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THE ROLE OF MUNICIPALITIES IN ENERGY GOVERNANCE IN SOUTH AFRICA

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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.

Signed by candidate

S C Mosdell

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TABLE OF CONTENTS

CHAPTER 1

CONCEPTUALISING ENERGY GOVERNANCE AND ITS IMPORTANCE, GENERALLY, AND IN THE SOUTH AFRICAN CONTEXT

1.1 Introduction – energy and electricity use by humans over the course of time

In modern society, even in less developed countries, energy is an essential commodity. This is so for a number of reasons, but the most essential uses of energy in modern life are for generation of electricity, and for transportation.[1]

Human activities in contemporary society, especially in more developed countries, are heavily dependent on electricity, which provides light, heat and cooling, cooking facilities, and power for electrical appliances and electronic devices. Electricity is particularly necessary in the urban context. When power outages occur, essential urban services such as health care, transport, communications and water and sanitation services grind to a halt. Industrial and commercial activity ceases. The consequences are manifold for government, individuals, businesses, industry, and the economy as a whole.

Prasad reinforces the position that adequate energy is a basic survival need in that it is needed to meet other needs, for example the supply of water. Thus severe energy poverty can lead to malnutrition, disease and death.[2]

Energy policy-makers face an ongoing challenge in that they must continuously deal with increasing dependence of society on energy in all aspects of human life, and on increasing demand due to population growth, and people moving out of poverty into circumstances where they consume more energy.[3]

A tension prevails between the dependence of humans on energy, and the ability of energy systems to cater for their needs. Davidson explains that energy has been the key to economic development worldwide, but that the global energy system suffers two major drawbacks in the way that it is sourced, produced and used. These he says, are the fact that the overall

[1] This dissertation is focused primarily on the role of local government in South Africa with regard to electricity governance, rather than on its role in governance of transportation. However much of the legislation referred to and legal discussion contained herein is equally applicable to governance of transport matters by local government.

[2] Prasad G in Winkler, Davidson et al, p 61. The1998 White Paper on Renewable Energy also focuses strongly on the need for electricity for human development and protection. A more detailed discussion of this White Paper, is to be found in Chapter 2.

[3] In this regard see Anderson at p 78.

energy system is very inefficient, and that it has major environmental and social problems associated with it.[4]

The provision of electricity is considered to be central to the achievement of many of the Millenium Development Goals recorded at the 2002 World Summit on Sustainable Development in Johannesburg.[5] Besides having hosted this conference, South Africa is a signatory to the conference declaration, and has diligently pursued the furnishing of its country development reports. These are furnished annually to the United Nations Development Programme, which is the United Nations entity pursing achievement of these goals and monitoring the progress of participating states.[6]

Looking back in time, energy is a commodity which has been of enormous importance to humans since prehistoric times. The first energy source used by people was almost certainly wood. Archaeologists have found evidence of early man having used controlled fires as far back as the Early Stone Age, approximately two million years ago.[7]

In the late nineteenth century, at the time of the Industrial Revolution, coal became a dominant fuel source. This was followed by the invention of extractive processes to remove oil and gas from under the ground, which led to petroleum products becoming readily available for industrial, transport and other uses. In more recent times, physicists have discovered nuclear energy, derived from nuclear fission of unstable atoms, especially uranium, and nuclear power has become a major energy source in many countries.

It is commonly known and acknowledged in contemporary times that the burning of coal and other fossil fuels has caused environmental harm on a global scale, especially global warming caused by emissions of carbon dioxide and other gases. Nuclear energy does not cause emissions, but the risk of nuclear accidents is a deadly and serious one for communities close to

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[4] Winkler, Davidson et al, p 1.

[5] See Macdonald at page xvii of the chapter entitled 'The Importance of Being Electric' in Electric Capitalism, for a summary of how the availability of electricity supports the achievement of the Millenium Development Goals. It is explained how electricity is essential for poverty eradication, universal education, gender equality, reduced child mortality, combating disease and other health measures, and ensuring environmental sustainability (the last aspect is relates to electricity from renewable resources).

[6] The most recent report furnished by South Africa to the UNDP with regard to MDG goal achievements, is available on www.za.undp.org/.../south_africa/.../Reports. (Accessed on 13 January 2016.)

[7] See K K Hirst *The Discovery of Fire – Two Million Years of Campfires* on http://archaeology.about.com/od/ancientdailylife/qt/fire_control.htm. (Accessed on 25 November 2015.)

nuclear power stations.[8] Furthermore, humans have not yet found a completely safe method for disposal of nuclear waste.[9]

Florini and Sovacool write that global energy governance is currently on an unsustainable and conflict-prone path. There are issues of unreliable supply, brittle and vulnerable energy infrastructure, massive environmental degradation, and failure to deliver energy services.[10] Udall goes so far as to say that 'energy is the original currency', and that mankind is at the beginning of a period of resource nationalism.[11] Victor and Yueh endorse this view, saying that the decade between 2000 and 2010 has seen governments in all the large consumer nations of the world besieged by doubts about their energy security.[12]

The increasing demand for energy across the world has a number of consequences. Among these, the most challenging for governments is the association of energy generation with climate change, resulting from emission of greenhouse gases in the process of burning fossil-based fuels to generate electricity.[13] Victor and Yueh describe the energy sector as one of the most exciting technological frontiers in the world, with many countries changing their expectation as to what the sector should deliver, due to climate change.[14]

Across the world, renewable energy sources are being recognised as the safest and most desirable energy sources, as they are largely free of emissions and are non-depletable.[15] In South Africa the legislative framework explicitly promotes the development and use of renewable energy.[16]

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[8] This point is borne out by the consequences of leakage of radiation evidenced by the Chernobyl disaster in 1986. According to www.world-nuclear.org/info/safety-and-security/safety-of-plans/chernobyl-accident (author not stated) there were 30 immediate deaths from the nuclear accident, and 237 cases of acute radiation syndrome. Also there is a suspicion that leaked radiation caused widespread thyroid cancer in the vicinity. (Accessed on 13 January 2016.)

[9] See Magic Hour Films' 'Into Eternity', available for purchase or online viewing on http://www.intoeternitythemovie.com. (Accessed on 25 November 2015). This is a documentary film about the construction of Onkalo, the world's first deep underground nuclear waste disposal site, under construction in Finland and due for completion by 2020. In the film, it is emphasised that the safety of any method of disposal above ground cannot be guaranteed.

[10] Florini and Sovacool 'Bridging the Gaps', p 57.

[11] Udall, p 33.

[12] Victor and Yueh, p 61.

[13] A full discussion of the consequences of climate change is outside of the ambit of this dissertation. It should be noted however that climate change is associated with global temperature rise, sea level rise, extreme weather events, and changing patterns of rainfall. The importance of energy and climate change matters being managed concurrently is further discussed in Sub-chapter 5.4.

[14] Victor and Yueh, p 70.

[15] Information in the first four paragraphs of this chapter was gleaned from http://www.scienceclarified.com/scitech/Energy-Alternatives/The-Development-of-Energy. (Accessed on 25 September 2015). The wide acceptance of the principle that policy support is needed globally to support renewable energy development is also articulated by Sebitosi and Pillay at p 3312.

[16] See Chapter 2 of this dissertation, where the legislative framework is discussed. As mentioned in this Chapter, both the National Energy Act and the Electricity Regulation Act, the main legislative

In this dissertation it will be shown how municipalities in South Africa can play a valuable role in energy governance, which, it is posited, is a central element of their legislative responsibilities with regard to service delivery, upholding of the Bill of Rights, promoting a safe and healthy environment, promoting local economic development, and other issues.[17]

1.2 A brief history of electricity governance in South Africa

In order to contextualise the main discussion in this dissertation, which concerns the powers and responsibilities of municipalities in South Africa with regard to energy governance, especially with regard to electricity, this sub-chapter briefly explains the history of electricity governance in the country up to the present time.

In South Africa electrification of areas deprived of electricity under apartheid has been a politically charged issue for quite some time. During apartheid times service delivery to areas occupied by people of colour was neglected or totally lacking.

Prior to the Local Government Transition Act of 1993, and its successor in 1996, the privileged and lesser privileged parts of cities and towns, demarcated racially, existed under a regime of strict separation, geographically and in many other ways, including with regard to access to services. Bekker et al use the expression 'hived off' when describing the status of these areas, which were occupied by people of colour, and which were governed by their own separate local authorities, albeit with limited powers[18]. These areas were underprovided or not provided with basic services, and the apartheid state did not provide them with financial resources for electrification or for any other basic services.

Even in contemporary times, a substantial segment of the South African population is deprived of electricity. According to a 2014 report by Sustainable Energy Africa, six million metropolitan households remain unelectrified, and forty three per cent of South Africa's population are 'energy poor'.[19]

In South Africa governance of electricity has been centralised under the control of the national government for almost a century. The Electricity Supply Commission (Escom), the predecessor to Eskom Holdings Limited, the current power utility, was founded in 1923. In Chapter 2, the current legislative and policy framework applicable to provision and consumption of

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instruments with regard to national energy law, advocate the development and use of renewable energy.

[17] The legislative powers and responsibilities specific to municipalities are discussed in Chapter 3. Their roles and responsibilities in relation to human rights and energy are discussed in Chapter 4.

[18] Bekker et al, p 3127.

[19] Sustainable Energy Africa, p 5.

electricity will be outlined in detail. *Inter alia* mention will be made of the hegemonic role of Eskom and the national sphere of government which prevails currently in the sphere of energy governance.

A brief outline of the recent history of governance of electricity by Eskom, and its associated functions, from approximately the 1970's to the present time, is useful to understand the context in which Eskom currently operates.

