter these risks. In contrast, respective efforts in developing countries started much later, if any. This led to divergent domestic environmental standards in both parts of the world. Nevertheless, international attention did not focus on these domestic aspects, but on the international trade in substances, and in particular – driven by spectacular incidents in all three fields – on trade between developed and developing countries. While the factual problems related to this trade have already been described with regard to each single agreement, the following section will seek to frame this issue into a broader perspective.

2. Analysis of the problem of trade between developed and developing countries

a) The sovereign right of states over the use of their territory

Given that waste, hazardous chemicals and LMOs all produce or might produce adverse effects to the environment or human health, their trade can be considered as a transfer of sources of risks. Therefore, some might call trade in these substances as

such immoral, especially if the same substance is prohibited by the exporting country for domestic use. However, one has to realize that trade in general, and therefore also in these substances, is an intentional exchange of goods proceeding from the territory of the exporting state to the territory of the importing state. Thus, the importing state has, due to its jurisdiction over its territory, the legal possibility of restricting any imports. To consider a transfer, which has been permitted by the importing state, as immoral would imply, that the decision of the importing country to accept the good is not accepted – due to its result which some might perceive as not environmentally sound. Considered from a legal perspective, such reasoning contradicts a central principle of international environmental law: as already established in the Stockholm Declaration and reiterated in the Rio Declaration, every state has the sovereign right to determine how to use its territory. This power is only limited by deleterious effects that actions on one territory can have on the territory of another state or to the global commons. The stated principle includes the right of every state to establish, on its own, which substances to import or not. For this reason, trade in – and thus also the export of – hazardous substances as such, even if domestically prohibited, seems to be consistent with international law.

b) The problem of a "sovereign" decision

However, the principle laid down above suggests that the decision to import a certain substance is a conscious one. Put differently, one can only speak of the exercise of a sovereign right if a decision was effectively taken. Consequently, the crucial point is the circumstances under which a substance enters developing countries. For that, the factual situation of the import must be considered. The examples given in the preceding sections show a similar pattern: the described lack of a domestic management in developing countries with regard to hazardous substances resulted, almost unavoidably, in a respective shortage also of import management capacities. This shortage is mirrored in a lack of legal and administrative measures to control the import of the respective goods. As a consequence, developing countries were often not aware at all of imports, or of the related risks of a substance or were not able to assess these risks properly. This led to uncontrolled imports that caused or, at least, had the possibility of causing serious environmental harm in these countries.

c) The moral perspective

In the light of this situation, the moral question of trade from developed to developing countries must be examined from a different perspective. The crucial point lies in a combination of four aspects: Firstly, the source of the risk stems from a developed country. Secondly, developing countries often do not possess the capacity to efficiently control the import and to conduct a proper risk assessment and thus to take a fully informed decision about the permissibility of an import. Thirdly, exporting developed countries do have the possibility to control the trade – by means of export controls -, but often do not exercise it. Fourthly, the moral "account" becomes even worse, if developed countries export a substance, against which they have simultaneously taken domestic control measures in order to protect their own citizens. Thus, from a moral point of view, there seems to be an obligation of exporting developed countries to support importing developing countries when dealing with the transboundary movement of hazardous substance.

II. Regulatory mechanisms

The development of international instruments followed similar lines in all three fields. Once the above mentioned moral dilemma was brought to the attention of the broader public with regard to a certain group of substances, which may be waste, chemicals or LMOs, international pressure increased to tackle the problem, in particular as a consequence of the prior-mentioned incidents. International efforts were then first undertaken on a regional basis. Thereafter, global agreements were reached, mostly starting in the form of non-binding guidelines. As of now, the development has culminated in one global and legally binding agreement in each realm, the Basel Convention in the field of waste, the Rotterdam Convention in the field of hazardous chemicals and the Cartagena Protocol in the field of LMOs.

All three agreements mainly contain provisions dealing with trade between parties. In addition, obligations concerning domestic management, supportive measures, and, in the case of the Basel Convention and the Cartagena Protocol, those concerning trade with non-parties are provided.

1. Trade between parties

The Basel and Rotterdam Convention and the Cartagena Protocol provide for a range of mechanisms to regulate trade between parties.

a) Ban

The Basel Convention is the only of the three Conventions which incorporates a ban. It does so in three different ways[195]. Firstly, it prohibits hazardous waste exports to the area south of 60° South latitude. The most interesting aspect of this kind of ban is that is applies whether or not such wastes are subject to transboundary movement. This can be said to be at odds to the overall concept of the Basel Convention, as it is not aimed at protecting a single state, but a certain region, that is the Antarctica, and thus a global commons.

The second kind of ban is the obligation of exporting countries, not to permit hazardous waste to be shipped to a party that has exercised its right to generally prohibit the import of waste and that has informed the secretariat of this decision. The peculiarity of this ban lies in the fact that it is not established directly in the Convention itself. Rather the Convention links a certain domestic measure of importing countries to an international obligation of exporting countries. Therefore, the decision to generally ban the import rests with the importing country and is not taken by the Convention itself[196]. In turn, the international support lies in the enforcement of this decision by exporting countries. Thus, Art. 4 (1.a and b) can be defined as a form of a ban as the import of a whole group of substances is prohibited. At the same time it embodies an element of prior informed consent in that the final decision rests with the importing country and constitutes an exercise of sovereignty.

While the preceding measures were already contained in the original version of the Basel Convention, the introduction of a third sort of ban, the so-called total ban, was rejected during the original negotiations and was only adopted later on, first as a non-legally binding commitment and thereafter in a formal amendment. This amendment, has not as of now entered into force. If it is in effect, it will prohibit every kind of waste transfer from states listed in Annex VII (mainly OECD states)

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[195] A fourth case of a ban is imposed on trade with-non parties.

[196] For this reason, the qualification of this measure as a ban might be questioned which shall, however, not be further discussed at this place.

to non-listed countries. In this case, the decision of the admissibility or inadmissibility of a transfer does not any longer remain with each single importing country, but is laid down in the international agreement itself. Responsibility of enforcement is assigned to exporting countries[197].

b) Prior informed consent procedure

The prior informed consent procedure represents the central tool of the Rotterdam Convention and the Cartagena Protocol as well as of the Basel Convention in its original version[198].

aa) General concept

The prior informed consent procedure consists basically of three elements: first, information is provided by the exporting country to the importing country concerning the substance to be transferred. Based on this information, the importing country has to take a decision, which has to be communicated to the exporting country. Finally, the exporting country has to prevent exports from taking place without the prior consent of the importing country, within limits. Therefore, the PIC procedure supports importing countries in two fundamental ways, that is by providing information to strengthen their decision-making capacity and by enforcing the decisions.

bb) Differences in the single agreements

The described procedure, however, presents a high degree of flexibility and its concrete application varies essentially with regard to each agreement. The following section will compare the different approaches of the individual agreements, focussing on five aspects: the scope of the procedure (that is which substances are subjected to it); what triggers the procedure; whether criteria are established based on which the import decision has to be taken; what kind of assistance is provided for in

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[197] Art. 4 A does not provide for a correspondent obligation of importing countries to prohibit imports.

[198] To facilitate the reading, the following section will not differentiate between the terms prior informed consent and advance informed agreement. So, reference to the PIC procedure is to be read to include also the AIA procedure of the Cartagena Protocol.

the decision-making process; and what happens if the party of import fails to respond to the notification[199].

aaa) Scope of application

In the case of the Basel Convention, the PIC procedure equals to the scope of the overall agreement, whereas in the case of the Rotterdam Convention and the Cartagena Protocol it covers only a certain category (only chemicals listed in Annex III and LMOs for intentional introduction into the environment, respectively). However, it should also be noted that, nonetheless, the total trade volume covered by each procedure seems considerably higher in the case of the Rotterdam Convention and the Biosafety Protocol, reflecting the much higher trade relevance of these substances[200].

bbb) Trigger of the PIC procedure

It one considers what triggers the PIC procedures, it can be seen that the Basel Convention requires a notification for every single transboundary movement of wastes which takes place. In contrast, under the Rotterdam Convention and the Cartagena Protocol, a PIC procedure must only be conducted once: at the time of listing of a specific chemical, or at the time of the first transboundary movement, respectively. As every PIC procedure is quite a complex process it is evident that a shipment-by-shipment procedure has much stronger trade implications than in the case of a single procedure. On the other hand, the form adopted in the Basel Convention reflects the unique nature of each transportation of waste. It therefore seems that the shipment-by-shipment notification requirement is rather a consequence of the peculiarity of waste as a substance than of its lower trade volume.

ccc) Criteria for the decision of importing countries

The Rotterdam Convention is the only one of the agreements that does not set out

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[199] Further interesting aspects include: which information must be provided along with the notification, which timeframes are set out for the different steps of the PIC and under what circumstances can import decisions be reviewed.

[200] For estimates see the respective sections above.

any criteria to be taken into account with regard to the import decision. As a consequence, the importing country is completely free in this regard. In contrast, the Basel Convention establishes a range of criteria to be taken into account, all requiring more or less that it must be assessed whether the transboundary movement can be considered as "environmentally sound". It should be noted, however, that the language of all these criteria is quite general. Their operationalization is therefore dependent on their further specification by the Conference of the Parties. It is particular to the Basel Convention that it does not only require the importing party to take a decision, but that is also establishes that the exporting party has equally to ensure that the mentioned criteria are met. With regard to the Cartagena Protocol, one can observe that it requires the importing party to conduct a risk assessment for which it establishes very clear-cut criteria, based essentially on the principle of scientific soundness. However, it also permits the consideration of socio-economic considerations. One can conclude that both the Basel Convention and the Cartagena Protocol complete the basically procedural approach of the PIC by requiring further substantive aspects. The fact that the Rotterdam Convention does not contain such an element is somewhat compensated by the fact that it sets out quite detailed criteria for the inclusion of new chemicals to the annex (which determines its scope of application). These criteria are quite similar to those established by the Cartagena Protocol with respect to the import decision to be taken by every single country.

ddd) Measures to assist countries in taking a specific import decision

As mentioned above, an informed decision requires sufficient information about a substance. The Basel Convention as well as the Cartagena Protocol, therefore, require the notification of an intended export to be accompanied by information as set out in detail in an annex. In both cases, further information may be requested by the importing country. This information serves as a basic assistance for the decision to be taken with regard to the import. Moreover, the Cartagena Protocol provides for a clause calling upon the COP to establish specific supportive measures[201]. Finally, the already mentioned requirement to conduct a scientifically sound risk assessment, could also be considered an assistance measure as it serves as an additional detailed

[201] Art. 10 (7). In contrast to general supportive measures, Art. 10 (7) does not consider general capacity-building, but specific assistance with regard to individual decision-making processes.

and country-specific source of information. Taking into account the financial problems of developing countries, the Protocol states that the cost of the risk assessment shall be borne by the exporter if the importing country so requires.

Unlike the above mentioned instruments, the Rotterdam Convention provides for a highly elaborate process for the listing of chemicals into Annex III. The function of this process is, however, not limited only to determining the inclusion of a chemical in the PIC procedure. In addition, it works as a process to generate information for a specific chemical. This information is summed up and processed in the so called decision guidance document. This document serves both to enable an international decision about the inclusion of a chemical into the annex, and to facilitate decision-making with regard to the import decision of each individual country. It can therefore be deemed a multilateral element of assistance for decision-making for importing countries, opposed to the bilateral elements set up by the Basel Convention and the Cartagena Protocol.

eee) Failure of importing countries to respond to the notification

When describing the general concept of the PIC, it has been held that the principle of prior informed consent generally requires that no export may take place without the consent of the importing party. This appears to include situations in which an importing country fails to respond to the notification within the timeframe required by the agreement[202]. However, this principle is unconditionally incorporated only into the Basel Convention, with the result that no transboundary movement may take place without explicit consent. In contrast, the Rotterdam Convention and the Cartagena Protocol provide for different types of qualifications in this regard. The Rotterdam Convention establishes the principle that a listed chemical may not be exported from its territory when an importing country fails to transmit a response. It does, however, provide for two qualifications. First, it mentions three cases in which export of the chemical may nevertheless continue. Secondly, it limits the obligation of the exporting country not to permit exports to a period of one year after the moment where the importing country was due to transmit a response. From the perspective of developing countries, this constitutes a considerable weakness of the PIC as

[202] All three agreements provide for detailed schedules for all phases of the PIC procedure.

the reason for non-response will most likely be a result of lack of capacity.