During the 1970's and 1980's the Electricity Supply Commission, then known as Escom, driven by fears of energy insecurity due to political isolation, undertook a major construction and development programme, which included the construction of many major coal-fired power stations, and the Koeberg Nuclear Power Station. Steyn explains that between 1973 and 1985 the expenditure by Escom on capital projects increased threefold.[20] The rapid expansion programme came at a cost – Escom incurred substantial debt and increased its prices substantially. This led to a confrontation with the national government, then led by P W Botha. He appointed the De Villiers Commission of Enquiry into the Supply of Electricity in the Republic of South Africa in 1985. Pursuant to the findings of this commission, Eskom[21] was constituted as a statutory entity, intended to take up several of the recommendations for reform of the electricity supply industry going forward, in particular better financial management. However, according to Steyn,[22] the reforms proposed by the commission failed to remedy the fact that Eskom's over-expenditure had translated into high tariffs for consumers. For some years after the commission made its findings, Eskom had to slow its capacity expansion and focus on amortising its debt. By the early 1990's it succeeded in substantially reducing its debt and was favourably positioned to address the issue of national electrification.[23] At this point, it still had approximately forty per cent surplus capacity.[24]

In the years leading up to the democratic transition in 1994, there was much debate between Eskom and a number of private sector role players regarding electrification issues. Bekker refers to the private sector role players as 'energy policy activists'. In 1992 the Energy Development Research Centre at the University of Cape Town arranged a National Electrification Conference on behalf of the newly unbanned African National Congress. The major outcomes of this conference were the appointment of a National Electrification Forum, a decision to establish a national energy

[20] Steyn, p 23.
[21] The name of the new statutory entity was Eskom, as opposed to the previous commission known as Escom.
[22] Steyn, p 32.
[23] Bekker et al, p 3128.
[24] Steyn, p 32.

regulator, and an agreement between Eskom and the African National Congress to electrify 2.5 million homes between 1994 and 1999. [25]

It was a major focus of the Reconstruction and Development Programme undertaken at the time of political transition in 1994, to provide 'electricity for all'.[26]

In 1996, after the withdrawal of the National Party from the transitional government structures and the appointment of the first African National Congress Minister of Minerals and Energy, the government embarked upon the formulation of a new energy governance framework, which it published in the form of the *White Paper on the Energy Policy for the Republic of South Africa* in 1998. The White Paper stresses the need for increasing access to energy services,[27] and the importance of electricity for human well-being and development.[28] It deals with all types of energy derived from various fuel sources, but the provision of electricity is its major focus.

An important aspect of the White Paper is that it advocates the unbundling of Eskom into separate companies, and the introduction of competition into the electricity generation industry.[29] In recent times, with the introduction of the Renewable Energy Independent Power Producer Procurement Programme,[30] a small amount of the country's electricity has come to be produced by the private sector from renewable resources.[31] To a small degree this has given effect to diversification in the generation industry. However by far the bulk of the country's electricity – approximately ninety five per cent thereof - is produced by coal-fired power stations, owned and operated by Eksom.[32]

Subsequent to the publication of the White Paper the national government had to set about establishing institutional arrangements to plan and manage the electricity industry.

Because of the previous hiving off of areas occupied by people of colour, as described above, it was necessary to reintegrate municipalities under a regime of wall-to-wall municipal governance. This was achieved in 1999 with the coming into effect of the Local Government: Municipal Structures

[25] Bekker et al, p 3129.
[26] Reconstruction and Development Programme, Clause 2.7.7.
[27] White Paper, para 3.2.2.1, p 8.
[28] White Paper, para 6.1.4, p 32.
[29] White Paper, para 7.1.6.1, p 55.
[30] The REIPPPP is a programme whereby specified amounts of electricity from specified sources are procured from the private sector, in terms of a complex competitive bidding process.
[31] The Integrated Resource Plan for Electricity 2010 – 2030 indicates that the percentage of national electricity coming from sources other than coal is approximately five per cent.
[32] This is verified by Bohlmann at p 2.

Act No. 117 of 1998, and the Local Government: Municipal Demarcation Act No.27 of 1998.[33] Pursuant to this legislation, there were then, and still are, no areas in the country falling outside of the ambit of municipalities. Thus all citizens are now able to call municipalities to account for the provision of basic services, including electricity, and compliance with the statutory and other obligations of local government.

In addition to reconfiguring municipalities, the new post-transition government urgently needed to address service delivery backlogs, including the provision of electricity.

The imperative of the national government to ensure provision of electricity to all under a democratic governance regime has been pursued somewhat erratically over the course of time. Bekker et al explain that during the years 1994 to 1999 the government was occupied with dismantling of apartheid governance frameworks and institutions. From approximately 2000, institutions began to function effectively, and policy-making and governance returned to 'business as usual'. The government then proceeded to embark on its national electrification programme. Initially the focus of this programme was on broad infrastructure development. Subsequently the focus shifted to household energy provision and local economic development.[34]

The corporatisation of Eskom, previously Escom, occurred in 2002, with the coming into effect of the Eskom Conversion Act No. 13 of 2001. In terms of this legislation, Eskom became a public company with a share capital, with its entire shareholding in the hands of the state. Section 6(5) of the Act sets out mandatory considerations that must be taken into account when drafting the memorandum of articles of the new Eskom Holdings Soc Limited. These are the developmental role of the corporation, and the promotion of universal access to, and the provision of, affordable electricity, taking into account the cost of electricity, financial sustainability and the competitiveness of Eskom. Thus these are formal statutory objectives of Eskom.

The Act makes it is clear that although universal access to electricity and affordability thereof remained key issues, Eskom was henceforth to operate as a corporate entity. This would imply that services must be paid for, and a cost recovery model must be pursued. As explained later in this dissertation,[35] the application of strict business principles to the provision of electricity is problematic in various ways, especially in that it is not aligned to socio-economic upliftment imperatives.

[33] Both Acts came into effect on 1 February 1999.
[34] Bekker et al, p3127.
[35] This issue is raised in Chapters 4 and 5.

Macdonald stresses that electricity provision in South Africa has to a large extent been linked with capitalism,[36] since it has been the fuel firing the mines and industry. Whilst this is clearly so, electricity is also a critical life-enhancing commodity for people, as explained above. The socio-economic necessity of providing electricity to households in order to enhance their health and well-being does not fit well with a capitalist-driven electricity provision model.[37] Furthermore, hegemonic state control of the electricity industry does not fit with capitalism, which dictates that market forces must prevail. Thus there are opposing and contradictory considerations at play in the realm of electricity governance in South Africa.

Krupa and Birch are vociferously critical of the energy governance path which has been pursued to date by the national government of South Africa. They state that it has resulted in inequality and economic injustices as wealth and power grow increasingly concentrated, and that it has contributed to significant environmental degradation. The policy makers, they say, are aware of the challenges but have nevertheless opted for a gross-domestic-product-centric based wealth generation model, over one which could have more diffuse benefits and sustainable growth. There has been a 'myopic focus', they say, on top-down governance without improving grassroots involvement.[38]

The path of governance of electricity in South Africa during the past few decades, in particular the establishment of large scale coal-fired power generation facilities, has placed the country among the worst emitters of greenhouse gases in the world. The Greenpeace Report of 2011 on energy matters in South Africa states that South Africa is the twelfth largest emitter of carbon dioxide in the world, and the largest in Africa. It also has the worst per capita emissions in the world. At the time this report was written, South Africa's emissions were escalating. The report states that the country has a moral responsibility to address the issue, especially given that it has abundant renewable energy resources.[39]

1.3 Where do municipalities fit in?

In the evolution of electricity supply and governance in South Africa, as described briefly in this chapter, the role of municipalities has thus far been small. Governance of energy matters has been centralised with national government, and municipalities have only played a very limited role, mostly as distributors of electricity and as owners of local electricity reticulation systems. Until 1996, when the Constitution came into effect,

[36] Macdonald. P xv.
[37] This is a central theme to Macdonald's Electric Capitalism.
[38] Krupa and Birch, p 6255.
[39] Greenpeace Report, p 8.

municipalities were subservient organs of state with very limited authority. However the Constitution has now afforded municipalities independent status as autonomous organs of state.[40] Moreover it has imposed obligations on municipalities to secure the health and well-being of local citizens.[41]

The further chapters of this dissertation proceed from the standpoint that at the present time in South Africa there are two problems pertaining to electricity that need to be addressed urgently. Firstly, the national grid-based supply is severely constrained, as most South Africans know very well, having endured load shedding in recent years. Thus there is a concern about security of supply. Secondly, there is a need to reduce emissions from electricity generation, as more fully explained in subsequent chapters. Municipalities have roles and responsibilities to address both of these problems, in terms of the Constitutional and legislative framework, which will be discussed in Chapters 2 and 3. They also have roles and responsibilities with regard to the upholding of the Bill of Rights, and a right to electricity is increasingly being acknowledged in human rights discourse. This issue is explored in Chapter 4. In Chapter 5 consideration is given to ways in which municipalities can embrace their role with regard to governance of energy and electricity.

[40] Chapter 7 of the Constitution, in particular Sections 151 and 152, sets out the status and objects of local government. Executive and legislative authority is conferred upon municipalities, and other spheres of government are prohibited from compromising or impeding their exercise of municipalities' powers or performance of their functions.

[41] Sections 152(1)(b),(c) and (d) respectively require that municipalities provide sustainable services, promotion of social and economic development, and promotion of a safe and healthy environment.

CHAPTER 2

NATIONAL LEGISLATION AND POLICY PERTAINING TO ENERGY MATTERS, AND THE IMPORT THEREOF FOR MUNICPALITIES

2.1 Introduction

The national legislative and policy framework relating to energy matters provides the overarching governance framework within which municipalities must undertake planning and activities within this sphere.

This chapter contains an outline of the primary national legislative and policy instruments governing energy matters, and includes discussion on their interpretation and efficacy. Firstly, legislation and policy governing energy matters, broadly within the context of their status as environmental matters, will be considered. Thereafter, legislation and policy specific to energy and electricity will be considered. Municipalities are not at liberty to deviate from national legislation, either in their local by-laws or in their activities and undertakings.[42] However, as will be explained in the separate discussions on the various national legislative and policy instruments, the national legislative and policy framework is not restrictive but is rather empowering with regard to energy work by municipalities. This chapter leads on to Chapter 3, which reflects on legislative and policy instruments conferring powers and responsibilities specifically pertaining to energy matters on municipalities.

2.2 Energy governance via the Constitution and broad environmental legislation

Amongst other things, the way in which energy is produced, disseminated and utilised is an environmental issue. This is so because methods of energy extraction and generation, such as coal mining and the generation of electricity by burning coal, can have substantial environmental impacts.

Section 24(a) of the Constitution confers upon everyone in South Africa the right to *an environment that is not harmful to health and well-being*. Section 24(b) confers upon everyone a right *to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development*.

[42] Section 156(3) of the Constitution provides that a by-law that conflicts with national or provincial legislation is invalid. Municipalities, like all public and private entities, are bound to obey the Constitution and national and provincial laws.

Section 24 confers upon people in South Africa the right to demand of the state and of anyone else involved in the energy sector that they not be subjected to pollution that harms their health and well-being, produced in the course of generating energy. Furthermore, they are entitled to require of the state that it pursue an agenda of ecologically sustainable development.

The provisions of Section 24, and all the other fundamental rights, are reinforced by Section 7 of the Constitution, which requires of the state, including municipalities, that it protect, promote and fulfil the rights in the Bill of Rights. In addition they must be understood in the context of Section 36, which allows for laws of general application to limit the fundamental rights, to the extent that the limitation is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom, taking into account various factors. Thus it is permissible for national law meeting these criteria to limit the right established in Section 24.

The national electricity generation system is fundamentally fossil-fuel based, and this has adverse environmental impacts. This cannot be overturned overnight, as a shift to other methods of electricity generation inevitably would take time. In forward planning for provision of electricity, however, the state is obliged to promote and fulfil Section 24 and the imperative of sustainable development.

The concept of sustainable development was first widely embraced globally pursuant to the *Brundtland Report.* This report was prepared for the Rio Conference on the Environment and Development in 1992. The concept formed an integral part of the *Rio Declaration on Environment and Development*[43] ('Rio Declaration') which emerged from the conference. The action plan emanating from this conference, *Agenda 21 – Programme of Action for Sustainable Development* ('Agenda 21'),[44] had sustainable development as its main focus, as is apparent from its title and content.[45]

The *Brundtland Report* defines sustainable development as follows:

> *Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.*[46]

The bulk of electricity generated in South Africa is produced by burning coal – a depletable resource. The country has an emissions profile

[43] United Nations Conference Declaration No. A/CONF.151/26.
[44] Agenda 21 is an annexure to the Rio Declaration.
[45] For example Chapter 1, para 1.1: "… integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own; but together we can - in a global partnership for sustainable development".
[46] Brundtland Report, para 27.

which places it amongst the worst per capita emitters of greenhouse gases in the world.[47] It also has a national policy target, transposed into a public pledge in the international arena, to substantially reduce these emissions.[48] Given its current energy and emissions profile, and its commitments to reduce greenhouse gas emissions, there is a strong argument to be made that South Africa should not be including coal-fired power stations in its future energy resource planning.

Many writers are agreed that future energy planning by the national government of South Africa falls short of the sustainability standard. For example, Spalding Fecher and Williams express the following view:

> *Taken against most measures of sustainability, the South African energy sector does not fare well.*[49]

They go on to explain that the energy intensive economy of the country is unsustainable in two respects. Firstly, its reliance on depletable resources is unsustainable. Secondly, the manner in which coal resources are used has major adverse environmental impacts.

Failure on the part of national government to address sustainability issues fully in its energy planning constitutes a violation of Section 24.

The National Environmental Management Act[50] ('NEMA') also has relevance to energy matters. It is a broad environmental legislative instrument which must be adhered to by the state and other entities undertaking activities which may have an impact on the environment.[51] The activity of generating electricity, whether undertaken by the state or others, is an activity with potential impacts on the environment, and as such falls within its ambit.[52] It is possible to distil certain principles from NEMA which are of particular significance in relation to electricity generation.

Section 2(3) of NEMA requires that development must be socially, environmentally and economically sustainable. Section 2(4)(a) provides that sustainable development requires the consideration of all relevant factors, including certain specified factors. The stated specified factors most relevant to energy matters are Section 2(4)(a)(ii), which requires that pollution and

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[47] See footnote 39 above.
[48] At the 2009 Conference of the Parties to the United Nations Framework Convention on Climate Change, known as COP 15, President Zuma pledged on behalf of South Africa that its emissions would peak between 2020 and 2025 at between 500 and 550 megatons of carbon dioxide equivalent per year, and then decline to between 200 and 400 megatons per year by 2050.
[49] Spalding Fecher & Williams,p 9.
[50] Act No. 107 of 1998.
[51] In terms of Section 2 of NEMA, its principles apply to all actions of the state which may affect the environment. .
[52] Electricity generation falls within the ambit of NEMA in the general sense, being an activity with potential environmental impacts. It is also a listed activity requiring environmental authorisation, if the capacity generated exceeds certain limits.

degradation of the environment are avoided, or where they cannot be altogether avoided, are minimised and remedied, and Section 2(4)(a)(viii), which provides that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied. Furthermore, Section 2(4)(n) requires that global and international responsibilities relating to the environment must be discharged in the national interest. Reading these various segments of NEMA together, it is clear that there is an obligation incumbent upon the state, and all spheres of government, including municipalities, to deal with energy matters, including electricity generation, in a manner that both prevents pollution domestically and honours the international commitments of the country to reduce its greenhouse gas emissions.

Since electricity generation is an activity which may cause atmospheric pollution, it also falls within the ambit of legislation governing air quality. The primary national legislative instrument dealing with matters of air pollution and air quality is the National Environmental Management: Air Quality Act ('NEMAQA').[53] This Act binds all spheres of government, including municipalities, and empowers all of them to establish enforceable air quality standards. National standards are binding, but municipalities may establish standards that are equally strict or stricter than the national standards.[54] Thus there are potentially three layers of regulation – national, provincial and municipal, which can be used to regulate emissions produced by the energy sector. Besides being able to set local standards, municipalities are the licensing and enforcement authorities for air quality matters within their areas of jurisdiction.[55] Given that municipalities are at liberty to establish strict local standards, and given that the diligence or otherwise of enforcement is in their hands, they wield considerable power with regard to air quality governance.

In terms of Section 59 of NEMAQA, it is possible to apply to the Minister of Environmental Affairs for an exemption from the provisions of the Act. Eskom made such an application early in 2015 in respect of its obligation to comply with minimum emission standards laid down by the Minister. The Minister declined the application but granted Eskom a period of five years to comply with the minimum standards.[56]

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[53] Act No. 39 of 2004.
[54] Section 11(2) of the Act.
[55] Section 36 of the Act.
[56] Eskom's application was widely reported in the press in early 2015. The writer has not been able to find a copy of the application, neither a copy of the response by the Minister of Environmental Affairs. However news reports of February 2015 indicate that the Minister declined a total exemption to Eskom, but allowed the corporation a period of five years to comply with the standards. See for example the report on IOL Online of 25 February 2015, on

The success of Eskom in deferring its legal obligation to control its emissions seems to be indicative of a laxity in enforcement of air quality legislation against the energy sector, at national level. The decision of the Minister could be challenged by way of administrative review, or by way of a challenge to its constitutionality for violation of Section 24.

The close connection between air quality and energy issues affords municipalities an opportunity to align these two issues to contribute towards a transition towards a low carbon society. Thambirani and Diab express the view that it is possible to harvest co-benefits of air quality and energy governance, and that this is particularly important in developing countries such as South Africa.[57] Air quality governance measures should be selected and implemented, they argue, in alignment with broader energy and climate change policy.

In exercising their air quality governance powers, municipalities should be cognisant of the provisions of the 2011 *National Climate Change Response White Paper,* which embodies national policy guidelines for management of climate change. A discussion of this white paper follows in sub-chapter 2.4 below.

2.3 Energy governance via national legislation and policy specific to the energy sector and electricity industry

This section deals with national energy legislation that is specific to the energy sector and the electricity industry. Subject always to the supremacy of the Constitution, this specific legislation carries greater weight and authority over the sector and industry, on the basis of the principle of *generalia specialibus non derogant.*[58]

The legislative and policy instruments discussed in this sub-chapter are set out in chronological sequence, for the purpose of showing how energy governance instruments of this nature developed over the course of time. Mention is made of policy instruments which were published by government in between the various Acts of Parliament, but these are discussed more fully in Subchapter 2.4.

After the political transition in 1994, the government released the *White Paper on Energy*. The final version thereof was published in 1998. It reflected a number of policy aspirations, all of which were oriented towards making major changes to the energy sector. These included improving energy

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http://sbeta.iol.co.za/scitech/science/environment/major-air-polluters-given-a-reprieve-1823400 (accessed on 28 December 2015).

[57] Thambirani and Diab, p 6658.

[58] This is a principle of interpretation emanating originally from Roman law but still used today, which dictates that the provisions of general legislation must yield to those of specific legislation.

governance, including rethinking its institutional framework and the transparency and accountability thereof, providing access to affordable energy to all, and introducing diverse energy sources. The supply sector was to have been restructured, which was to have included the unbundling of Eskom, and a move towards a competitive energy market.[59]

A few years after the publication of the White Paper, the Eskom Conversion Act ('the Conversion Act') was promulgated.[60] In terms of this Act, Eskom was converted from its previous status as a parastatal agency of government, to a public company. Section 6(5) of the Act determines that when entering into the shareholder compact with Eskom, and when determining its articles of association, the Minister of Energy must take into account the developmental role of Eskom, and the promotion of universal access to and the provision of affordable electricity, taking into account the cost of electricity, financial sustainability and the competitiveness of Eskom. Other than these briefly stated policy-related imperatives, there is nothing in the Act outlining the motivation for the corporatisation of Eskom. However corporatisation clearly represented a move away from fiscally funded electricity – the intention was clear that Eskom would henceforth function according to commercial principles. The Conversion Act did not serve to apply the unbundling principle stated in the White Paper some years earlier. This cast some doubt on the intentions of the national government in this regard.

The *Renewable Energy Policy White Paper* of 2002, following shortly after the Conversion Act, indicated that the government was still intending to pursue the imperatives of the White Paper of 1998. It again provides for the intended unbundling of Eskom, in that it provides for the establishment of a transmission company to act as the electricity system operator, separate from the newly corporatised Eskom Holdings Soc Limited.[61] To date this has not materialised. The Independent System and Market Operator Bill to provide for this, was withdrawn from Parliament early in 2014.[62]

In 2004, the National Energy Regulator was established in terms of the National Energy Regulator Act.[63] The purpose of this Act was to establish the regulatory institution which would henceforth regulate the electricity, gas and petroleum industries. The powers of the regulator with regard to the various energy sectors are not delineated in the Act. It is purely a structural Act creating the institution of the National Energy Regulator, now known as

[59] Subchapter 2.4 below contains a more comprehensive discussion of the objectives of the White Paper.
[60] Act No. 13 of 2001.
[61] Section 2.4 below contains a more comprehensive discussion of the 2002 White Paper.
[62] Information re withdrawal of the Bill by the Minister of Energy sourced from https://pmg.org.za/bill/151/. (Accessed on 29 December 2015.)
[63] Act No. 40 of 2004.