The weakness of the Cartagena Protocol with respect to the consent aspect does not lie in any exceptions of the principle, but in two cases of vague language used to define the principle itself. Firstly, it falls short of explicitly stating that no transfer may take place without prior consent. Nevertheless, through interpretation it can be deemed that consent is required[203]. Furthermore, the Protocol fails to clearly state the obligation of the exporting state to enforce the decisions notified to it by the importing country.

cc) Assessment

The general concept of the principle of prior informed consent is realized in different ways in the three agreements. Even if one focuses only on the level of protection offered by each agreement to developing countries[204], it is difficult to reach a conclusion about which agreement incorporates the most protective version of the PIC. The judgement depends on various criteria, among which those analyzed in the preceding section. It seems that the procedure as set out in the Basel Convention is the most stringent one with regard to the enforcement element as it offers the most clear-cut provisions in terms of the "consent requirement". Therefore, it is most powerful in terms of providing assistance to the enforcement problems of developing countries. The Rotterdam Convention and the Cartagena Protocol, however, seem more efficient with regard to providing developing countries with adequate information for the decision-making process and, thus, in helping them to cope with their regulatory deficiencies. Therefore it seems fair to say that each agreement offers different kinds of strengths and weaknesses.

c) Further measures concerning trade with parties

The ban and/or the PIC procedure, respectively, constitute the key mechanisms of the analyzed agreements for regulating trade with parties. All of them, however,

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[203] For an interpretation of the respective provision see the section above on the Cartagena Protocol.

[204] Another possible perspective would be, for example, the degree of impact on trade caused by each agreement.

provide for further measures in this regard. First, all three instruments include obligations mandating more or less specified labelling measures, designed to enable and facilitate control measures at the border, and packaging and transport requirements. Then, the Basel Convention dedicates considerable efforts to regulating re-import of waste and consequences of illegal traffic. This is a result of incidents of illegal trade during the negotiation phase of the Basel Convention that revealed serious problems in this regard. The Cartagena Protocol touches on this issue as well, but remains far more general.

Another set of obligations is set out in the Rotterdam Convention and the Cartagena Protocol. During the negotiation of these agreements, the question of their scope was a hotly debated issue. The debate was, finally, settled by a compromise: on the one hand, certain substances were not totally excluded from the agreements' scope; on the other hand, they were not to be covered by the PIC procedure itself. Instead, a kind of second procedure was set up applying to those substances not included into the PIC procedure. The specific procedures chosen in the Rotterdam Convention[205] and in the Cartagena Protocol[206] seek to support the decision-making process of importing countries. However, none of them contain a "consent" requirement. Thus, it can be stated, that this second procedure tends to focus on assistance in the regulatory deficiencies of importing countries, while being rather silent on the aspect of enforcement. Generally speaking, they thus offer a lower level of protection to developing countries.

2. Trade with non-parties

The Basel Convention and the Cartagena Protocol both contain provisions subjecting trade with-non parties to restrictions. The respective provisions in the Basel Convention are, however, more stringent as they permit trade with non-parties only if a particular agreement is concluded whose provisions "are not less environmen-

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[205] Art. 12 regarding export notification for chemicals which are banned or severely restricted by a party, but not listed.

[206] Art. 11 regarding the procedure for LMOs intended for direct use as food or feed, or for processing.

tally sound" than those provided for by the Basel Convention. The Cartagena Protocol, instead, mandates consistency with its "objectives" for trade with non-parties, but does not require the conclusion of a respective agreement. Thus, while the substantive criteria used do not differ widely, in the case of the Basel Convention there is no "procedural hurdle" for trade with non-parties. In practice, this will make derogation from the obligations of the Cartagena Protocol much easier.

In spite of these differences the aim of both is the same, namely creating negative incentives for non-parties to join the agreement, as well as ensuring that all transactions of a party meet essentially the same standards. A non-party clause was also considered during the negotiations of the Rotterdam Convention, but finally rejected.

3. Domestic management

All three agreements contain provisions regarding domestic management of the regulated substances, but the coverage of this issue differs greatly: whilst the Rotterdam Convention only provides for minimal hints included in the section of supportive measures, the Cartagena Protocol and, in particular, the Basel Convention embody respective operational obligations. However, even in these instruments, the clauses are of a very general nature and far from practically enforceable. It should nonetheless be noted that the COP of the Basel Convention has recently declared to undertaken efforts to specify the respective clauses.

4. Supportive measures

All agreements provide for a range of supportive measures including especially general information exchange, international co-operation, capacity-building and financial assistance. These measures differ from the above-mentioned obligations regarding trade, in that they are not linked to a specific transboundary movement. They are rather designed to assist developing countries in building up or strengthening the general capacity necessary to deal with trade in hazardous products and wastes. Therefore, their long-term aim is basically to reduce the need of those countries for foreign aid in specific transactions. The tricky aspect of these measures is that they generally require direct funding by developed countries while most of the other,

specific obligations cause only some indirect costs in form of administrative expenses, if any. On the other hand, they do not impose procedural hurdles and are thus less trade restrictive.

III. Conclusions

All agreements analyzed so far show similar patterns. They were developed in response to problems which developing countries – due to a lack of related capacities – were experiencing in trading with hazardous wastes and products, in particular in efficiently controlling the import of these substances. As a consequence, all of them focus on regulating trade between parties. The issue of trade with non-parties is only considered by the Basel Convention and the Cartagena Protocol, whereby the rules of the latter are extremely vague. As far as domestic management of waste, chemicals and LMOs is concerned, one can generally notice that all agreements deploy only very vague provisions with the Rotterdam Convention, however, being, by far, the one with the least coverage.

Turning specifically to the mechanisms used to control trade between parties, the Basel Convention is the only instrument containing a total ban. A ban resolves the problem with regard to lacking regulatory capacities by releasing importing countries from taking an own decision. As the ban has also to be enforced by exporting countries, it also addresses the related problem of developing countries. Therefore, it is definitely the most efficient way of protecting developing countries from hazardous products. On the other hand, it deprives countries from the possibility to make their own decision which fits their specific needs. Politically, a ban is only agreeable for substances on which there is international consensus, that the risks associated with an import cannot be compensated by respective benefits. The only group of substances where a wide respective consensus exists at the moment seems to be waste destined for final disposal, while even with regard to waste for recycling a total ban seems to be still contentious. This is reflected by the fact that the Basel Ban Amendment has not yet entered into force[207]. While a total ban was also, for a short while, on the agenda of the negotiations leading to the Rotterdam Convention, it was

[207] As of March 2003, only 36 parties had ratified the ban, while 62 ratifications are required for its entry into force.

not even discussed during the Cartagena Protocol talks.

The core mechanism of the Rotterdam Convention, the Cartagena Protocol and the Basel Convention in its original version is the PIC procedure. It generally seeks to assist importing parties in the decision-making process, by providing relevant information, and in the enforcement of their related decisions. The decision itself remains however, with some limits, with the importing states themselves.

While the PIC procedure provides for transaction specific assistance, all agreements also contain general supportive measures designed to strengthen the overall capacities of importing countries, both in terms of regulatory and enforcement capacities. In the long-term, supportive measures should seek to make specific agreements for the protection of importing developing countries superfluous. In the short and mid-term, they should, however, focus to strengthen especially those capacities which are essential for developing countries to exercise those tasks, which the agreements do not assign to exporting states. Put more generally, the more tasks an agreement assigns to importing measures, be it with regard to decision-making or be it with regard to enforcement, the more essential general supportive measures are in the area of regulatory and enforcement capacities.

Chapter three: MEAs focussing on the domestic management of hazardous products (the Montreal Protocol and the Stockholm Convention)

While in chapter two those "product related MEAs" were examined which focus on trade, chapter three will deal with those two MEAs which concentrate on domestic management of products, namely the Montreal Protocol and the Stockholm Convention.

A. The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol)

In 1985, the Vienna Convention for the Protection of the Ozone Layer (Vienna Convention) was signed as a framework convention to address threats to the ozone layer deriving from certain chemicals. Two years later, the Montreal Protocol was adopted in the context of the Vienna Convention to establish specific measures to reduce and eliminate certain ozone depleting substances.

I. Factual background

Ozone was first discovered in 1840. Around 1880, scientist detected it in the earth's stratosphere (10-50 kilometers above the surface of the earth)[208]. The ozone layer performs two essential functions necessary for life to exist on earth: it absorbs solar radiation, which prevents harmful radiation from reaching the earth's surface and it is also essential for the maintenance of atmospheric temperature[209]. Scientists believe that a 1 per cent decrease in stratospheric ozone results in a 1-2 per cent increase in UV-B radiation. This is equivalent to 100.000 – 150.000 additional cases of cataracts world-wide each year, or a 2 per cent increase in some forms of skin

[208] Litfin, Karen T., *Ozone Discourse: Science and Politics in Global Environmental Cooperation*, New York 1994, p. 115.

[209] Duval, Lee Anne, 'The Future of the Montreal Protocol: Money and Methyl Bromide', *Virginia Environmental Law Journal* 18 (1999), p. 609, 610.

cancer[210]. Moreover, the radiation increase entails adverse impacts on the natural environment including: reduced crop yields, increased mortality of commercially or ecologically important aquatic organisms, more rapidly degradation of paints, plastics and other materials, and potentially significant climactic changes[211].

In 1970, scientists first voiced general concerns over the viability of the ozone layer[212]. In 1974, research was published hypothesizing that chlorofluorocarbons (CFCs) would remain in the atmosphere for long periods and would react with and destroy ozone molecules and would therefore deplete the ozone layer[213]. Later on, concerns in this regard were also raised for Halons and other chemicals. This news was not welcomed from an economic perspective, given the characteristics and use, especially of CFCs: they were inexpensive to produce, non-toxic, non-flammable and chemically stable. Therefore, they became widely used since World War II, especially as coolants in refrigeration and air conditioning, propellants in aerosol spray, solvents in electronics, agents in medical equipment sterilization, and components in producing plastic foam and computer chips[214]. The economic importance of CFCs at the end of the 1980s becomes evident if one considers some related figures: in 1987, the US industries, making up for one-third of all CFCs produced worldwide, sold more than US$ 870 million worth of these chemicals every year. Goods and services involving CFCs were even worth US$ 28 billion annually, and more than US$ 128 billion of installed equipment relied on CFCs[215].

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[210] Brack, Duncan, *International Trade and the Montreal Protocol*, London 1996, p. 9.

[211] Twum-Barima, Rosalind; Campbell, Laura, *Protecting the Ozone Layer through Trade Measures: Reconciling the Trade Provisions of the Montreal Protocol and the Rules of the GATT*, UNEP Environment and Trade Report No. 6, Geneva 1994, p. 7.

[212] Litfin, (Fn 208), pp. 61.

[213] Ling, Bing, 'Developing Countries and Ozone Layer Protection: Issues, Principles and Implications', *Tulane Environmental Law Journal* 6 (1992), p. 91, 92.

[214] Faries, Timothy C., 'Clearing the Air: An Examination of International Law on the Protection of the Ozone Layer', *Alberta Law Review* 28 (1990), p. 818, 821.

[215] Cook, Elizabeth, *Marking a Milestone in Ozone Protection: Learning from the CFC Phase-Out*, Washington D.C. 1996, p. 1.

II. Historical development

1. Developments until the adoption of the Vienna Convention

International action to combat ozone layer depletion began in the late 1970s[216]. In March 1977, UNEP sponsored a meeting of experts from governments, intergovernmental organizations and NGOs in Washington who drew up a "World Plan of Action on the Ozone Layer"[217]. Reflecting the scientific uncertainty at that time in terms of causes and extent of ozone depletion and the economic cost of possible abatement policies, the action plan merely focused on intensive international research and monitoring of the situation. It also created the Co-ordinating Committee on the Ozone Layer with a view to initiate, co-ordinate and review research. In May 1981, the Governing Council of UNEP decided to initiate the elaboration of a global regime to protect the ozone layer. For this purpose, it established the Ad Hoc Working Group of Legal and Technical Experts for its preparation[218]. The seven meetings attracted little attention on behalf of developing countries and showed a clash of interest of developed countries: the European Community countries, on the one hand, preferred to limit CFC production capacity more generally. The United.States, Canada and the Scandinavian countries, on the other hand, which had already taken specific domestic measures in this regard, sought equally specific international steps. Eventually, on March 22, 1985, the Vienna Convention for the Protection of the Ozone Layer (Vienna Convention) was adopted at a Conference of Plenipotentiaries held in Vienna.