NERSA. From the perspective of municipalities, the Act is important because all activities they may embark upon in the realm of energy and electricity are subject to the authority of the regulator, including the obtaining of licences for various activities.

Two years later, the Electricity Regulation Act ('the ER Act') emerged.[64] This Act creates the regulatory framework within which the regulator governs the electricity sector.

Section 2 of the ER Act delineates its objects. It is stated that the Act seeks to achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa. It furthermore seeks to ensure that the interest and needs of present and future electricity customers and end users are safeguarded and met, having regard to the governance, efficiency, effectiveness and long term sustainability of the electricity supply industry within the broader context of economic energy regulation. Section 2 also states that the Act seeks to facilitate investment in the electricity supply industry, and universal access to electricity. Furthermore it seeks to promote the use of diverse energy sources and energy efficiency, competitiveness in the industry, and customer end user choice. In addition it seeks to facilitate a fair balance between the interests of customers and end users, licensees and investors in the electricity supply industry and the public.

In light of the provisions of Section 2, the Act is positioned and articulated as a transformative instrument to reform and upgrade the electricity industry, and open it up to competitive processes. However it is also a regulatory instrument conferring wide discretionary powers upon the regulator with regard to the issuance of electricity generation, transmission and distribution licences.

The process for obtaining a generation licence is a rigorous one, and confers upon the regulator a wide discretion to attach such conditions as it may see fit.[65]

The ER Act also contains tariff principles which licensees must follow,[66] and determines broad conditions upon which they much grant access to their customers.[67]

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[64] Act No. 4 of 2006.

[65] Section 14 of the Act contains a long list of conditions numbered (a) to (z), but inexplicably excluding (h) and (v), which the regulator may impose upon granting a generation licence. The last of these is a catch-all provision entitling the regulator to impose 'any other condition prescribed by the Regulator'.

[66] Section 15 of the Act. The principles contained in this section are guidelines and allow municipalities a measure of freedom in the structuring of their tariffs. However municipal tariffs are subject to approval by the Regulator.

It is noteworthy that the ER Act does not restrict the category of persons to whom the various types of licence may be granted. Thus it is possible for all private sector entities and organs of state, including municipalities, to apply for the various types of licences.[68]

Whilst the way is open for generation licences to be granted to any category of person or entity, national government has retained stringent control over who may purchase electricity. Section 34 of the ER Act empowers the Minister of Energy to exercise such control. This section empowers him or her, in consultation with the regulator, to determine how and when new generation capacity may be sourced, and to determine the identity of the person or persons to whom electricity comprising new generation capacity may be sold.[69]

Acting in terms of the powers conferred in Section 34, the Minister, backed by the cabinet, determined in 2007 that Eskom would be the sole purchaser of electricity from external sources.[70] This decision has never been revoked.

The ER Act is thus a curious mix of transformative imperatives for the transformation of the electricity industry, and provisions conferring wide discretionary powers on the regulator with regard to the issuance of the authorisations and licences necessary for parties to participate in the electricity industry. In sub-chapter 2.5 further consideration is given to the importance of this Act for municipalities.

With the promulgation of the ER Act, the suite of legislation dealing with the various components of the energy sector was complete.[71]

If the ER Act left industry stakeholders in any doubt about the intent of government to effect transformation in the electricity industry, the 2008 National Energy Act ('NE Act')[72] seemed to settle all uncertainty in this regard. This is an overarching legislative instrument pertaining to the energy sector as a whole, setting out principles applicable to the electricity, gas and petroleum industries. Its promulgation after the separate legislation for various

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[67] Section 21 of the Act.
[68] Generation licences are currently regularly granted to independent power producers who are successful bidders under the Renewable Energy Independent Power Producer Procurement Programme. In addition there are a number of generation licences in the hands of municipalities, granted prior to the coming into operation of the Act, for example the City of Cape Town's generation licence to operate the Steenbras Dam Hydropower Facility.
[69] Section 34(1)(c) and (d) of the Act.
[70] Steyn at p7 explains that this was announced by cabinet at a national energy summit in 2007. The reason given was that security of supply was the government's top priority, over and above all other considerations including competition.
[71] The ER Act was preceded by the Gas Act No.48 of 2001, the Petroleum Products Act No.120 of 1977, and the Petroleum Pipelines Act No. 60 of 2003.
[72] Act No.34 of 2008.

industries comprising the sector would seem to be somewhat back-to-forward. It would arguably have been more logical to formulate overarching strategy first, and develop sectoral legislation from that. Although dated 2008, this Act only came into operation on 1 April 2011.

The Act is aspirational in its stated objectives, which are encapsulated in Section 2 thereof. These include ensuring uninterrupted supply of energy to the Republic, the promotion of diversity of supply of energy and its sources, the facilitation of effective management of energy demand and its conservation, the promotion of energy research, the promotion of appropriate standards and specifications for the equipment, systems and processes used for the producing, supplying and consuming of energy (sic), ensuring the collection of data and information relating to energy supply, transportation and demand, providing for optimal supply, transformation, transportation, storage and demand of energy that are planned, organised and implemented in accordance with a balance of security of supply, economics, consumer protection and a sustainable development (sic), provision for certain safety, health and environmental matters that pertain to energy, facilitation of energy access for improvement of the quality of life of the people of the Republic, the commercialisation of energy related technologies, ensuring effective planning for energy supply, transportation and consumption, and contributing to the sustainable development of South Africa's economy.

Besides its aspirational content, the Act enjoins the Minister of Energy to adopt measures that provide for universal access to appropriate forms of energy or energy sources for all the people of the Republic at affordable prices.[73] In addition it requires the Minister to develop and annually review an integrated energy plan, which must deal with specified issues, being the supply, transformation, transport, storage and demand for energy. These issues must be dealt with in a way that takes in account security of supply, economically available energy sources, affordability, universal access and free basic electricity, social equity, employment, the environment, international commitments, consumer protection, and the contribution of energy supply to socio-economic development.[74] Section 6 of the Act, which sets out these requirements, has not yet formally entered into force. However the Minister has published one draft integrated energy plan.[75] This will be considered in more detail in Section 2.4 hereof.

Both the ER and the NE Acts, outlined briefly above, are progressive in their endorsement of environmental protection and economic and social development, which are the fundamental elements of sustainable development. The legislation is also innovative in its endorsement of

[73] Section 5 of the Act.
[74] Section 6 of the Act.
[75] Draft Integrated Energy Planning Report, 2012, published for public consultation in June 2013.

competition in the electricity industry. However Section 34 of the ER Act, as explained, entitles the Minister to control the identity of the purchaser when he or she makes a determination that new generation capacity is needed to ensure the continued uninterrupted supply of electricity.[76] The government has used this provision to retain the role of Eskom as the sole entity managing grid-connected electricity. Section 34 is also the provision in terms of which the Minister established the Renewable Energy Independent Power Producer Procurement Programme ('REIPPPP'). Currently the cabinet determination of 2007 referred to above dictates that only Eskom is authorised to purchase electricity from this programme. Thus the renewable energy industry is developing within an anomalous legislative environment, which favours its development, but at the same time is effectively subject to strict regulation.

A municipality wishing to ensure security of supply for its citizens by way of direct purchase of electricity from an independent power producer has to seek a determination from the Minister to the effect that it be designated as the purchaser of electricity from a source chosen by the Minister in terms of Section 34, or from a source procured by the municipality. If the Minister should decline to make such a determination, his or her decision in this regard could be taken on review in terms of the Promotion of Administrative Justice Act.[77]

2.4 National policy instruments relating to energy governance

Policy instruments, even those of national government, do not have the force of law. However municipalities cannot ignore national policy instruments – at the very least they may be taken to reflect the thinking of government with regard to possible future development of the law. Also, where the meaning and intent of legislation is unclear, clarity can be sought with reference to policy.

The most comprehensive and significant national policies pertaining to energy governance in South Africa are the 1998 *White Paper on Energy*, the 2002 *White Paper on Renewable Energy*, and the 2011 *National Climate Change Response White Paper.*

[76] Section 34 of the ER Act.

[77] Act No.3 of 2000. The grounds of review which could be invoked are set out in Section 6 of the Act. This dissertation does not permit a full consideration of the merits of possibly invoking these grounds. However those which are most likely to apply to this situation are suspicion of bias (bias towards protecting the interests of Eskom), non-compliance with a mandatory and material procedure or condition prescribed by an empowering provision (non-compliance with Section 24 and the stated objects of the National Energy Act and the Electricity Regulation Act), the action not being rationally connected to the purpose for which it was taken (the purpose should be linked to the objects of the legislation referred to, including introducing competition in the energy industry and promoting security of supply and diversification of supply), and overriding unreasonableness.

The 1998 *White Paper on Energy* was a watershed national policy document of the new democratic government and cast a new light on energy governance.[78] Its most salient policy directives are set out in Section 3.2.2 thereof. These are increasing access to affordable energy services, improving energy governance, stimulating ecnomic development, managing energy and environment related health and environmental health impacts, and securing supply through diversity. Almost twenty years later, the aspirations reflected in the White Paper have not been realised.[79]

The 2002 *White Paper on Renewable Energy* followed shortly after the World Summit on Sustainable Development in Johannesburg. In the problem statement of this document it is acknowledged that South Africa has to play its part in reducing greenhouse gas emissions, and that it must therefore develop a framework for the renewable energy industry to operate and grow.[80] In quantitative terms, the White Paper sets the goal of sourcing 10000 Gigawatt hours per annum of energy from renewable sources by 2013, which, it is stated, will contribute to approximately 4% of the projected energy demand.[81] As at the end of 2014, the total estimated renewables capacity in South Africa was 343 Gigawatt hours per annum.[82] Thus it appears that the White Paper was over-ambitious in this regard.

It is stated in the White Paper that the envisaged introduction of 10000 Gigawatt hours per annum into the energy mix will be equivalent to replacing two coal fired power stations.[83] Subsequent to the White Paper, Eskom embarked on the procurement process for two new coal-fired power stations known as Medupi and Kusile.[84] These are currently under construction. Thus the new build programme of Eskom and the stated imperatives of national government in in its policy documents are misaligned.