Reflecting the high degree of disagreement about the kind of measures to be taken, the Vienna Convention imposes few concrete obligations. Parties are to take "appropriate measures" to reach the general objective of the protection of human health and the environment against the adverse effects of human activities that modify the

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[216] A good survey of the negotiations is given by Benedick, Richard Elliot, *Ozone Diplomacy: New Directions in Safeguarding The Planet*, Cambridge 1991, pp. 3.

[217] World Plan of Action on the Ozone Layer, UNEP/WG/7/25/Rev. 1, Annex 3 (1977).

[218] UNEP Governing Council Decision 9/13B of May 26, 1981.

ozone layer[219]. The nature of these measures is not defined, nor does the Convention specify any particular substances to which these measures must relate. It merely lists, in an annex, substances "thought" to have the potential to modify the ozone layer. The only measures which the Convention itself actually requires the parties to take, concern the assessment of the causes and effects of ozone depletion[220]. The Convention therefore tends to be a general framework requiring further action by the parties who proved unable in 1985 to agree on more specific control measures[221].

2. The Montreal Protocol and its amendments

Only two months after the adoption of the Vienna Convention, a British Antarctic Survey team published their findings indicating an "ozone hole" over Antarctica. Following assessments, undertaken by UNEP and the World Meteorological Organization, concluded that CFC production trends would lead to a dangerous degree of ozone depletion[222], with the environmental and human health consequences as described above. This spurred the international community to take further actions. The Ad Hoc Working Group for the Preparation of a Protocol on the Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer, established by the Vienna Conference, held its first session in December 1986 and successfully prepared the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol)[223]. The Protocol was adopted in September 1987 at a Conference of Plenipotentiaries in Montreal. It entered into force on January 1, 1989.

In contrast to the Vienna Convention, it contains specific obligations for the parties concerning the reduction and eventual elimination of consumption and production of a range of ozone-depleting substances.

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[219] Art. 2 (1) Vienna Convention.

[220] Art. 3, 4 Vienna Convention.

[221] Birnie, Patricia and Boyle, Alan, *International Law And The Environment*, 2nd ed, New York 2002, p. 519.

[222] Kiss and Shelton, (Fn 7), p. 508.

[223] Ling, (Fn 213), p. 93

Before considering these obligations in more detail, it is important to note that one of the key features of the Protocol is that its development did not finish with its adoption. The actual version therefore is the result of several revisions of the Protocol since its adoption. These revisions, encouraged by Art. 6 urging parties to regularly assess the control measures on the basis of recent information, were technically facilitated by provisions allowing for a flexible adjustment of the agreement itself[224]. The main amendments to the Protocol were established at the following meetings of the Conference of the Parties to the Protocol: at the meeting in London in 1990, at the meeting in Copenhagen in 1992, at the meeting in Vienna in 1995 and at the meeting in Montreal in 1997. Roughly speaking, these amendments, which will be considered more in detail as part of the following analysis of the main obligations, can be divided into two categories. The first covers amendments regarding both the inclusion of new substances into the regime and the tightening of existing regulations. This category of amendments was the result of new scientific findings that revealed that the ozone losses were more severe than originally expected. A second set of adjustments concerned provisions taking account of the special situation of developing countries.

III. Central provisions

The key operational provisions of the Montreal Protocol mandate parties to reduce or phase-out the domestic production and consumption of certain ozone depleting chemicals. In addition, the treaty contains trade obligations and supportive measures.

1. Scope of application

The Protocol does not contain a special clause defining its scope. Its coverage is rather established by the various annexes, containing various kinds of ozone deplet-

[224] In particular, changes to control schedules are defined as "adjustments". According to Art. 2 (9), once these adjustments are agreed by the Meeting of the Parties they are binding upon all parties, including those who voted against them. In contrast, under Art. 2 (9), other revisions, including the adding of new chemicals to the control regime, are formal "amendments". They will be binding only on those parties who ratify them. As a consequence, not all obligations of the current version bind every state who has ratified the original version. An updated overview of the status of ratifications is available at: www.unep.org/ozone/ratif.shtml. For more details concerning the institutional provisions see Birnie and Boyle, (Fn 221), p. 521.

ing substances, to which the operational provisions refer[225].

2. Domestic management: Control of domestic production and consumption

The following section will first examine the obligations concerning domestic management of the controlled substances, namely control of domestic production and consumption, as laid down in Art. 2 – Art. 2 I. Thereafter, the special treatment of developing countries, mainly according to Art. 5, will be dealt with.

a) Obligations contained in Art. 2 and Art. 2 A – 2 I[226]

Art. 2 and Art. 2 A – 2 I constitute the core control mechanisms of the Protocol laying down reduction and phase-out schedules for production and consumption of ozone depleting substances. Under Art. 2 (1), (3), (4) of the original version of the Montreal Protocol, state parties agreed, with certain exceptions, to reduce their consumption and production of CFCs step-by-step to fifty percent of the base year (1986) figure by 1999. The parties also agreed to freeze their consumption and production of halons at the base year level by 1992. Countries with an annual consumption of CFCs under 0.3 kilograms per capita – in practical terms developing countries – were, however, given a ten year period to comply, a so-called grace period.

The next meetings of the Parties were characterized by new scientific findings, showing that the standards adopted in 1987 would not be effective in reducing ozone depletion. Therefore, and supported by the development of new technology and alternative substances which were at least less harmful to the ozone-layer, parties agreed to accelerate the phasing-out timetables. In addition, they decided to include new substances in the regime. Technically, this was done by enlarging existing annexes or by inserting new operational provisions, often closely modelled on already existing ones, which referred new annexes[227]. As amended by the Beijing Amend-

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[225] If a provision is not only applicable to substances contained in a certain annex, but to all annexes, the Protocol refers to the term "controlled substances".

[226] See Art. 2, 2 A, 2 B, 2 C, 2 D, 2 E, 2 F, 2 G, 2 H and 2 I.

[227] As a result, the Montreal Protocol contains many provisions which are almost identical apart from the fact that they refer to different annexes and set up different schedules.

ment which was the last amendment that entered into force[228] the Protocol provides for the following phase-out schedules for the substances listed in the various annexes: CFCs (elimination by 1996); Halons (elimination by 1994); Carbon tetrachloride (elimination by 1996); Methyl chloroform (elimination by 1996); HCFCs (elimination of consumption by 2030; freeze of production by 2004 at the level of 1989); HBFCs (elimination by 1996); Bromochloromethane (elimination by 2002); Methyl bromide (elimination by 2005)[229].

The Protocol also provides for exceptions from these obligations. The most relevant is the one under Art. 5, concerning developing countries, which will be considered in the following section. Furthermore, the Protocol also contains exceptions applying to all states. Those include, in particular, the production by recycling which is, for the purpose of the Protocol, not included in the calculation of the permissible production amount of a party[230]; in addition, most of the articles apply only "save to the extent that the Parties decide to permit the level of production or consumption that is necessary to satisfy uses agreed by them to be essential"[231].

b) Special treatment for developing countries

The position of developing countries in the issue of ozone depletion can be characterized as follows. At the time of the adoption of the Protocol, they made a relatively small contribution to ozone depletion. However, their potential for increased production of ozone-depleting substances and the likelihood that this could simply nullify the actions of developed states, made it essential to encourage them to join the agreement. This becomes evident if one considers an estimate according to which two percent of stratospheric ozone would be depleted by 2050 if every country

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[228] The Beijing Amendment entered into force on February 2002.

[229] As far as not noted otherwise, the schedules refer both to production and consumption. The figures and dates only reflect the ultimate target set out by the Protocol. Most of the articles, however, establish further step-by-step obligations to be met in the meanwhile. For example, Art. 2 B does not only mandate the elimination of the consumption of Halons by 1994, but also mandates a reduction by 1992 to the level of 1986.

[230] Art. 1 (5).

[231] Art. 2 A (4). For further exceptions see Art. 2 (5) – (8), including, for example, the possibility, in certain cases, to transfer a portion of the calculated level of production or consumption to another party.

freezes its CFC use at the present level. On the other hand, six to ten percent of ozone would be lost by 2050 if developed countries reduce their CFC use by twenty to fifty percent, while developing countries increase their use by twenty-five percent annually up to 0.5 kilograms per capita[232]. The economic possibilities of developing countries to freeze or even reduce production and consumption of ozone-depleting substances were, however, limited given the fact that less deleterious substances were generally more expensive. Therefore, countries agreed under the London Amendment to include Art. 5 of the Montreal Protocol which allows a ten-year delay in compliance with the control measures for developing countries (so-called grace period)[233].

3. Trade measures

The Montreal Protocol in its original version contained only trade measures with regard to non-parties. Later on, also rules governing trade with parties were inserted.

a) Trade with non-parties

Trade with non-parties is regulated in Art. 4. The most striking feature of Art. 4 is that it does not only establish trade measures with regard to controlled substances, but also with regard to products containing controlled substances, products "produced with, but not containing, controlled substances" and technology linked to the production of controlled substances. Eventually, even related subsidies and credits are mentioned.

First of all, Art. 4 (1) and (2) require parties to ban imports of the controlled substances from and exports of them to non-parties as of a certain date[234]. Art. 4 (3) calls upon parties to elaborate, within three years of the date of entry into force of the Protocol, on a list of products containing controlled substances. Parties not ob-

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[232] Ling, (Fn 213), p. 96.

[233] The second approach to encourage developing countries' participation, that is financial assistance, will be described below.

[234] If not otherwise stated, Art. 4 (1), as used in this section, shall be read as including Art. 4 (1) – Art. 4 (1 sex.). Each of the sub-articles deals with one specific controlled substance and sets out a specific date by which the import has to be banned.

jecting to the list should afterwards be obliged to ban the import of such products from non-parties. So far, the meeting of the parties has only decided upon a list of products containing Annex A substances (CFCs). The list, adopted as Annex D, comprises six categories of products, including, among others, air-conditioning units and fire extinguishers which import is to be banned by parties.

Art. 4 (8) constitutes an important exception from the obligations as above. Accordingly, the meeting of the parties may determine that a state is in full compliance with the control measures established in Art. 2 – Art 2 I. In such a case, trade measures will not be applicable with regard to this state, that is trade is permissible with regard to this non-parties[235].

Art. 4 (4) addresses a third category of trade restrictions, concerning products "produced with, but not containing, controlled substances". It calls upon parties to determine the feasibility of banning or restricting the import of these products. Feasibility studies were then undertaken by a the Technology and Economic Assessment Panel in 1993. The report of the Panel concluded that in some cases it would be very expensive, but technically feasible to detect trace residues of the controlled substances, while in other cases there would be no technical means of detection. On the basis of a cost-benefit analysis, the Panel therefore recommended not to establish trade measures with regard to the products in question. This recommendation was later on accepted by the COP[236].

Art. 4 (5) and (6) are aimed at the export of technology or subsidies and so on. While not implementing an outright ban of exports, they call upon parties not to export technology for producing or for utilizing controlled substances or to provide subsidies, which could facilitate the production of controlled substances.

The main objective of all above mentioned measures is to put pressure on non-parties to accede to the Protocol by setting negative incentives. As a result of the trade-measures, a non-party would find itself in the situation of losing entire access

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[235] Art. 4 (8) also refers to measures under Art. 4 (4). For Art. 4 (4) see immediately below.

[236] OECD, *Experience with the Use of Trade Measures in the Montreal Protocol on Substances that Deplete the Ozone Layer*, Paris, 1997, p. 14.

to the controlled substances, rather than phasing them out in a step-by-step manner[237]. In addition, access to overseas markets would also be lost for products containing controlled substances. Moreover, the measures seek to prevent competitive advantages of non-parties by not joining the Protocol ("free-riding")[238]. Another intention of the measures in this regard, is to ensure that parties of the Protocol would not be tempted to circumvent their obligations by importing controlled substances or products containing such substances, respectively, from non-parties[239]. The strong formulation of the non-party measures in the Montreal Protocol reflects the recognition that achievement of its objectives depends strongly on the number of participating states because the protection of the ozone layer as a global commons is only possible if all important actors take joint actions[240].

b) Trade among parties

While the bulk of the trade measures concerns non-parties, the Montreal Amendment introduced Art. 4 A and Art. 4 B which deal with trade amongst parties. The general reason for the inclusion of both Art. 4 A and Art. 4 B was to install mechanisms to combat the problem of illegal trade among parties[241]. This seems, at a first glance, slightly surprising as the Protocol originally did not contain trade provisions in a strict sense which could have been illegally circumvented. The possibility of illegal trade transactions, derives, however, from the fact that especially production of ozone-depleting substances is still allowed in developing countries and, under certain conditions also in developed countries, but only for certain purposes, mainly to "satisfy basic needs" of developing countries. This opens the possibility of

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[237] OECD, (Fn 236), p. 21.

[238] Rutgeerts, Ann, 'Trade and Environment: Reconciling the Montreal Protocol and the GATT', *Journal of World Trade* 4 (1999), p. 61, 74.

[239] For a special consideration of trade measures in the Montreal Protocol see Hurlbut, David, 'Beyond the Montreal Protocol: Impact on Nonparty States and Lessons for Future Environmental Regimes, *Colorado Journal of International Environmental Law and Policy* 4 (1993), p. 344, 358.

[240] It should be noted that trade measures have to be seen in the overall context of a bundle of measures taken to encourage states to accede to the agreement. Trade measures thus represent the "negative incentives" within this bundle. Positive incentives are presented by supportive measures and by the special treatment of developing countries.

[241] Kiss and Shelton, (Fn 7), p. 511.

fraudulent practices to be hidden in amongst various legal trade flows[242]. Estimates of the amount of the illegal trade are uncertain, but the chemical industry itself suggests that as much as twenty per cent of the CFCs in use worldwide are illegally traded[243].

This urged parties to impose enforcement mechanisms to prevent this trade that could undermine the Protocol's key achievements. Therefore, Art. 4 B calls upon parties to build up a licensing system for imports and exports. Art. 4 A prohibits the export of recycled ozone depleting substances by a party which is in non-compliance with its production phase-out obligations as the risk of illegal trade under these circumstances of "overproduction" was considered relatively high.

4. Supportive measures

The third pillar of measures of the Montreal Protocol is constituted by financial and technical assistance for developing countries. As already mentioned above, the particular participation of highly populated developing countries was deemed to be essential to its success from the inception of the Montreal Protocol. For that, the original version had provided for special treatment of these countries in the form of grace periods. In addition, it contained quite vague language concerning financial and technical assistance. Both aspects, however, did not prove sufficiently attractive to prompt especially India and China to ratify. They still considered the economic burdens associated with compliance with the obligations as too high, especially given the acceleration of timetables for phase-outs. Therefore, the London Amendment did not only further reaffirm and expand the special treatment of developing countries as far as phase-out obligations are concerned, but adopted also new financial and technical incentives to encourage developing states to join the Protocol[244].

Art. 10 requires parties to establish a Multilateral Fund which shall be financed by contributions from developed countries. To comfort developing countries' fears that

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[242] For examples of fraudulent practices see Ogden, Douglas, 'The Montreal protocol: Confronting the Threat to Earth's Ozone Layer', *Washington Law Review*, 63 (1988), p. 997, 1008.

[243] Brack, (Fn 210), at note 17.

[244] Birnie and Boyle, (Fn 221), p. 520.

the resources allocated to this fund by developed countries would be deducted from other development assistance, Art. 10 (1) states that these contributions shall be additional to other financial transfers. The purpose of this fund is to meet "all agreed incremental costs", that means all cost which developing countries have to bear in order to comply with the phase-out obligations. At the London Meeting, parties decided on an Interim Multilateral Fund[245], while the permanent Multilateral Fund was finally established at the Copenhagen Meeting in 1992[246]. For example, for 1997-1999 a replenishment of US$ 540 million was provided[247]. In addition, activities to reduce ozone layer depletion are also sponsored by the Global Environmental Facility, mainly to support countries with economies in transition which are not eligible for assistance from the Multilateral Fund.

The London Amendment also introduced Art. 10 A which states that each party shall take every practicable step to ensure that the best available technologies are transferred to developing countries under fair and most favorable conditions. While Art. 10 A itself seems still somewhat vague, both Art. 10 and Art. 10 A have to be seen in the context of Art. 5 (5) and (6). According to Art. 5 (5), compliance of developing countries with their substantive obligations will "depend upon the effective implementation of the financial co-operation as provided by Art. 10 and the transfer of technology as provided by Art. 10 A". Moreover, under Art. 5 (6) developing countries may refer their inability to comply, due to the inadequate implementation of Art. 10 and 10 A, to the meeting of the parties which must then decide on appropriate action. Art. 5 (5) had been the particular cause of heated debates between developing and developed countries during negotiations. Developing countries had called for a legal condition between their obligation to comply with the phase-out schedules and developed states' obligations under Art. 10 and Art. 10 A, while developed states denied such a technical link. To reach a compromise parties agreed on the ambiguous wording of Art. 5 (5)[248]. Without discussing this in detail, it may, however, well be stated that both provisions give developing countries the power to

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[245] Decision II/8, UNEP/OzL.Pro.2/3, pp. 50.

[246] Decision IV/18, UNEP/OzL.Pro.4/15, pp. 19.

[247] Kiss and Shelton, (Fn 7), p. 510.

[248] Ling, (Fn 213), pp. 121.

put pressure on developed states to ensure that they have sufficient means to meet the Protocol's targets[249]. In sum, it can be held that the Montreal Protocol has triggered an unprecedented multilateral effort to provide financial assistance in support of an environmental policy[250]. As a consequence, one can conclude that developing countries and developed countries alike are responsible for developing countries' ability to reach the environmental objectives as agreed upon by the international agreement.

[249] Birnie and Boyle, (Fn 221), p. 520.

[250] OECD, (Fn 236), p. 14.

B. Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention)

The Stockholm Convention was signed in May 2001 and is thus the most recent MEA surveyed in this dissertation. It mandates parties to implement a wide range of domestic management measures with regard to persistent organic pollutants (POPs), a certain category of hazardous chemicals whose specific features make them a worldwide threat to people and the environment.

I. Factual background

POPs are a certain subset of hazardous chemicals. They are organic compounds of natural and anthropogenic origins that provide some specific properties. They resist, to a varying degree, photolytic, chemical and biological degradation. As a result, they persist in the environment. In addition, these chemicals are characterized by low water solubility and high lipid solubility, which leads to their bioaccumulation. This means that POPs collect in the fatty tissues of living organisms. The combination of the lipophilicity and persistence of POPs causes them not only to bioaccumulate, but also to biomagnify. Therefore, even at low exposure rates, organisms at the top of the food chain, including humans, accumulate the highest levels of POPs[251]. Another important feature is that they are also semi-volatile. Therefore, they tend to move in a "hopping" fashion, known as the "grasshopper effect". That means that these chemicals evaporate in warm places, are transported (as gases) by wind currents to cooler temperatures where they return to the surface and de-volatilize. The overall effect of this is a general drift of these substances toward the Poles and mountain areas[252]. The combination of unusual persistence and semi-volatility has resulted in the presence of compounds such as PCBs all over the world, even in re-

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[251] Final Report of the IFCS ad hoc Working Group on Persistent Organic Pollutants, 1 July 1996, p. 1, available at:www.chem.unep.ch/pops/indxhtms/manwgrp.html (accessed on 30 April 2003).

[252] UNEP, *Ridding the World of POPs: A Guide to the Stockholm Convention on Persistent Organic Pollutants*, Geneva 2002, p. 9.

gions where they have never been used, including very remote areas like the open oceans, the Arctic and the Antarctic[253].

The chemistry of POPs, as laid down above, has to be seen in conjunction with their toxicology. In this regard, it seems adequate to differentiate between acute high level exposure and a chronic low level exposure. For the first category, cases of intoxication have been well documented with regard both to the environment and human health. Identifying adverse effects with regard to the latter category proved, however, to be more difficult. As it is the case with many environmental pollutants, it is very challenging to establish causation to illness or disease, that is directly attributable to exposure to a specific persistent organic pollutant or to a group of POPs. However, for certain POPs there is some experimental evidence for some animal populations like minks that cumulative low level exposures may be associated with chronic non-lethal effects like immunotoxicity, dermal effects and carcinogenicity. As far as human health is concerned, it seems that there is at least a high possibility that even low level, but chronic exposure to some POPs can be linked to reproductive and immune dysfunctions and certain kinds of cancer[254]. In addition, studies hint that POPs also may disrupt the endocrine system, that means the system which is controlling the body's hormone production[255]. Much of these adverse effects are, however, still scientifically controversial[256]. Given this lack of scientific data, one can argue that measures aiming at reducing or eliminating chronic low level exposure mirrors a kind of precautionary approach.

Having described the various risks of exposure to POPs, it is also important to know in which way humans and the environment come into contact with them. The possibility of acute exposure to a POP depends primarily on its specific use or occurrence. In spite of their common chemical properties, POPs chemicals can be them-

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[253] Ritter, L.; Solomon, K.R.; Forget, J.; *Persistent Organic Pollutants: An Assessment Report*, 1996, available at: www.chem.unep.ch/pops/ritter/en/ritteren.pdf (accessed on 29 April 2003), p. 13.

[254] Ritter et al, (Fn 253), pp. 12.

[255] For further details on this point see Sachs, Noah, 'Potential Legal Responses to Endocrine Disrupting Chemicals', *Columbia Journal of Environmental Law* 24 (1999), p. 289, 293.

[256] Lallas, Peter L., 'The Role of Process and Participation in the Development of Effective International Environmental Agreements: A Study of the Global Treaty on Persistent Organic Pollutants (POPs)', *UCLA Journal of Environmental Law & Policy* 19 (2000/2001), p. 83, 99.

selves subdivided into three categories[257]: pesticides[258], industrial chemicals[259], and those which, as dioxins and furans, are not intentionally produced, but rather are an unwanted by-product of certain types of activities[260]. According to the respective kind of POP, acute exposure can take place, in particular, at their manufacturing, their application (primarily farmworkers using pesticides) and where industrial chemicals have been built in or used (for example in electronic equipment). In addition, operations to dispose of lapsed chemicals or industrial chemicals which have to be replaced pose a high risk of acute exposure. Chronic exposure, instead, may derive from dietary exposure, i.e. consumption of foods that contain residues of toxic substances, and contact with contaminants released into the air, water or soil[261]. Summing up, one could best describe the situation in light of the fact that acute exposure to POPs occurs mainly where they are in fact produced, used or disposed. In contrast, chronic exposure can occur on every place on the earth by contaminated water or air or by contaminated food[262]. In terms of the possibility of a state to protect its own citizens, this means that a country could probably eliminate acute exposure of its citizens to POPs by domestically prohibiting production and use of these substances. However, from a mere scientific point of view and apart from a general reluctance to proceed unilaterally for economic reasons, there is no means of avoiding chronic exposure by domestic regulation. Given this background, states became more and more aware that effective protection could only derive from global approaches.

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[257] For the following see Chen, Christina S., 'Persistent Organic Pollutants: Regime Formation and Norm Selection', *Connecticut Journal of International Law* 13 (1998), p. 119, 140.

[258] The specific use of these pesticides differs, but, generally spoken, they are used for vector control and to protect crops and structures from pests.

[259] Due to their chemical inertness, resistance to heat, non-flammability, low vapor pressure and high dielectric constants, the two industrial POPs are suitable for a variety of industrial purposes. These include use as dielectric fluids in electrical equipment, heat exchange fluids, paint additives, and components of carbonless paper and plastics.

[260] In particular, activities which involve combustion processes generate dioxins and furans.

[261] Lallas, (Fn 256), p. 92.

[262] This may be food imported from countries where POPs pesticides are still used or domestic food which in turn was contaminated by air or water.

II. Historical development

The origins of global work on POPs date back to 1992 when the United Nations Conference on Environmental and Development, concluded Agenda 21. Chapter 19 of this action program calls upon governments to adopt measures to identify and minimize exposure to toxic chemicals by reducing and ultimately phasing out, inter alia, those chemicals that are toxic, persistent and bio-accumulative, that means POPs[263]. In the follow-up to Rio, work on hazardous chemicals in general took place in different fora. Some aspects were already referred to in the section about the Rotterdam Convention. With specific regard to POPs, in 1995, an important step was represented by the UNEP sponsored Washington Conference to Adopt the Global Programme of Action for the Protection of the Marine from Land-Based Activities (GPA). This programme, among other things, called for international action to reduce and/or eliminate the production, use or release of POPs. In this context, the possible scope of a global instrument on POPs was also discussed[264]. In the same year, the Executive Body of the Convention on Long Range Transboundary Air Pollution under the UN Economic Commission for Europe decided to start negotiations for a protocol on POPs[265]. Still in 1995, the Governing Council of UNEP invited the Intergovernmental Forum on Chemical Safety (IFCS)[266] to initiate an "assessment process" regarding POPs, initially beginning with a list of 12 POPs[267]. In response to that, the IFCS convened a meeting in Manila in June 1996 with a view to make a recommendation to the UNEP Governing Council concerning a possible negotiation of a global treaty on POPs[268]. In the final reports, the IFCS experts concluded that a sufficient scientific basis existed to recommend the immediate development of a

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[263] Agenda 21, Chapter 19, section 49.