The White Paper also acknowledges that a time will be reached when the cost of electricity generated from renewable sources will be less than the

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[78] Paragraph 2.3 above sets out the essential policy directives contained in the White Paper.
[79] Baker, writing in 2011, verifies at p 5 that many of the objectives stated in the 1998 White Paper have not been realised, including the stated intent to source 30% of electricity from renewable sources.
[80] White Paper, page viii.
[81] White Paper, page ix.
[82] Department of Energy 'State of Renewable Energy in South Africa', p18.
[83] White Paper, p 25.
[84] Details of these two projects can be found on fact sheets published by Eskom and available for download on http://www.eskom.co.za/Whatweredoing/TransmissionDevelopmentPlan/Documents/medupi%20fact%20sheet%20sept2013.pdf and http://www.eskom.co.za/AboutElectricity/FactsFigures/Documents/Kusile_and_Medupi.pdf. (Accessed on 15 January 2016).

cost of coal-fired electricity. As at the time of writing at the dawn of 2016, this is already the case in South Africa.[85]

Subsequent to the two landmark white papers in 1998 and 2002, the *Free Basic Electricity Policy* of 2003 ('FBE Policy'), the *Free Basic Alternative Energy Policy* of 2007 ('FBAE Policy'), and the *Electricity Pricing Policy* of 2008 ('EP Policy'), were published.

The FBE and FBAE Policies are somewhat brief and sketchy documents.

The FBE provides for the allocation of free basic electricity packages by municipalities to consumers. The limit of the free basic allocation is 50 Kilowatt hours per month, which is expressed to be sufficient for lighting and media access, and limited ironing and water heating.[86] Municipalities have a choice to implement a broad-based approach, allowing the free basic electricity to everyone, or a targeted approach, allowing it to those who apply.[87] Funding for the free allocation is to be provided by the national fiscus.[88] Municpalities with adequate resources, in particular metropolitan municipalities, are encouraged to fund free basic electricity via cross-subsidisation from paying customers.[89] Municipalities are afforded freedom to offer special tariffs to categories of customers, within the framework of the FBE policy.[90]

The Free Basic Alternative Energy Policy of 2007 is a somewhat confusing document. On reading its objectives as set out in paragraph 1.2 of the policy, namely to facilitate access to energy services by households without access to electricity, and to address their socio-economic issues and health risks, one could be forgiven for thinking that the policy proposes renewable energy solutions for households of this nature. The policy provides that upon identification of an area as being one to which the policy applies, a municipality must provide an alternative energy carrier to each household therein in the amount of R55 per month, increasing annually at the rate of 1.5% above the rate of inflation. This they may do, says the policy, by providing paraffin, liquefied petroleum gas, coal or bio-ethanol gel.[91] All of these substances have their own drawbacks and associated hazards - health

[85] Department of Energy & National Treasury 'Independent Power Producers Procurement Programme: An overview', at page 10, contains a graph of the renewables portfolio price trends for the four bidding windows of the REIPPPP. The average price reduction depicted for the various renewable technologies is from R2.37 per KW/h to R0.77 per KW/h. As per the Eskom 2015/2016 tariff schedule, the charge per KW/h in peak periods levied by Eskom can be as high as R2,56.
[86] FBE Policy, para 4.1(iv). It is not clear why ironing is mentioned, whereas cooking and refrigeration are possibly greater priorities in poor households.
[87] FBE Policy, para 4.2.
[88] FBE Policy, para 4.4.1.
[89] FBE Policy, para 4.4.2.
[90] FBE Policy, para 6.
[91] FBAE Policy, Annexure 1.

and safety hazards in the case of paraffin, coal and liquefied petroleum gas, and the difficulty of acquiring suitable appliances in the case of all four. There is no mention of solar photovoltaic home systems, which are now widely acknowledged to be a suitable off-grid solution for communities remote from the electricity grid.[92]

In the Sustainable Energy Africa Report of 2014 entitled *Urban Energy Poverty in South Africa*, it is stated that the FBAE Policy has not achieved any of its purported goals, as neither municipalities in rural areas nor metropolitan municipalities have implemented it.[93]

The national government released the Electricity Pricing Policy in 2008. This is a detailed policy document setting out principles which must be applied in the electricity industry as a whole, including by generators, transmitters and distributors. The fundamentals for electricity pricing by all of these operators are set out in Section 2.1 of the policy. These are a reiteration of the provisions of the tariff principles set out in Section 16 of the ER Act. In this section it is stated that the setting of prices, fees and tariffs must enable a licensee - it appears any type of licensee - to recover the full cost of its licensed activities, including a reasonable margin or return. Furthermore, such prices must provide for incentives for continued improvement of the technical and economic efficiency with which services are provided. In addition consumers must be given proper information regarding the costs that their consumption imposes on the licensee's business. Also, there must be no discrimination between customer categories. However the cross-subsidy of tariffs to certain categories of customers is permitted.[94] The last two statements are mutually contradictory, as cross-subsidisation is inherently discriminatory. The policy goes on to state principles extracted from the Local Government: Municipal Systems Act which apply to tariff setting.[95] It must be noted that the discretion of municipalities with regard to electricity tariff determination is not unfettered, since their tariffs must be approved by NERSA in terms of Section 4 of the ER Act.

Section 2.6 of the policy provides some guidance with regard to the dilemma of outlawing discriminatory pricing whilst allowing cross-subsidisation. Cross-subsidisation, it says, is permissible only under specific cross-subsidisation/developmental programmes, and must be transparently reflected to unlock the full potential of electricity for all.[96] Thus it seems that

[92] The benefits of solar photovoltaic home systems are further discussed in Sub-chapter 5.4 below.
[93] The SEA Report on Urban Energy Poverty, at p 12, explains the hazards associated with these fuels.
[94] EP Policy, Section 2.1
[95] The provisions of the MSA relevant to energy governance are discussed in Chapter 3.
[96] E P Policy, Section 2.6.

there is a discretion on the part of the licensee to establish differentiated tariffs provided the motive for doing so is developmental in nature.[97]

Since 2010 the Department of Energy has undertaken the compilation of national energy planning policy documents, albeit is a somewhat tardy manner. A draft Integrated Energy Plan, as required by Section 6 of the National Energy Act, was published for public comment in May 2013. Since Section 6 has not yet come into effect, there is no statutory obligation on national government to formulate this plan, which could account for it not having been finalised. The IEP deals with the energy sector generally, including gas and petroleum products.

The IEP objectives are stated to be security of supply, minimisation of cost, access to energy, diversification of supply, minimisation of emissions, energy efficiency, localisation of energy planning, technology transfer, job creation and conservation of water.[98] These objectives are aligned to the imperatives contained in the National Energy Act, except that minimisation of emissions and conservation of water are new introductions. These additions are reflective of resource concerns which have arisen since the NE Act was promulgated. The reduction of emissions became a national priority after the 15th Conference of the Parties of the United Nations Framework Convention on Climate Change held in Copenhagen in the latter part of 2009, at which South Africa made bold and public commitments to reduce its emissions.[99] The concern about water conservation emanates from a general awareness globally about conservation of water resources.[100]

The draft contains no specific policy directives other than broad conceptual ideas and objectives. It is a scenario-sketching document designed to stimulate debate and discussion. In Section 6 thereof, the base case scenario reflecting the current energy resource and usage situation is sketched, and this is followed by the outlining of a number of 'test cases' going forward. The test cases are said to represent scenarios deviating from the current 'business as usual' scenario.[101] The policy issues identified as being deviations from the business as usual scenarios are the 'peak-plateau-decline emission limits test case', the 'emission limit – no nuclear build programme' case, the 'renewable energy target' case, the 'emission limit – natural gas' case, the 'carbon tax case', and the 'low/high crude oil price' sensitivity analyses.[102] A full discussion of these scenarios is beyond the ambit of this

[97] The flexibility enjoyed by municipalities to determine tariffs is again discussed in Sub-chapter 5.6.3.
[98] Draft Integrated Energy Plan, p6.
[99] Detail of the commitments made by South Africa is set out in footnote 48 above.
[100] There is currently much civil society activism and awareness around water conservation issues. An example is the international organisation known as 'Blue Circle'. Details of its activities may be found on www.bluecircle.org.
[101] Draft Integrated Energy Plan, p 127.
[102] A summary of these appears on p 15 of the plan.

dissertation. However with a variety of scenarios being explored in the plan, it is essentially a discussion document without clear policy orientation.

The Integrated Resource Plan for Electricity 2010-2030 ('the IRP') is a planning document dealing specifically with electricity resources, formulated in terms of the prescripts of the Electricity Regulations on New Generation Capacity promulated under the ER Act.[103] It articulates the policy of the Department of Energy with regard to the respective percentages of electricity that will be sourced from coal, nuclear, hydro-electricity, gas turbines, and renewables, in the period under consideration. The plan advocates diversification of sources, but this includes major investment in nuclear power, and a relatively small percentage of renewables. At the time of its drafting the cost of renewable energy was still substantially higher than coal-fired power. This has since changed, as explained above.[104]

The intention is expressed in the IRP that it should be revised every two years. This has not occurred. A draft update to the IRP was published for comment in 2013, but this was not accepted by the cabinet. The update took into account changes in the evolution of technology, and the fact that electricity demand had diminished since the previous IRP. It contains more ambitious renewables targets, and advocates postponement of the decision to expand the country's fleet of nuclear power stations. It also advocates a flexible decision making process going forward with regard to electricity resources.[105]

The *National Climate Change Response White Paper* of 2011 followed upon the publication of the *National Climate Change Response Green Paper* in 2009. The white paper expressly aligns South African climate change policy to the findings of the International Panel on Climate Change and the United Nations Framework Convention on Climate Change.[106] Various greenhouse gas mitigation and climate change adaptation strategies are posited in the white paper. For purposes of this dissertation the mitigation strategies are the most relevant as these are linked to energy governance. It is stated that the South African greenhouse gas mitigation strategy is informed by two imperatives. These are the need to contribute to the global effort to reduce greenhouse gas emissions, and the need to manage development and eradicate poverty within the country. The approach to mitigation is reflected in a list of strategies.