[264] Vanden Bilcke, Christian, 'The Stockholm Convention on Persistent Organic Pollutants', *Review of European Community and International Environmental Law* 11/3, 2002, p. 328.

[265] This protocol was adopted in June 1998 as the Protocol on Persistent Organic Pollutants to the 1979 Convention on Long Range Transboundary Air Pollution. It establishes detailed obligations to reduce and, in some cases, eliminate the production, the use and the release of 16 POPs, including the 12 POPs that were later on included in the Stockholm Convention.

[266] The IFCS was created in 1994 to serve as an international forum for stakeholders in the field of chemicals.

[267] UNEP Governing Council Decision 18/32.

[268] Lallas, (Fn 256), p. 109.

legally binding global treaty on POPs. This agreement should seek to protect human health and the environment through measures, which will reduce and, possibly, eliminate the production, use, emissions and discharges of the 12 POPs[269]. The report further recommended a set of mechanisms to be considered by the negotiators. Based on these results, the UNEP Governing Council adopted Decision 19/13C setting up the International Negotiating Committee (INC) for the purpose of negotiating a global POPs treaty[270]. The INC started its work in 1998. In May 2001, after five sessions of the INC, 91 states finally signed the Stockholm Convention on Persistant Organic Pollutants.

III. Central provisions

The main stress of the Stockholm Convention is on domestic management measures regarding POPs. Moreover, the Convention embodies trade and supportive measures.

1. Scope of application

As it is the case with the Montreal Protocol, the Stockholm Convention does not contain a formal provision stating the scope of application. Its operational provisions rather define their scope by reference to the respective Annexes A , B and C which contain at the moment 12 POPs. Annex A and B include both pesticides and industrial chemicals. As of now, Annex A lists the pesticides aldrin, dieldrin, endrin chlordane, hexachlorobenzene (HCB), mirex, toxaphene, and heptachlor. PCB is the main industrial chemical, but HCB is also listed as it can cross over into this category. Annex B contains only the pesticide DDT[271]. The industrial by-products are listed in Annex C. It contains dioxins, furans and PCB and HCB[272].

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[269] IFCS Ad Hoc Working Group on POPs, Manila, 21 – 22 June 1996 , section 51.

[270] UNEP Governing Council Decision 19/13C.

[271] Like Annex A, Annex B is also open both for pesticides and industrial chemicals. The difference between both annexes is that Annex A contains POPs intended to be "eliminated", whereas Annex B deals with POPs to be "restricted".

[272] Dioxins and furans are of no practical use and are therefore not created intentionally. PCBs and HCBs are, however, generated intentionally as well as unintentionally. Therefor they are included in Annex A and Annex C, see Chen, (Fn 257), p. 135.

2. Domestic management

The common element of the POPs consists in their compounds and properties. The environmental and health problems of each POP, however, differ considerably, according to whether a specific POPs is intentionally produced or not. The Convention takes this aspect into consideration by establishing specific rules for pesticides and industrial chemicals on the one hand, and POPs generated unintentionally on the other hand. In addition, it provides for measures to reduce or eliminate releases from stockpiles and waste. Finally, it sets up a special mechanism for the listing of further POPs in the annexes.

a) Measures to reduce or eliminate release of intentionally produced POPs, Art. 3, 4

Art. 3 envisages those POPs which are intentionally produced, that are pesticides and industrial chemicals. It provides for different kinds of obligations which can be loosely divided into three groups. Firstly, Art. 3 (1) requires, in principle, the prohibition or restriction of production and use of chemicals listed in Annexes A and B. Exemptions from this principle are established by Art. 3 (5) and (6) as well as Art. 4. Secondly, Art. 3 (3) and (4) establish quite general obligations with regard to POPs which are not listed in the annexes. While both categories of provisions concern domestic management measures, the third category, contained in Art. 3 (2), regards trade measures. These will therefore be discussed in a specific section further below.

aa) Prohibition and restriction with regard to chemicals listed in Annexes A and B

aaa) The principle

According to Art. 3 (1) (a.i), each party shall prohibit and/or take legal and administrative measures necessary to eliminate its production and use of chemicals listed in Annex A[273]; under Art. 3 (1) (b), each party shall restrict its production and use of

[273] Art. 3 (1) (a.ii) refers to import and export of chemicals listed in Annex A, but it appears redundant as the same obligation is set out in Art. 3 (2) in a more specified manner.

chemicals listed in Annex B. The question of the exact language of Art. 3 (1) (a.i) was a very controversial issue during the negotiations. While the EU advocated the wording "prohibit", countries like the US favored the language "take effective measures to eliminate". This would allow states to adopt a mix of voluntary and compulsory measures thus leaving a wider margin of flexibility in the implementation. The adopted text presents a compromise between both positions[274].

bbb) Exemptions

While Art. 3 (1) (a.i) clearly establishes the prohibition/elimination of production and use of POPs, Art. 3 (5) and (6) and Art. 4 list a range of exemptions. The system of exemptions consists of general and specific ones.

(i) General Exemptions

In total, there are four general exemptions that are applicable to all parties and with regard to all chemicals. Only one is contained in Art. 3, that is Art. 3 (5). It provides that Art. 3 (1) and (2) shall not apply with regard to quantities of POPs to be used for laboratory scale research or as a reference standard. In addition, both Annex A and B provide three (identical) footnotes stating, in fact, exemptions for the following cases: quantities of a chemical occurring as unintentional trace contaminants in products (footnote i); quantities occurring as constituents of articles already in use before the entry into force of the Convention (footnote ii) and quantities used in closed systems (footnote iii). However, the latter two general exemptions require a notification by that party to the secretariat which will make that notification publicly available.

(ii) Specific exemptions

Apart from these general exemptions, parties agreed that there should be further exemptions or certain chemicals. For that, Annex A Part I contains a special section titled "specific exemptions"[275]. This section states whether a certain chemical may

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[274] Vanden Bilcke, (Fn 264), p. 333.

[275] In the case of Annex B Part I, the respective section is entitled "Acceptable purpose or specific

be further used for a specific purpose or whether it "may be allowed for the Parties listed in the Register". Use of the first kind of specific exemptions is permissible for all parties without further qualifications[276]. This category could, therefore, be called "chemical specific exemption". The latter category could, instead, be considered as "country specific". Use of these exemptions is possible to all parties. However, to prevent this provision from being used as a carte blanche, negotiators built in restrictions: the exercise of a "country specific exemption" is subject to a special registration procedure as set out in Art. 4. According to Art. 4 (1), the secretariat shall maintain a register in which every country has to be registered if it intends to make use of one of the "country specific exemptions". The register shall be available to the public. This can be characterized as a primarily procedural approach to limit countries' preparedness to make use of the exemptions, especially by putting them under public observation and pressure.

In order to further limit the use of specific exemptions, Art. 4 (4) – (7) provide for a kind of review process for both categories[277]. Accordingly, all exemptions shall, in principle, expire five years after the date of entry into force of the Convention with respect to a particular chemical[278]. The Conference of the Parties shall then review each entry in accordance with a specific procedure which has to be yet established by the Conference of the Parties[279]. Prior to this review, however, the party concerned shall submit a report justifying its continuing need for that exemption. On the basis of all available information, the Conference of the Parties may decide to extend the expiry date of a specific exemption for a period of up to five years. In making its decision, the COP shall take due account of the special circumstances of the developing countries and of countries with an economy in transition[280]. Thus, the further permissibility of a "country specific exemptions" falls into the discretion of

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exemption".

[276] This results from a literal interpretation of Art. 4 (1) sentence 2: "[The Register] shall not identify Parties that make use of the provisions in Annex A or Annex B that may be exercised by all Parties."

[277] The wording of Art. 4 (4) - (7) at least does not contain any indication that only one of the two categories of specific exemptions could be meant.

[278] Art. 4 (4).

[279] Art. 4 (5).

[280] Art. 4 (7).

the COP.

Finally, Art. 3 (6) lays down which obligations parties have to meet, when exercising one of the specific exemptions. Accordingly, parties shall take appropriate measures to ensure any production or use under such exemptions is carried out in a manner that prevents or minimizes human exposure and release into the environment. If intentional release into the environment is involved such release shall be to the minimum extent necessary, taking into account any applicable standards and guidelines.

(iii) Peculiarities with regard to PCB and DDT

Two further peculiarities have to be mentioned in the context of Art. 3 and 4. The first one regards Annex A Part I which, in general, merely records for each listed chemical whether or not a chemical or country specific exemption is in place. However, in the case of Polychlorinated Biphenyls (PCB), the main industrial chemical, it states under "specific exemptions": "articles in use in accordance with the provisions of Part II of this annex". Part II then describes in more detail how parties should handle products containing PCB until their elimination in 2025.

The second peculiarity concerns Annex B, titled "Restrictions". In contrast to Annex A, Annex B Part I states not only "specific exemptions", but also an "acceptable purpose". At the moment, Annex B contains only one chemical, DDT. Under acceptable purpose it mentions "disease vector control use in accordance with Part II of Annex B" which specifies the conditions of use. In particular, Annex B Part II provides for the establishment of a specific "DDT register" listing all countries that use DDT, a triennial notification on actual use and a triennial evaluation by the COP of the continued need for DDT. Thus, the general approach used with regard to the DDT register is very similar to the register for "country specific exemptions". However, the provisions of Annex B Part II for DDT are softer. In particular, in the case of DDT, the COP is only entitled to "evaluate" the further need of a country for the use of DDT, but, importantly, is not entitled to decide upon it. Therefore and unlike the "country specific exemptions" the decisions to further use or not DDT rests with each country.

ccc) Special treatment of developing countries

The Stockholm Convention does not explicitly provide for special treatment of developing countries in the context of Art. 3 (1). However, if one scrutinizes the exemptions permitted for certain POPs, it becomes clear that many of them are specifically designed to meet the needs of developing countries[281].

bb) Obligations with regard to POPs not listed in Annexes A or B

While Art. 3 (1) and (2) are both limited to those POPs listed in Annexes A or B, Art. 3 (3) and (4) address pesticides and industrial chemicals which are not listed in the Annexes, but which "exhibit the characteristics of persistent organic pollutants". Art. 3 (3) concerns *new* pesticides or *new* industrial chemicals. Accordingly, each party that has one or more regulatory and assessment schemes for pesticides and industrial chemicals shall take measures to regulate POPs chemicals with a view to preventing the production and use of these chemicals. With regard to pesticides and industrial chemicals *currently in use*, Art. 3 (4) establishes a similar, yet less stringent rule. It calls upon each party that has one or more regulatory schemes for the chemicals above "where appropriate, [to] take into consideration within these schemes the criteria in paragraph 1 of Annex D" when conducting assessments[282]. Thus, in contrast to Art. 3 (3), Art. 3 (4) does not set the aim of the prevention of production and use. Its objective is rather to raise awareness for the risks associated with the POPs characteristics. The differentiated regulation of both groups of POPs might seem surprising given that the risks deriving from new POPs will not be lower than those from old POPs. Therefore, one may argue that the costs of a reduction of chemicals currently in use were deemed higher, as it is easier to prevent the marketing of new chemicals, than prohibit those already on the market. Thus, the differentiation between Art. 3 (3) and Art. 3 (4) is a good example that the weighing of costs and benefits does not depend only on the environmental cost, but also on the economic cost associated with abatement measures.

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[281] See, for example, the vector control use of DDT.

[282] Paragraph 1 of Annex D lists the characteristics of POPs, like persistence and so on.

b) Measures to reduce or eliminate releases from unintentional production, Art. 5

The above examined Art. 3 and 4 provide rules for those POPs which are intentionally produced as pesticides and industrial chemicals. As already noted, POPs can, however, also be created unintentionally in industrial processes. These POPs are contained in Annex C, including particularly dioxins and furans[283]. Dioxins are released by production of pesticides and other chlorinated substances, whereas furans are primarily by-products of the manufacturing of PCBs. However, both POPs can be also generated by various other processes, ranging from the incineration of certain kind of wastes (especially hospital, municipal and hazardous waste), automobile emissions to the production of steel. This makes their emission quite difficult to control[284].

Given the difference between the unintentional generation of Annex C chemicals and the intentional production and use of chemicals of Annexes A and B, it was evident from the outset of the negotiations that the legal mechanisms for Annex C POPs would have to be different from those for the latter category. However, the very nature of the measures required to be taken were very contentious.

According to the chapeau of Art. 5, the Convention aims at a continuing minimization and, where feasible, ultimate elimination with regard to unintentionally produced POPs. For this purpose, Art. 5 calls upon parties to take a variety of measures. Art. 5 (a) prescribes the development of an action plan in order to facilitate the implementation of the obligations contained in the following paragraphs[285]. Art. 5 (b) and (c) require, in broad terms, the promotion of measures and techniques to reduce the release of the substances in question. Art. 5 (d) and (e) require the promotion of "best available techniques" and "best environmental practices" for certain sources which have the "potential for a comparatively high formation and release" of the

[283] As mentioned above, also PCBs and HCBs are included.

[284] Chen, (Fn 257), p. 139.

[285] The elements to be included in this action plan range from an evaluation of current releases of POPs and a scrutiny of existing laws to projecting concrete measures and establishing a schedule for implementation.

respective POPs into the environment[286] and even set a schedule for certain of these sources. The terms "best available techniques" and "best environmental practices" are further specified in Art. 5 (f) and Annex C Part V.

The version of Art. 5 as finally agreed upon differs widely from some initial proposals that provided a targets-and-timetable approach modelled around the example of the Montreal Protocol. Parties would have been obliged to take all necessary measures to reduce total annual releases of POPs under Annex C by a specific percentage from a base year level. As this was, however, opposed both from some industrialized countries and some developing countries, considering such an approach unrealistic in light of the practical circumstances in their countries, this idea was dropped during the negotiations[287]. The compromise, finally agreed upon, can be seen to adopt an ambitious aim. Its operational obligations are, however, considerably vague. Art. 5 (a) is a mere procedural obligation which is usually used in framework conventions[288]. Art. 5 (b) and (c) are similarly limited to very general obligations. A nucleus of an enforceable obligation might be found in Art. 5 (d) given the statement of a specific schedule. The meaning of this obligation depends, however, greatly on how parties will implement "best available techniques" and "best environmental practices" as these terms remain very generic, in spite of their definition in the Convention. In sum, it can be said that Art. 5 as it stands now contains only a minimum of enforceable obligations. Making Art. 5 operational will therefore depend on further specifications to be undertaken by the Conference of the Parties.

c) Measures to reduce or eliminate releases from stockpiles and wastes, Art. 6

Art. 6 addresses the issues of stockpiles and wastes. While both aspects are relevant to intentionally produced POPs, only the latter aspect gains relevance for unintentionally generated ones[289]. The reason for regulating both aspects in one article might be that both are linked in practical terms as stockpiles can easily turn into

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[286] Annex C Part II, chapeau.

[287] Vanden Bilcke, (Fn 264), p. 335.

[288] See for example Art. 6 of the Convention on Biological Diversity.

[289] The storage of waste is not considered in the category of stockpiles, but in the category of waste, see Art. 6 (1) (d.i).

wastes, if they cannot be used any more, for legal motives or because they have expired/lapsed.

Art. 6 (1) establishes the primary aim to ensure that stockpiles containing POPs listed in Annexes A or B and wastes containing chemicals listed in Annexes A, B or C are managed in a manner protective of human health and the environment. To reach this objective, the Convention establishes a range of measures. In terms of stockpiles, parties shall develop strategies for, firstly, identifying existing stockpiles and, afterwards, managing them in a "safe, efficient and environmentally sound manner"[290]. Importantly, the Convention also states explicitly that stockpiles of listed chemicals, when they are no longer allowed to be used under the exemptions of the Convention, shall be deemed to be wastes and shall therefore be subject to the relevant rules. Thus, the Convention delineates between two phases in the life-cycle of a product, namely the "use-phase" and the "disposal phase", by reference to the international legal permission to use the product[291].

With regard to wastes, the Convention mandates parties to develop appropriate strategies for identifying wastes containing POPs, including products upon becoming wastes[292], and sites contaminated by POPs[293]. For those wastes which have been identified, the Convention sets out further obligations covering all stages of their "life-cycle"[294]. Firstly, parties shall collect and store the wastes in an environmentally sound manner[295]. More detailed rules are then provided for the stage of the disposal of wastes: according to Art. 6 (1) (d.ii), wastes shall, in principle, be disposed of in a manner that the persistent organic pollutant content is destroyed or irreversibly transformed, so that they do not exhibit the characteristics of POPs. Only if this method does not represent the environmentally preferable option or if the POP con-

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[290] Art. 6 (1) (a.i), (b), (c).

[291] Another question in the context of the delineation between product-phase and disposal-phase is how stockpiles are considered when they are lapsed. This issue is, however, not specifically addressed by the Convention.

[292] Art. 6 (1) (a.ii).

[293] Art. 6 (1) (e).

[294] While waste can be a stage of a product, the waste itself runs through different stages, especially generation, collection, storage and disposal/recycling.

[295] Art. 6 (1) (d.i).

tent is low, may the waste be "otherwise disposed of". The meaning of this vague term is then further specified: First of all, the Convention sets out a special qualification stating that these methods may not lead to recovery of POPs, in other words, only final disposal is permitted with regard to POPs[296]. Secondly, it requires parties to take into account relevant international rules, explicitly referring to those which are in effect with regard to transboundary movement and which will be developed in accordance with Art. 6 (2). This article, in turn, calls upon the Conference of the Parties to develop, in close co-operation with the Basel Convention, guidelines determining the methods that constitute environmentally sound disposal. Hence, it can be held that the Stockholm Convention, on the one hand, sets out, POPs-specific principles for the waste management. On the other hand, it leaves further specification to the Conference of the Parties thus allowing a practical co-operation between the POPs COP and the Basel COP.

3. Trade measures with regard to chemicals listed in Annexes A and B

Art. 3 (2) of the Stockholm Convention provides for trade measures. The Convention text itself differentiates between import and export measures, rather than between trade with parties and trade with non-parties. The import related rules are applicable both to trade with parties and trade with non-parties, whereas different rules apply to both situations in the case of exports.

a) Import

Under Art. 3 (2.a), the import of chemicals listed in Annex A or Annex B is permitted only for two purposes. Firstly, according to Art. 3 (2.a) (ii), import may take place for a purpose which is permitted for a specific party under Annex A or Annex B. This restriction is a consequent "prolongation" of a party's obligation to *use* chemicals only as far as permitted by the Annexes. Put differently, this obligation is more a kind of enforcement of the obligation under Art. 3 (1) regarding the domestic management. This interpretation is strengthened by the fact that Art. 3 (2.a) applies

[296] Art. 6 (1) (d.iii). This constitutes an important deviation from a general principle of waste disposal, contained in different kinds of international instruments, that recovery operations should be preferred to final disposal. This difference is due to the specific risks inherent to the POPs characteristics.

without drawing a distinction as of whether import takes place from a party or a non-party. Under Art. 3 (2.a) (i), imports are additionally allowed for the purpose of environmentally sound disposal as set forth in Art. 6 (1.d).

b) Export

In terms of export, the Convention differentiates between trade with parties and trade with non-parties. Regarding trade with parties, Art. 3 (2.b) (i) and (ii)[297] allow exports for the purpose of environmentally sound disposal in accordance with Art. 6 (1.d) and to a party which is permitted to use that chemical under Annex A or Annex B. Thus, both provisions correspond to the respective import rules. As in the case of the corresponding import provisions, the latter provision serves to enforce the domestic obligations under Art. 3 (1).

Trade with non-parties is addressed in Art. 3 (2) (b.iii). Given the global effects of POPs, the general need for non-party measures as a negative incentive for them to join the Convention seemed evident during the negotiations. The EU initially proposed a language designed on the model of the Montreal Protocol, which only permits trade with non-parties after the meeting of the parties has determined that a non-party is in full compliance with the rules of the Protocol. This solution was abandoned later on because the task of determining whether compliance has been reached seemed to be almost impossible given the impressive array of exemptions[298]. Therefore, Art. 3 (2.b) (iii) merely establishes that a party may export a chemical listed in Annex A or B only if the non-party has provided an "annual certification" to the exporting party. This certification shall identify the intended use and include a statement that the importing state is committed to protect human health and the environment, complies with the provisions concerning the environmentally sound disposal of POPs and complies with the provisions of Annex B Part II, para. 2 (concerning DDT). The rationale of the adopted wording is still that export is only permissible if conditions in the non-party equal to those required under the regime.

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[297] Formally, Art. 3 (2.b) (ii) only applies in cases where specific exemptions are in place while Art. 3 (2.c) is relevant when those exemptions are no longer in force. However, in effect, there is no substantive difference.

[298] Vanden Bilcke, (Fn 264), p. 340.

However, it is more soft and therefore less enforceable.

4. Supportive measures

Like all other MEAs analyzed so far, the Stockholm Convention contains supportive measures for developing countries, especially in Art. 9 (information exchange), Art. 12 (technical assistance) and Art. 13, 14 (financial resources). Art. 9 is formulated quite broadly requiring exchange of information relevant to the reduction of POPs and their alternatives. In contrast, Art. 12 is much more specific. First of all, it recognizes that technical assistance "is essential to the successful implementation of the Convention"[299]. Therefore technical assistance, mainly in form of capacity-building, including technology transfer, shall be expediently provided to developing countries. This assistance, in so far as it is provided on an international level, depends on sufficient financial resources. Therefore, provisions concerning financial aspects will be the most important ones among the supportive measures.

Art. 13 (2) states that developed parties are responsible for providing financial support for developing countries. In this regard two aspects are important: these resources shall be "new and additional" and shall be sufficient to "meet the full incremental costs of implementing measures". Art. 13 (4) stresses that the extent to which the developing countries will effectively implement their commitments under the Convention, will depend on the effective implementation by developed countries of their obligations concerning financial resources and capacity-building. In addition, this provision recognizes the fact that sustainable economic and social development and eradication of poverty are the first and overriding priorities of developing countries.

While the above mentioned considerations lay down the substantive criteria in terms of financial resources, another important issue which proved to be highly contested during the negotiations was an institutional one. Developing countries requested a new financial mechanism under the Stockholm Convention, in the form of a multilateral fund similar to that of the Montreal Protocol. In contrast, developed countries preferred a strengthening of existing mechanisms, in particular of the Global Envi-

[299] Art. 12 (1).

ronmental Facility (GEF)[300]. By way of compromise, parties agreed to entrust the GEF, on an interim basis, with the operation of the financial mechanism[301]. However, the COP will have to decide at their first meeting which entity will be entrusted with the management of the financial mechanism on a final basis. It depends on this decision whether the GEF will keep the task or whether a new multilateral fund will be set up[302].

5. Listing of further chemicals in the Annexes, Art. 8

At the very beginning of the negotiations it was clear that the Convention should not be limited to twelve chemicals given the fact that there are many more chemicals exhibiting the characteristics of POPs[303]. Therefore, Art. 8 sets out a procedure for adding new POPs to one of the annexes. Annexes D, E and F contain the criteria to be considered at different points of this procedure.

a) Proposal

The procedure is triggered by a proposal that may be submitted by each party[304]. The proposal shall contain the information specified in Annex D ("information requirements and screening criteria"). Paragraph one of Annex D requires evidence of two kinds of information: evidence of the criteria exhibiting the POPs characteristics (persistence, bio-accumulation and potential for long-range environmental transport) and evidence of adverse effects to human health or to the environment. Both aspects could be attributed to the phase of risk assessment. As a second step of the procedure, the proposal will then be forwarded to the so-called Persistent Organic Pollutants Review Committee[305]. This will examine the proposal and "apply the screening

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[300] Vanden Bilcke, (Fn 264), p. 331.

[301] Art. 12.

[302] Art. 13 (6).

[303] This is reflected in Decision 19/13C of the UNEP Governing Council setting out the negotiation mandate.

[304] Art. 8 (1).