Firstly, the national emissions reduction trajectory is to be used as a benchmark against which the collective outcome of all mitigation actions will

[103] GNR 499, 4 May 2011, GG 34262.
[104] Details of the pricing trends for renewables as opposed to coal-fired energy are given in footnote 85 above.
[105] A summary of the policy proposals of the update can be found on page 8 thereof.
[106] White Paper, p 9.

be measured. Secondly, desired sectoral mitigation contributions are to be defined and identified. Thirdly, 'carbon budgets' are to be determined for industries with the worst greenhouse gas emissions profiles. Fourthly, industries identified as serious emitters will be required to formulate mitigation plans detailing how they intend to achieve their required mitigation outcomes. Fifthly, the optimal mix of mitigation strategies is to be found in order to further sustainable development and job creation. Sixthly, economic instruments are to be developed to help realise the country's emission reduction aspirations. Lastly, the seventh strategy is to establish a country-wide data collection system for purposes of monitoring and evaluation.[107]

Five years after the publication of the White Paper, only the fourth strategy appears to be in the process of implementation.[108]

In the course of transposing these strategies into law, assuming there is still intent to do so, national government will have to consult extensively not only with the industrial sector, but also with municipalities in their capacity as regulatory authorities in the sphere of air quality. Thus municipalities, particularly those with polluting industries within their areas of jurisdiction, should have an opportunity to play a role in moulding the energy and climate change regulatory regime going forward.

2.5 A municipal perspective on national law and policy pertaining to energy governance

The Constitution, NEMA and NEMAQA all favour sustainable development, including environmental protection, and do not support the current predominant methodology utilised by Eskom of generating electricity by burning coal. The right to clean and sustainable electricity can be seen as an element of the environmental right, which municipalities are obliged to uphold.

The legislation specific to the energy sector and the electricity industry is similarly in favour of sustainable development, environmental protection, security of supply, diversification of sources, and renewable energy.

Both the broader constitutional and environmental legislation and the sectoral legislation dealing with energy and electricity, as described above, constitute national law and as such establish a legally binding regime relating to energy and electricity governance which is binding on all organs of state and the private sector. This is supplemented by legislation specific to

[107] Detail of these strategies appears on pages 25 and26 of the white paper.
[108] On 8 January 2016, the Minister of Energy published draft regulations regarding the requirement for certain industries emitting certain substances to have pollution prevention plans. Aside from this, the imperatives of the White Paper have not found implementation. In this regard see Worthington et al at page 27.

municipalities which delineates their powers and responsibilities, many of which are relevant to the energy sector. This legislation is considered in Chapter 3.

What can municipalities take from national policy on energy and electricity matters? The three white papers on energy, renewable energy and climate change response, which are the cardinal policy documents on the subject, contain numerous policy directives in favour of sustainable development, especially a shift away from polluting coal-fired power generation to renewables, and ensuring energy security through diversification of supply sources. Thus municipalities can justifiably say that energy governance initiatives on their part which are oriented towards sustainable development, diversification of supply and deployment of renewables, if they undertake these, are aligned to national policy directives. The energy planning documents, being the IEP and the IRP, reiterate the policy orientation of the white papers in their general discussion, but they do not indicate clear targets and mechanisms to achieve a substantive shift towards renewable energy. Indeed, the procurement and construction of Medupi and Kusile seem to belie the imperatives mentioned in the general discussion. It is also questionable whether the adherence to the nuclear build imperative is aligned to the policy statements.[109]

A persuasive argument could be made that the resource allocation percentages reflected in the IRP are unlawful in view of their non-adherence to the constitutional and legislative imperatives contained in legislation, because they reflect only a low percentage shift towards renewable energy by 2030, whilst the legislation supports a more substantive shift. In particular they violate the Section 24 of the Constitution. This could serve as the basis of litigation by concerned citizens and interest groups, including municipalities. At the time of writing, Medupi and Kusile are already under construction, but the government's nuclear procurement programme is at the inception stage and could realistically be challenged.

As mentioned above, South Africa made commitments at the international climate negotiations in 2009 to make substantial reductions to its greenhouse gas emissions. There would seem to be a credibility gap however between these commitments and energy governance decisions made by government, in particularly the decision to build Medupi and Kusile. This gap is due largely to the fact that the emissions reduction imperative has not been formalised into law in South Africa. Turton and Baretto are vociferous in their articulation of the need for a greenhouse gas emissions reduction policy. They were writing in 2006, prior to the articulation of the targets by the President in 2009, and their writing is not specific to South Africa, but it

[109] Some would argue that nuclear technology is clean technology. This is questionable. See comments in Chapter 1 in this regard.

nevertheless contains cogent comment which is relevant in the South African context. They express the view that there are potential strong synergies between emission reduction policy, if formally legislated, and the achievement of security of supply through diversification of sources of electricity.[110]

Thus there is a mismatch in South Africa's energy law and policy and its on-the-ground energy planning. It appears that the environmental and sustainability imperatives reflected in energy law and policy are not given priority when government makes practical energy planning decisions.

As pointed out by Lund-Thomsen, [111] South African environmental and energy legislation does not challenge the dominant neo-liberal economic development strategy of the government, and it does not deal with issues pertaining to service delivery, poverty alleviation, human rights and environmental and energy justice. However it does provide an enabling framework to allow municipalities to embark on local energy planning in a sustainable manner, and to initiate and promote the establishment of a system of secure energy services at local level. This is both a challenge and an opportunity.

In Chapter 3 consideration will be given to legislation specific to municipalities which has a bearing on energy matters.

[110] Turton and Barreto, p 2247.
[111] Lund-Thomsen,p 13.

CHAPTER 3

STATUTORY POWERS AND RESPONSIBILITIES OF MUNICIPALITIES RELEVANT TO ENERGY GOVERNANCE

3.1 Introduction

The advent of the new constitutional democracy in South Africa brought a fundamental shift in the status of municipalities. They are no longer a tier of government, subservient to provincial and national government, but are an independent sphere of government with autonomous powers, subject to certain constitutional constraints, as explained below. Moreover, they have a whole new host of responsibilities and are more accountable to communities than before. This applies in the sphere of energy governance, and in many other spheres.

In this chapter the legislative provisions relevant to energy matters which govern municipalities are outlined and interpreted. Reference is also made to relevant case law regarding municipal powers and responsibilities.

3.2 Relevant constitutional provisions

Section 151 of the Constitution, headed 'Status of Municipalities' requires that municipalities must be established for the whole of the territory of South Africa, and vests their legislative and executive authority in their municipal councils.[112] Section 151 (3) confers upon municipalities the right to govern, on their own initiative, the local government affairs of their communities, subject to national and provincial legislation, as provided for in the Constitution. Section 151(4) provides that the national and provincial spheres of government many not compromise or impede a municipality's ability or right to exercise its powers or perform its functions.

It is clear from the wording of Section 151 that municipalities are autonomous, subject to their obligation to comply with national and provincial legislation. Section 152 affords further insight into the nature of the municipal sphere of government. It sets out the objects of local government, these being to provide democratic and accountable government for local communities, to ensure the provision of services to communities in a sustainable manner, to promote social and economic development, to promote a safe and healthy environment, and to encourage the involvement of communities and community organisations in the matters of local government.

[112] Section 151(1) and (2).

Of particular relevance for purposes of the present discussion are the requirements for sustainable service provision and a safe and healthy environment, both of which point towards providing energy services in a sustainable and environmentally sound manner. However all of the objects stated in Section 152 can be taken to have some significance. Democratic and accountable government includes the provision of sustainable energy services to people in a manner best suited to their needs. Social and economic development is intimately interwoven with the availability of sustainable and secure energy services.[113]

In addition to the status and objects of municipalities as set out above, Section 156, entitled 'Powers and Functions of Municipalities', states that municipalities have executive authority in respect of and have the right to administer the local government matters listed in Part B of Schedule 4 and Part B of Schedule 5, and any other matter assigned to them by national or provincial legislation.[114] Section 156(4) provides that the other spheres of government must assign to a municipality, by agreement and subject to any conditions, the administration of a matter listed in Part A of Schedule 4 or Part A of Schedule 5 which necessarily relates to local government, if the matter would most effectively be administered locally, and the municipality has the capacity to administer it. Section 156(5) establishes incidental powers in favour of municipalities, stating that a municipality has the right to exercise any power concerning a matter reasonably necessary for or incidental to the effective performance of its functions.

In seeking to understand what limits there are to the categories of matters over which municipalities have authority, a careful analysis of Section 156 is useful. Section 156(1), read in isolation, could be taken to mean that municipal authority is limited to the matters listed in Schedules 4B and 5B. However the mandatory assignment provisions of Section 156(4) and the conferral of incidental powers in Section 156(5) suggest otherwise. Furthermore, looking at the headings of the two schedules referred to reinforces the position that the B parts of these schedules are not meant to restrict the powers of local government to the matters listed therein. The heading to Schedule 4 is 'Functional Areas of Concurrent National and Provincial Legislative Competence' and that of Schedule 5 is 'Functional Areas of Exclusive Provincial Legislative Competence'. The heading of part B of both schedules is 'The following local government matters to the extent set out in Section 155(6)(a) and (7). Section 155(6)(a) provides for monitoring and support of municipalities by provincial governments, and Section 155(7) provides for the power of national and provincial governments

[113] Chapter 1 contains more detail regarding the importance of energy for social and economic development.
[114] Section 156(1).

to see to the effective performance by municipalities of their functions listed in the schedules. Thus the parts B to the schedules list matters in respect of which the other spheres of government may involve themselves in matters administered by municipalities. These lists do not purport to delineate the sum total of municipal governance powers.

In 2013 the Kwa-Zulu Natal High Court had to determine the ambit of municipal powers and functions in relation to the constitutional schedules, in the matter of *Le Sueur v Ethekwini Municipality.*[115] The court had to consider whether municipalities have authority with regard to environmental matters, notwithstanding the fact that 'environment' is not listed in Part B of either Schedule 4 of Schedule 5, but in Part A of Schedule B. The court found that environmental matters are of necessity dealt with by all spheres of government, and that the listings in Parts 4B and 5B of local government matters should not be interpreted as a strict delineation of the sum total of local government powers.[116]

The significance of the Le Sueur judgment for the present discussion is that it supports the argument that there are matters which are of a cross-cutting nature and must of necessity be dealt with by all spheres of government. Energy is not listed at all in the two constitutional schedules. It must however be an aspect of a safe and healthy environment, and of local economic development, both of which municipalities are constitutionally mandated to govern. This is so because of the potentially severe impacts of energy generation on the environment, and because local economic development is heavily dependent on a secure energy supply.[117] Furthermore, many other matters dealt with by municipalities are dependent upon energy. For example, water and sanitation works cannot function without an energy supply, and the consequences of these potentially ceasing to function could be dire. The same is true of airports, public health facilities, and public transport, to mention a few more examples.