[305] Art. 8 (2).

criteria specified in Annex D"[306]. This can only be interpreted in a way that the Committee verifies whether the information delivered is, in fact, sufficient evidence of the criteria to be met by a chemical. If the Committee comes to the conclusion that the criteria are not fulfilled, it shall set the proposal aside. In this case, the Convention grants the proposing party a two-step "appeal procedure"[307]. Firstly, it may resubmit the proposal to the Committee including a justification for additional consideration by the Committee. If the Committee nevertheless decides again to set the proposal aside, the concerned party may challenge this decision a second time. In this case, the COP has to decide upon the proposal, according again to the criteria of Annex D[308].

b) Risk profile

If the Committee, or the COP in the course of the appeal procedure, decides that the criteria are fulfilled, it shall make the proposal and its evaluation available to all parties and invite them to submit the information set out in Annex E. Thereafter, it shall further review the proposal and prepare, in accordance with Annex E, a draft "risk profile"[309], which basically represents a kind of in-depth risk assessmenta. Annex E refers to similar criteria as already mentioned in Annex D, but requires a more detailed approach.

On the basis of this risk profile, the Committee decides whether "the chemical is likely as a result of its long-range environmental transport to lead to significant adverse human health and/or environmental effects such that global action is warranted.[...] Lack of full scientific certainty shall not prevent the proposal from proceeding"[310]. The latter phrase constitutes a manifestation of the precautionary principle.

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[306] Art. 8 (3).

[307] Vanden Bilcke, (Fn 264), p. 338.

[308] Art. 8 (5).

[309] Art. 8 (6).

[310] Art. 8 (7.a).

If the Committee denies this question the Convention again provides for an appeal procedure consisting, in essence, of the same two elements as the first procedure of this kind. That means that the proposing party can demand a reconsideration on behalf of the Committee itself and, in case of a renewed denying, a challenge of this decision followed by a decision of the COP[311].

c) Risk management evaluation and decision

If the decision of the Committee, or of the COP in the course of the appeal procedure, is affirmative, the Committee shall prepare a "risk management evaluation". This evaluation shall consider possible control measures for the chemical in question and shall evaluate associated possible socio-economic considerations, taking into account the indicative list of Annex F. Annex F mentions, inter alia, the efficacy and efficiency of possible control measures, alternative products and processes, positive and/or negative impacts on society and waste disposal implications.

Based both on the risk profile and the risk management evaluation, the Committee shall then make a recommendation whether the chemical should be listed in one of the Annexes. Afterwards the COP has to take the final decision[312], deciding in an "precautionary manner" whether to list the chemical and specify its related control measures. The amendment of the related annex will enter into force for every party after one year unless a party has notified to be unable to accept this amendment (opt-out procedure)[313].

[311] Art. 8 (8).

[312] Art. 8 (9).

[313] Art. 22 (4) in conjunction with Art. 22 (3). Note, however, also the exemption in Art. 25 (4) (opt-in procedure in the case of a respective declaration in the instrument of ratification).

C. Analysis and comparison of the key elements of the Montreal Protocol and the Stockholm Convention

Having so far analyzed the Montreal Protocol and the Stockholm Convention separately, the following section will analyze the key features of this sub-set of product related treaties as well as to point to their main differences.

I. Factual background

At a first glance, the problems associated with the chemicals regulated by the Montreal Protocol and those regulated by the Stockholm Convention seem to be of quite a different nature. Ozone depleting substances specifically cause harm to the ozone layer as a global commons, and only indirectly to other environmental sectors and human health. On the other hand, POPs directly affect many sectors of the environment and human health – both in the country of use and, due to their specific chemical properties, worldwide. The common aspect of both products lies, however, in the fact that their adverse effects are not limited to a single country, but that their production and use in one country can affect other countries or the global commons. As a consequence, regulatory measures of single country cannot effectively tackle the respective problems. Therefore, a global approach seemed compulsory in both cases.

However, there should also be mentioned one key difference between both adverse effects: while in the case of ozone depleting substances, the country of origin is not directly affected, in the case of the POPs it has to bear the bulk of those effects. The transboundary adverse effects are, thus, only additional to the domestic ones.

II. Central mechanisms

The mentioned transnational adverse effects of ozone depleting substances and POPs are not deliberately transferred into another state or into the global commons. The "boundary crossing" process as such is, therefore, not controllable. Thus, the only way of avoiding them is to regulate the sources of these effects, i.e. the domestic generation of the substances. As a consequence, both agreements concentrate on

obligations regarding domestic management of the respective substances. In addition, they contain measures regarding trade, supportive measures and, in the case of the Stockholm Convention, a specific procedure for the adding of new POPs.

1. Domestic management

The Montreal Protocol as well as the Stockholm Convention provide for measures to reduce or eliminate the production and use of the regulated substances. Furthermore, the Stockholm Convention addresses the issues of unintentional release, stockpiles and wastes.

a) Reduction or elimination of intentional production and use

aa) General obligations

While both the Montreal Protocol and the Stockholm Convention aim at reducing or eliminating the production and use of certain substances, the specific measures chosen in this regard differ essentially. The Montreal Protocol is based on a target-and-timetable approach; it requires states to take all necessary measures to reduce the total annual releases by a specified percentage from a base year level. As a consequence, the production and consumption level will decrease step-by-step. The Protocol does not provide for general exemptions, but contains an enabling clause for "essential use"[314]. In contrast, the Stockholm Convention prescribes, seemingly, an immediate prohibition or restriction, respectively, for POPs listed in Annexes A and B[315]. It provides, however, for a range of exemptions which, in turn, are subject to a later review by the COP. These differences probably reflect the fact that for most uses of POPs a replacement by other chemicals is easier than with regard to the ozone depleting substances. For certain few purposes, however, replacement seems quite difficult.

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[314] In addition, special provisions apply for developing countries, see below.

[315] Moreover, less stringent obligations are set out for POPs not listed in the Annexes.

bb) Special treatment of developing countries

International restrictions with regard to chemicals are mostly not cost neutral, as alternatives to hazardous substances are often more expensive and, additionally, require an economic adjustment process. To facilitate the adjustment process for developing countries, the Montreal Protocol provides for a special treatment of these countries[316]. In particular, it grants them a grace period of ten years. The Stockholm Convention, in turn, does not provide a corresponding clause[317]. This difference may, probably, be best explained by the divergent share that developing countries contributed to the respective environmental problem: with regard to ozone depleting substances, the share of developing countries of the total production and consumption was, relatively, much lower than the share of developed countries. From an environmental point of view, this fact made it easier to allow for less stringent substantive obligations for developing countries. For POPs, there is little data available. It can, however, be supposed that at the moment POPs are more widely used in developing countries than in developed countries[318]. As a consequence, allowing exemptions for these countries would have essentially reduced the overall efficiency of the treaty[319].

b) Unintentional release, stockpiles and waste

The obligations of the Montreal Protocol with regard to domestic management are

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[316] In addition, both agreements contain supportive measures, see below.

[317] As mentioned above, some of the "specific exemptions" of the Stockholm Convention are however specifically designed to meet developing countries' conditions.

[318] In many developed countries, domestic use of POPs was already prohibited in the 1980s. For the situation, for example, in Switzerland see Karlaganis, Georg; Marioni, Renato; Sieber, Ivo; Weber, Andreas, 'The Elaboration of the "Stockholm Convention" on Persistent Organic Pollutants (POPs): A Negotiation Process Fraught with Obstacles and Opportunities', *Environmental science and pollution research international* 8/3 (2002), p. 216, 219.

[319] Another reason for the lack of special rules in the Stockholm Convention might be associated with the above mentioned fact that ozone depleting substances "only" harm the ozone layer as a "true" global commons. POPs, in contrast, also threat the immediate surrounding. In the quite cynical atmosphere of the negotiations, this aspect might have been seen as a "sufficient incentive" to induce developing countries' participation.

limited to the above mentioned measures. In contrast, the Stockholm Convention contains two further important mechanisms: measures to reduce releases from unintentional production and measure to reduce releases from stockpiles and wastes.

The inclusion of stockpile and waste management reflects the fact, that releases of hazardous products can, generally, occur at any stage of their life-cycle. The main stages are production, use, storage and disposal[320]. Therefore, recently the "life cycle-concept" emerged in environmental law as a specific feature of product specific regulations. It seeks to assess and, if necessary, cover all stages of the life cycle of a product[321]. The inclusion of stockpiling and waste management is evidence of the fact that the Stockholm Convention is based on the life-cycle approach[322]. The exclusion of respective provisions in the Montreal Protocol may be explained by the fact that production and use are the only phases relevant in terms of risks of ozone depleting substances. In so far, ozone-depleting substances are quite uncharacteristic for chemical substances as their risks are of a very limited and specific nature[323].

The coverage of unintentional generation is an element which is generally strange to product related environmental rules as unintentional by-products are conventionally not covered by a system which focuses on products. Unintentional by-products are, traditionally, rather considered by regimes concentrating on processes, like the 1979 Convention on Long-Range Transboundary Air Pollution. Nonetheless, as POPs are, unlike most other chemical products, also generated unintentionally, negotiators decided to include this aspect. This indicates that they sought to create an agreement regulating all aspects of POPs and not only those aspects related to POPs as products. This reveals that the Convention is, strictly speaking, not primarily "product-related", but "POPs-related".

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[320] The disposal aspect is often treated separately, due to the particular problems it poses.

[321] Halpaap and Huismans, (Fn 1), p. 11.

[322] In addition, this principle is even explicitly mentioned in the preamble of the Stockholm Convention, see para. 16 of the preamble.

[323] In fact, one of the reason for their "economic success" was that they are not toxic and for a long time no adverse effects were known – until their ability to deplete the ozone-layer was discovered.

2. Trade provisions

The Montreal Protocol and the Stockholm Convention both contain trade provisions, with regard to trade with non-parties as well as with regard to parties.

The main objective of non-party trade measures is the same for both instruments, namely creating "negative incentives" for non-parties to make them join the agreements. Given the worldwide effects of the regulated substances, a wide participation in the instruments is crucial to the achievement of their objectives. The specific manifestations of the measures differ, however. With regard to the Montreal Protocol, it is noteworthy that the non-party trade measures are not limited to the ozone-depleting substances themselves, but also cover products containing these substances. This enormously increases the economic effects of the measures. Trade with non-parties may only be permitted if the COP formally determines that the non-party is in full compliance with the provisions of the Protocol. In contrast, the non-party rules of the Stockholm Convention are limited to the listed substances themselves. Moreover, the relevant clause requires only a certification to be released by the non-party stating mainly that it is in compliance with the provisions of the Convention. Therefore, one can conclude that the non-parties trade measures are less stringent in the Stockholm Convention than in the Montreal Protocol.

Regulations on trade among parties were only successively included into the Montreal Protocol and comprise a licensing procedure and an export ban for countries which are not in compliance with a production phase out obligation. The purpose of both measures is to combat illegal trade. A similar objective is pursued by the trade measures of the Stockholm Convention. It requires parties to permit only imports or exports, respectively, for a use which is permitted for the party in question under Annexes A and B[324]. This aims at preventing "illegal use" in the relevant parties. Thus, both agreements use measures concerning trade among parties to enforce the provisions regarding domestic production and use. Put differently, the measures as such do not have an own inherent purpose, but seek to further the purpose of the domestic obligations. Therefore, they could be called "secondary"/accessory trade measures.

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[324] In addition, trade for the purpose of environmentally sound disposal is permitted.

3. Supportive measures

Both the Montreal Protocol and the Stockholm Convention incorporate various kinds of supportive measures. These include information exchange, international co-operation, but in particular technical and financial assistance for developing countries. These measures are aimed at enabling developing countries to meet their obligations under the agreements. An important element of the financial provisions of both agreements is that they explicitly require "additional" resources to cover "the incremental costs" of implementation measures. In addition, they create a kind of link between the implementation of the commitments of developing countries under the agreements and the providing of sufficient funding by developed countries[325]. This strengthens the position of developing countries[326].

4. Adding new chemicals to the agreements

At the time of the adoption of both agreements, negotiators were aware that successive adjustments of the agreements would likely be required by new scientific (and political) developments. Therefore, negotiators of the Montreal Protocol included Art. 6 calling upon parties to periodically assess the control measures and to establish "panels of experts" for this purpose. This assessment process has led, among others, to the successive inclusion of several new ozone-depleting substances. The Stockholm Convention contains a similar "revision clause" requiring parties to evaluate regularly the effectiveness of the Convention[327]. In addition, it provides for a particular article concerning the listing of chemicals in Annexes. Thus, while the adding of new substances to the Montreal Protocol is dealt with in the context of the regular assessment procedure, the Stockholm Convention has singled out this aspect and has devoted a special procedure to it. In fact, in both cases the inclusion of new substances is the result of an international assessment and weighing process. However, this process is more transparent and predictable in the case of the Stockholm Convention, which explicitly sets up the criteria and the procedure, culminating

[325] This link does not seem, however, to establish a legal condition in a strict sense.