Thus, it is posited, a correct interpretation of the relevant constitutional provisions, reinforced by the position taken by the court in *Le Sueur,* leads to the conclusion that energy is a matter of a cross-cutting nature which must of necessity be governed by all spheres of government, including municipalities, subject to the Constitution and the provisions of national and provincial legislation.

[115] Le Sueur and Another v Ethekwini Municipality and Others (9714/11) [2013] ZAKZPHC 6 (30 January 2013).
[116] Para 20 of the judgment.
[117] Chapter 1 elaborates more fully on the cross-cutting nature of energy governance.

3.3 Provisions of the Local Government: Municipal Systems Act ('MSA')[118] relevant to energy governance

The MSA is the most broad-based of the legislative instruments specific to municipalities, and it delineates their broad functionality and orientation. The discussion in this regard will focus on the sections of the MSA which contain empowering and regulatory measures relevant to governance of energy and electricity matters by municipalities. Amongst these, Section 23 is the most significant. In terms of this section, a legislative requirement is set that municipalities must be developmentally oriented and must undertake developmentally oriented planning. Section 23(1)(a) enjoins municipalities to strive to achieve the objects of local government as set out in Section 152 of the Constitution. Section 23(1)(b) requires that they give effect to the developmental duties of municipalities as set out in Section 153 of the Constitution.[119] Section 23(1)(c) requires that, together with other organs of state, contribute to the progressive realisation of certain of the fundamental rights. Those specified in this subsection are those contained in Sections 24 (the environmental right), 25 (the property right), 26 (the right to access to housing), 27 (the right to healthcare, food, water and social security), and 29 (the right to education).[120] This subsection would seem to be superfluous, since all organs of state have a general obligation to respect, protect, promote and fulfil the fundamental rights, in terms of Section 7(2) of the Constitution. However it does suggest that the rights mentioned are of specific concern for municipalities. It is not clear why the property right is included, but this could be because municipalities have a duty to uphold the right to access to housing. It is even less clear why the right to education is included, since this is a function carried out by national and provincial governments.

Section 25 of the MSA imposes the requirement that municipalities must have integrated development plans. Before the importance of this requirement for purposes of energy planning and governance is considered, it is worthwhile to consider how development is conceptualised in the MSA, since the definition is multifaceted and provides direction as to how municipalities might embark upon work in the energy and electricity spheres. In Section 1 'development' is defined as *sustainable development, and includes integrated social, economic, environmental, spatial, infrastructural, institutional, organizational and human resources upliftment of a community aimed at- (a) improving the quality of life of its members with*

[118] Act 32 of 2000.

[119] This section requires that municipalities structure and manage their administration and budgeting and planning processes to give priority to the basic needs of the community, and promote the social and economic development of the community, and that they participate in national and provincial development programmes.

[120] Chapter 4 contains a detailed discussion of the role of municipalities in upholding the fundamental rights.

specific reference to the poor and other disadavantaged sections of the community, and (b) ensuring that development serves present and future generations. This definition is wider than that of NEMA and has a greater focus on people and their needs, including the redressing of disadvantage. It also makes mention of infrastructural development. These imperatives are strongly supportive of the notion that municipalities must address energy security and energy poverty issues in their communities, since energy poverty is closely associated with general poverty and socio-economic disadvantage. The inclusion of the redress of disadvantage in the definition also suggests that municipalities must see to resolving inequalities in access to energy services and electricity. The mention of infrastructural development is also significant, since addressing energy and electricity needs of necessity relates to considering options for electricity generation infrastructure.

Section 25 of the MSA also sets out the required attributes of a municipal integrated development plan. The plan must be single, inclusive and strategic. It must link, integrate and co-ordinate plans and take into account proposals for the development of the municipality. It must align the resources and capacity of the municipality with its implementation. It must form the policy framework and basis for the budgeting process. It must be compatible with national and provincial development plans and planning requirements which are binding on the municipality in terms of legislation.

Section 26 of the MSA outlines the mandatory core components of a municipal integrated development plan. It must reflect the council's vision for the long terms development of the municipality with special emphasis on its most critical development and internal transformation needs. It must contain an assessment of the existing level of development in the municipality, which must include the identification of communities which do not have access to basic municipal services. It must reflect development priorities and objectives for the term of appointment of the council, including local economic development aims and internal transformation needs. It must include a spatial development framework which must include basic guidelines for a land use management system for the municipality. It must also include a disaster management plan and a budget plan for a future period of three years, and also key performance indicators and performance targets.

It is difficult to conceptualise how a municipality could comply with the requirements of the MSA regarding integrated development planning, without addressing energy matters. The concept of integration suggests taking a holistic view of all social, economic and environmental needs within a municipality and seek to fulfil all of these in pursuit of sustainable development.

How should municipalities approach energy issues so as to fulfil their integrated development planning duties? With regard to energy matters, Bekker et al explain that the focus of the pledge to provide universal energy access under the Reconstruction and Development Programme and reiterated from time to time thereafter, has shifted in recent times from providing energy for industry to providing electricity for households, in order to secure socio-economic benefits.[121] Socio-economic issues at local level are better understood by municipalities rather than by other spheres of government. This is a strong consideration weighing in favour of energy planning being done at local government level.

It is important to understand that the purpose of integrated development planning is not only to address current service delivery needs, but also to take a longer term view, as explained in the *IDP Guide* of national government:

> *……municipalities are also required to make informed projections about and anticipate future demands in order to ensure effective, efficient and sustained service delivery over the short, medium and long term.* [122]

In the IDP Guide of national government[123] mention is made of the obligation of municipalities to adhere to national and provincial integrated energy planning.[124] It appears that the drafters of this guide take the view that it is incumbent upon municipalities only to provide reticulation and electrical connections, maintain these, and deal with complaints. In other words, it appears that the view is taken that municipalities have nothing to do with identifying sources of energy, neither with dealing with energy poverty and energy security issues. With respect to the authors of this publication, this cannot be the case. If poverty relief and socio-economic issues are the concern of municipalities, energy planning must similarly be their concern.

Integrated development planning is not a concept unique to South Africa. Binns and Nel explain that it is a popular concept internationally, valued for its holistic and environmentally favourable approach. They also point out that the Agenda 21 Document emanating from the 1992 Rio Conference on the Environment and Development favours holistic development planning.[125]

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[121] Bekker et al, p 7.
[122] This is a guideline document published by the Department of Provincial and Local Government (now the Department of Co-operative Governance and Traditional Affairs) to assist municipalities with integrated development planning.
[123] IDP Guide, p 2.
[124] Integrated energy planning is mentioned on page 42 of the guide as one of the sectoral plans which should form part of the IDP.
[125] Binns and Nel, p 3.

Municipalities have to consider what approach to energy planning is best suited to their communities. Many writers who write with regard to the viability of various energy planning options favour decentralized energy planning. Mirakyan states that the European Union Commission has done considerable research on the importance of using integrated approaches to the sustainable development of cities. The outcomes of this research, which have been distributed to member countries, favour distributed generation systems,[126] renewable energy sources, co-generation systems,[127] and an energy market with multiple players.[128] Hiremath is vociferous in his criticism of centralised energy planning such as we have in South Africa, stating that it ignores the needs of rural people and the poor, results in or perpetuates inequalities, and causes environmental degradation.[129] Municipalities should be aware of the discussion about alternatives to centralised energy planning, especially for areas where there is no grid access and newly developed areas.

Energy is a sine qua non of economic development and socio-economic upliftment.[130] It is also a commodity with potential negative externalities in terms of air pollution and environmental degradation, and there are enormous risks associated with failure of the energy system. Local energy planning must consider negative externalities associated with the available energy provision options, as well as the risk of current energy systems failing. Costs associated with these negative externalities and risks must be factored into local energy planning.[131]

In addressing the current and future energy needs of the various sectors of the local community, municipalities need to engage with existing and future energy users to determine their needs and preferences. Specific areas and sectors may be able to be served by an off-grid energy solution, and this may be a preferred choice even when grid power is available. For example, an office park or a group of houses can be served by a micro-grid powered by solar photovoltaic panels, with or without a grid connection to serve as a

[126] Distributed generation is the generation of energy at the point of consumption, as confirmed by Pepermans et al at page 2.
[127] Co-generation is the simultaneous production of energy and useful heat, as explained by the European Association for the Promotion of Co-generation on http://www.cogeneurope.eu/what-is-cogeneration_19.html. (Accessed on 16 January 2015)
[128] Mirakyan, p 290.
[129] Hiremath, p 730.
[130] In Chapter 1 this issue is discussed more fully.
[131] Winkler, Davidson et al at page 36 emphasise the need for the 'real cost' of energy to be taken into account in forward planning.

backup source of power. If grid-connected, they can feed excess power into the grid.[132]

Municipalities are the arena in which the tensions between developmental and environmental imperatives are most vividly evident. This is largely because land use management and building development management are local government functions.[133] The debate about whether to favour environmental protection or development rages daily in municipal decision-making bodies. Considerations pertaining to energy are intricately interwoven with developmental imperatives. Municipalities have scope for imposing energy management conditions when granting development authorisations.[134] In order to do so effectively a decision making framework on energy matters, as part of an integrated development plan, can be a useful tool.[135]

Cities across the world have in recent years taken the initiative to address energy and climate change issues and learn from each other as to how best to do so. The C40 Cities Network, led by former New York Mayor Bloomberg, is a dynamic platform for mutual engagement by cities in this regard. Johannesburg and Cape Town are members of this network. The network is founded on the principle that energy management in cities makes a large impact on energy management generally, due to the high energy consumption in cities, and due to accelerating urbanisation globally.[136]

Visser writes eloquently about the value of municipal integrated development planning in the South African context. She refers to it as a

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[132] The national regulations on small scale embedded generation with grid feed in have been anticipated for quite some time. NERSA has advised municipalities that grid feed in without a generation licence is permitted for installations with a voltage of less than 100kVA, without a generation licence. This is an informal concession, however, as the Electricity Regulation Act makes no provision for exceptions from the requirements for electricity generation licences. Some municipalities, including Cape Town and Nelson Mandela Bay, have embarked on small scale embedded generation agreements with customers, subject to no compensation being paid for fed in power which exceeds consumption. Details of the Cape Town project can be found on https://www.capetown.gov.za/.../CTGuidelinesforEmbeddedGeneration (accessed on 5 January 2016). Details of the Nelson Mandela Bay initiative can be found on www.nelsonmandelabay.gov.za/.../nmbm-requirements-for-small-scale-embedded-generation (accessed on 5 January 2016.