[326] For a further analysis of the aspect of developing countries see the respective section in chapter four.

[327] Art. 16 Stockholm Convention.

even in the inclusion of an "appeal procedure"[328]. Both the formalization of the procedure and the definition of remarkably precise criteria aim at a reduction of the future discretion of states. Thus, they almost resemble decision-making rules deployed by national (administrative) rules.

III. Conclusion

The Montreal Protocol as well as the Stockholm Convention constitute the global response to the environmental and health challenges represented by certain chemical products: ozone depleting substances and POPs. Even if quite different from each other, both kinds of substances are characterized by the fact that their adverse effects are not limited to the territory of the country in which they are produced or used, but pose a worldwide threat. As a consequence, both agreements concentrate on setting up respective domestic management measures. In particular, both contain provisions regarding the reduction and/or elimination of domestic use and production. In addition, both treaties provide for measures regulating trade with parties, which are aimed at enforcing the obligations regarding domestic measures, measures concerning trade with non-parties and supportive measures.

The differences between both treaties can in most cases be traced back to the divergent kinds of environmental threats posed by the respective substances. Therefore, there is little sense in comparing the Montreal Protocol and the Stockholm Convention under the perspective of environmental benefits. Some aspects which have been derived from the above comparison shall, however, be highlighted. Firstly, it seems that, for various reasons, the Montreal Protocol takes more into consideration the special situation of developing countries. Secondly, it is noteworthy that the Stockholm Convention does not only address the issues of production and use, but also covers the stages of stockpiling and disposal. It could therefore be seen as the first international manifestation of the life-cycle approach. Both these aspects can more or less be seen as expressions of the factual differences between the substances that the agreements deal with. One element of the Stockholm Convention can, however,

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[328] One has to add, however, that in the case of the Montreal Protocol, efforts have been undertaken on the level below the formal language of the treaty, to institutionalize the reassessment procedure by setting out rules of procedure for this process by way of decisions of the COP.

clearly be identified as a further development of the Montreal Protocol, that is the inclusion of a special procedure for the adding of new substances to the annexes.

Chapter four: Overall Conclusions

At time of writing, four global and legally binding Multilateral Environmental Agreements had been concluded in the field of hazardous products, three relating to chemicals, one to genetically modified organisms. In addition, one global MEA exists on the transboundary movement of hazardous wastes. The analysis reveals that one cannot define one common category of MEAs in the field of hazardous substances. Rather two different types have emerged, which, in spite of considerable differences, have similar key characteristics: the first type includes the Basel Convention, the Rotterdam Convention and the Cartagena Protocol. The second one consists of the Montreal Protocol and the Stockholm Convention. The present chapter will, initially, compare both categories. Thereafter, the different approaches chosen by the analyzed MEAs shall be considered in the wider context of transboundary pollution. Finally, future perspectives in the field of hazardous products and waste shall be outlined.

A. Comparison of the two groups of MEAs

I. The Basel Convention, the Rotterdam Convention and the Cartagena Protocol

The factual background which led to the adoption of all MEAs of the first group is characterized by the fact that developing countries faced serious problems in controlling the import of hazardous substances, due to a lack of regulatory and enforcement capacity. This resulted in some spectacular incidents which caused public outcry and triggered the elaboration of international regulations aiming at the protection of importing developing countries. As a result, the first group of MEAs is typified by the fact that the agreements concentrate on trade in the regulated substances with a view to supporting developing countries, which face problems in controlling the import of these substances. To achieve this end, mainly three different mechanisms are used: the ban, the prior informed consent procedure and supportive measures.

The ban constitutes an international decision about the impermissibility of trade in hazardous wastes[329]. Thus, developing countries no longer have to decide on their own whether or not to import certain substances. Thus, a ban assists them in a way in the decision-making process. In addition, the ban has to be enforced by exporting countries. The major disadvantage of this approach is that the ban deprives importing countries of the possibility of taking a decision fitting their own specific needs. This is the reason why a ban seems to be acceptable only as a last resort. A total ban is therefore only included in the Basel Convention in its amended version, which has, however, not yet entered into force.

The key mechanism of the Rotterdam Convention and the Cartagena Protocol, and of the Basel Convention in its original version, is the "prior informed consent" procedure. Its manifestation differs considerably from agreement to agreement, mainly as a consequence of the different properties of the substances and their variable trade volume. The basic structure, however, is very similar. It is aimed at ensuring that the transfer of a certain product or wastes takes place only if the party of import has given its consent on the basis of an informed decision. Thus, the decision of permissibility is taken by the importing country[330]. As a consequence, the purpose of prior informed consent is not to safeguard the environment as such, rather, it aims at strengthening developing countries' capacity in decision-making and enforcement, with regard to the import of hazardous substances. The same objective is finally pursued by supportive measures, which do not regard a specific transfer, but focus on general capacity-building.

All three agreements also contain obligations requiring domestic measures to be taken with regard to hazardous substances. However, these provisions are of a very general nature and, therefore, assume a subordinate role. The implication is that the responsibility for the domestic management of hazardous wastes, hazardous chemicals and genetically modified organism remains broadly with each single state.

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[329] The total ban was only successively included in the Basel Convention by a formal amendment in 1994. This amendment has, however, not yet entered into force.

[330] Exceptions in form of (quite vague) substantive criteria which the importing country has to take into consideration in its decision apply in the case of the Basel Convention and, to a less extent, in the case of the Cartagena Protocol.

II. The Montreal Protocol and the Stockholm Convention

The international discussion which led to the adoption of the second group of MEAs was characterized by a focus on the fact that the use of these products, as such, in one country, can cause adverse effects in other countries or to the global commons. Therefore, these treaties focus on the regulation of the domestic management of these products.

Both MEAs provide for the phase out or reduction of production and use of the substances they deal with, even if they are manifiested in different manners. While the Montreal Protocol is limited to this aspect, the Stockholm Convention also addresses the phases of stockpiling and disposal. In addition, it contains regulations on the unintentional release of POPs. This reflects the fact that the risks of POPs are, in contrast to those deriving from ozone depleting substances, not confined to the phases of production and use. Thus, the Stockholm Convention can be considered as a comprehensive international approach to the management of POPs - a manifestation of the so-called life-cycle approach.

Both the Montreal Protocol and the Stockholm Convention also contain provisions with regard to trade with parties. However, the purpose of these regulations is very different from those measures contained in the first group of agreements. While in the case of the latter ones, trade measures concerning parties are the key instrument, in the Montreal Protocol and the Stockholm Convention they seek to prevent circumvention of the obligations which the agreements set out with regard to the domestic management of the substances. Thus, they mainly constitute a means to enforce these obligations, and may therefore be perceived as "secondary" measures.

Finally, the Montreal Protocol and the Stockholm Convention contain supportive measures. They are designed to enable developing countries to meet their obligations under the treaties, in particular by providing funding for the "incremental costs" deriving from the implementation of the treaties' obligations. In this regard, one can note that the language of these provisions is considerably more expressive than in those MEAs dealt with in chapter two. The reason for this may be seen in the different function of both groups of agreements. The Montreal Protocol and the Stockholm Convention are not primarily aimed at protecting developing countries, but rather at protecting the global commons. In this context, supportive measures

and special treatment provisions are an element of assisting developing countries, specifically with a view to supporting their actions on protection of these global goods. The support of developing countries is, therefore, not a specific aim as such, but rather a means to reach a further objective, which is in the interest of all countries. In contrast, the Basel and Rotterdam Conventions, and the Cartagena Protocol do, directly, benefit only the category of developing countries. On the other hand, if one criticizes the lesser degree of financial support in these agreements, one also has to take into consideration, that the supportive measures in these MEAs are only one instrument in an overall toolbox designed to support developing countries in controlling their imports of hazardous substances.

B. Placing the different approaches in the wider context of transboundary pollution

All surveyed MEAs have seemingly been developed on an ad hoc basis. Nevertheless, the analysis of the factual background which led to their adoption reveals a common pattern. The public discussions, preceding their negotiation, were strongly characterized by the transboundary nature of the environmental hazards associated with the respective substances. As a result, all of the analyzed agreements have a strong focus on the prevention of transboundary pollution. However, the kind of transboundary pollution which is addressed, and consequently the chosen regulatory approaches, differ quite considerably.

The history of the Montreal Protocol and the Stockholm Convention was characterized by the fact that their adverse effects are not limited to the territory of the state in which they are used. The use of a product in the territory of one country poses risks to other countries or to the global commons, which the affected countries cannot prevent on their own, as the source of the pollution is situated outside their jurisdiction[331]. Amelioration was only possible by agreeing upon global regulations, that limited thee sovereignty of states, with regard to domestic management, resulting in

[331] Note, however, that POPs chemicals, in contrast to ozone depleting substances, also pose harm to the immediate environment. States are able to prevent this kind of pollution by releasing respective domestic restrictions. They cannot, however, protect themselves against the effects derived from their high volatility and persistence enabling long-range transboundary.

a kind of environmental harmonization. This scenario could be considered to be, at least very similar to the situations which have traditionally led to the adoption of MEAs, that is situations in which the source of pollution, for example an air-polluting factory, is situated in one state, while the adverse effects reach beyond this state's borders. In these cases, states are *legally* not able to protect their own territory because the source of pollution, be it industrial factories or products, is situated in the territory of another state.

In contrast, the negotiations leading to the conclusion of the Basel and Rotterdam Convention and the Cartagena Protocol concentrated on a different kind of transboundary pollution, which is specific to products, that is pollution caused by the intentional transfer of these products (i.e. trade). To prevent this form of pollution, it is not necessary to impose restrictions to the domestic management of the respective substances, rather it is sufficient to regulate the transboundary pollution as such - this means to regulate the trade in these substances[332].

From a structural point of view, the latter kind of transboundary pollution differs in an important aspect from the forms of transboundary pollution that are traditionally addressed by MEAs, because every state has the legal possibility of preventing pollution caused by trade, by enacting import controls. However, the Basel and Rotterdam Conventions and the Cartagena Protocol respond to the fact that developing countries are often *factually* unable to protect themselves efficiently from this kind of transboundary pollution.

One can conclude that the two different approaches reflect the different manners of transboundary pollution which the public has associated with some hazardous products. Firstly, the use of certain products, as such, can affect other countries or the global commons. In so far, hazardous products pose problems similar to those traditionally addressed by MEAs. Secondly, and in contrast to most other hazardous activities, hazardous products can cause transboundary pollution when they are traded. This kind of transboundary pollution is structurally different from the traditional one and lead to the adoption of trade related MEAs.

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[332] For the sake of clarity, it should be specified that the trade itself does not cause the pollution. However, it enables the pollution, by bringing possible sources of pollution into the country.

C. Future perspectives

The present study has revealed that in the field of hazardous products – as in most other cases of environmental pollution –, MEAs which impose restriction on the domestic management are only globally acceptable with regard to those hazardous substances whose use, as such, in one country is perceived as possible to affect global commons or the territory of other states. This is the case for ozone depleting substances and POPs. In contrast, the negotiations of the Basel Convention and the Rotterdam Convention and the Cartagena Protocol were characterized by a widespread assumption of negotiators that the adverse effects of these substances could only affect other states by means of trade. As a result, only trade regulations seemed politically agreeable as they do not substantially affect the sovereignty of states with regard to the domestic management of the substances, but rather seek to enable importing developing countries to effectively exercise their existing sovereignty.

From an environmental point of view, and taking also into account approaches existing in the field of human rights law, this tendency as such may be criticized. However, even if one accepts it as a fact, one may criticize the limitation of the Basel and the Rotterdam Conventions and the Cartagena Protocol on trade, as all of the substances they deal with present different kinds of "international dimensions", which all reach beyond trade: in the case of waste, its (excessive) domestic generation is often one of the reasons for the extent of international trade. With regard to hazardous chemicals, one may question the assumption that (developed) countries may protect themselves effectively from the re-import of hazardous chemicals particularly in the form of pesticide residues. Finally, in terms of biotechnology, one may doubt whether the effects of growing GMO food may, in the long term, be locally limitable. Therefore, one can finally conclude that the product related MEAs focussing on trade, constitute an important recognition of the responsibility of the developed countries in terms of trade with developing countries. Nevertheless, it seems that the limitation of international regulations on the trade in the field of hazardous chemicals, GMOs and hazardous waste will, in the long term, be insufficient to cope with the various kinds of transboundary environmental and health problems which these products pose.