[133] Both of these are mentioned in Schedule 4B of the Constitution as local government functions.

[134] Section 43 of the Spatial Planning and Land Use Management Act No. 16 of 2003 empowers municipal planning tribunals to impose such conditions as they deem fit when granting land use approvals.

[135] As mentioned above in 3.2, the Kwa Zulu Natal High Court in *Le Sueur* determined that municipalities have authority to incorporate environmental protection measures into their land use planning instruments. By necessary implication, they may also include energy planning measures in such instruments and decisions taken pursuant thereto.

[136] A summary of the importance of energy management in cities across the world can be found on the home page of the C40 administration, http://www.c40.org/why_cities (accessed 5 January 2016).

'gearing mechanism' for matching national constitutional obligations with autonomously determined locally generated development agendas.[137]

A significant element of integrated development planning and integrated energy planning is spatial planning. A spatial development framework is a mandatory component of a municipal IDP, as mentioned above. It is also listed as a local government function in Schedule 4B of the Constitution. Although South African municipalities are saddled with the legacy of apartheid segregational planning, planning for future expansion and development must of necessity include planning for energy provision, because of the central role of energy in development. In the past new development was only possible if it fell within the reach of the Eskom grid. However, with off-grid power systems now being technologically and financially viable, as explained in more detail in Chapter 5, municipalities can adopt new and innovative approaches to planning for energy provision in areas of new development. This concept can also be applied to retrofitting of energy systems in areas previously served by the grid.

Another aspect of spatial planning which is relevant to energy matters is the siting of energy generation facilities and infrastructure, which can be determined by municipalities as part of their land use planning function. Dart et al have researched and written about decision making tools which can be deployed for decisions about the location of renewable energy installations. Their work relates to the United States of America, but the considerations recommended by them are also of application in South Africa, for example environmental and heritage assessment requirements. Spatial development frameworks and zoning schemes can deal with the rules for siting of renewable energy installations.

Integrated development planning entails thinking outside of traditional engineering investment appraisal techniques. It entails consideration of the value of establishing system diversity and adjusting to new circumstances. Steyn writes of the value of this approach in the power sector.[138] Since the energy landscape is subject to rapid development and change, energy planning at local level must of necessity include a measure of flexibility to allow for changes in available technologies, and changing needs of communities.[139]

3.4 Perspective on municipal legislation relevant to energy governance

The provisions of the various legislative instruments referred to in this and the previous chapter, and especially the MSA requirement of integrated development planning, provide a solid legislative framework for

[137] Visser, p 8.
[138] Steyn, p 53.
[139] In Chapter 5 reference is made to the new window of opportunity that has opened up with renewable energy becoming more affordable.

municipalities to undertake energy governance within their areas of jurisdiction, in particular to ensure security of supply of electricity to their constituents. Integrated development planning is a broad and inclusive concept embracing all aspects of socio-economic development of which energy provision and electricity provision are essential parts. In the interest of their communities energy governance is a role which municipalities should embrace.

The chapter which follows deals with the position of municipalities as organs of state which are obliged to respect, protect and fulfil the rights in the Bill of Rights, and the relevance of this position to energy matters. As will be explained, providing electricity is considered by the South African Constitutional Court to be an essential element of municipalities' service delivery obligations, akin to their obligation to provide other services which are entrenched in the Bill of Rights.

CHAPTER 4

MUNICIPALITIES, HUMAN RIGHTS AND ENERGY GOVERNANCE

4.1 Introduction

In terms of Sections 7(2) and 8(1) of the Constitution, municipalities, like all other organs of state, are bound by the Bill of Rights and are obliged to respect, protect, promote and fulfil it.[140] Energy in relation to human rights is an issue which has a number of touch points in relation to the rights contained in the Bill. Foremost amongst these is the environmental right,[141] because policy choices relating to energy provision have profound environmental impacts. Other rights may also be impacted upon by energy policy, however. These include the right to equality,[142] the right to dignity,[143] the right of access to adequate housing,[144] and the right to healthcare, food, water and social security.[145] Whilst enforcement of the fundamental rights is carried out primarily by the courts and the Human Rights Commission, municipalities can and must, in their work and activities, and in their by-law and policy formulation, including in the realm of energy and electricity, respect, protect, promote and fulfil the fundamental rights.

Apartheid left a legacy of unequal service provision across the country, including inadequate provision for energy services in areas that were disadvantaged under the regime. At the time of writing, 21 years after the political transformation, energy poverty is still rife in both urban and rural contexts.[146] Thus a de facto situation of energy inequality prevails at present. Municipalities are enjoined by the Constitution[147] and by the jurisprudence of the Constitutional Court[148] to progressively realise the right of citizens to equality in service provision. Thus by necessary inference the addressing of energy poverty and energy inequality is an obligation falling on municipalities.

The mandate of municipalities to govern energy matters is not explicitly stated in legislation. It is posited in this dissertation, however, that

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[140] Section 7(2) states that the State must respect, protect and promote the Bill of Rights. The "state' is generally understood to include all spheres of government. Section 8(1) states that the Bill of Rights applies to all law, and binds the legislature, the executive, the judiciary and all organs of state.
[141] Section 24 of the Constitution.
[142] Section 9 of the Constitution.
[143] Section 10 of the Constitution.
[144] Section 26 of the Constitution.
[145] Section 27 of the Constitution.
[146] The SEA Report on Urban Energy Poverty is testament to urban energy poverty in South Africa. Besides this, many rural areas remain unelectrified, as acknowledged by Eskom in its Free Basic Alternative Energy Policy.
[147] Sections 26 and 27 of the Constitution both require the state to take measures to ensure the progressive realisation of the rights under reference.
[148] A discussion of the judgments in *Grootboom* and *Mazibuko* in Section 4.3 deals with this issue in more detail.

it may be inferred from a variety of legislative instruments, as well as from the jurisprudence of the courts, in particular *Le Sueur*[149] and *Joseph*.[150] Broad environmental legislation requires that development be sustainable,[151] and as an authority governing development at local level, municipalities have a major role to play in ensuring this. Municipal legislation confers a strong mandate and responsibility on municipalities to be developmentally oriented and to undertake integrated development planning.[152] Reading these legislative imperatives together, together with the relevant jurisprudence, the conclusion is warranted that municipalities have the power, but more importantly that they have the responsibility, to be active players in the realms of energy and electricity governance.

Energy poverty is associated with a number of indignities, particularly for those living in informal dwellings. The lack of light at night is a safety issue, and the burning of various fuels such as wood, paraffin and kerosene for cooking and heating causes indoor air pollution and attendant health problems. In addition fuel burning creates fire risks, with attendant risks of injury, loss of property and even loss of life. Fulfilment by municipalites of the right to dignity requires ensuring that the factors contributing to the indignities are minimised and controlled.

Section 26 of the Constitution enshrines the right of access to adequate housing. 'Adequate' must by necessary implication mean housing of a standard that facilitates a reasonable quality of life and constitutes an environment not harmful to health and well-being, as envisioned in Section 24. Such housing must of necessity have an energy source which provides lighting, cooking, water heating and electrical points for electronic devices.

The provision of healthcare, food, water and social security is largely dependent upon functional energy systems in towns and cities. Hospitals, clinics and schools require electricity to function optimally. Food manufacturing and retail similarly require electricity. Water and sewage pumping facilities for potable water and sanitation are electrically powered.

Seen in the broader context of the various rights upon which energy provision touches, it seems clear that energy, though not mentioned in the Bill of Rights, is a pre-condition for fulfilment of most of the socio-economic rights. Thus if a municipality is derelict in ensuring that its constituents have a sustainable energy supply, it may be derelict in fulfilling its constitutional obligation to respect, protect, promote and fulfil the Bill of Rights in a

[149] *Le Sueur* is discussed in sub-chapter 3.2 above.
[150] *Joseph* is discussed in sub-chapter 4.3 hereunder.
[151] See the discussion in sub-chapter 2,2 above regarding applicable provisions of the Constitution and NEMA. See also sub-chapter3.2 regarding constitutional powers of municipalities.
[152] The provisions of the MSA relevant to energy governance are discussed in sub-chapter 3.3.

broader sense. This argument is supported by the judgment in *Joseph,*[153] referred to below, in which the Constitutional Court placed the right to electricity on an equivalent footing with the right to water and other fundamental rights.

4.2 International environmental law developments regarding energy and human rights

Although, as stated above, access to reliable energy services, especially electricity, is a prerequisite for the realisation of many socio-economic rights, rather than a right per se, there is some acknowledgement in international soft law instruments of electricity as part of a package of socio-economic rights that make up the minimum rights which must be fulfilled for people to enjoy a reasonable quality of life. Although this acknowledgement does not constitute binding law, it is indicative of a trend towards the recognition of the right to energy as a fundamental right across the world. Municipalities in South Africa should take cognisance of this trend.

An example of the recognition of the right to electricity is contained in Article 14(h) of the 1979 Convention on the Elimination of All Forms of Discrimination Against Women, which enjoins member states to ensure that women are able to enjoy adequate living conditions, particularly in relation to housing, sanitation, electricity and water supply, transport and communications.

Another example stems from the 1966 International Covenant on Economic, Social and Cultural Rights, which provides in Article 11 thereof that member states must uphold the right of everyone to an adequate standard of living, including housing. Tully advises that the United Nations Special Rapporteur on Adequate Housing considers that his mandate entails ensuring that housing has adequate facilities, including electricity. He also mentions that there are a number of international non-governmental organisations which support to the right to electricity for everyone, in particular one named 'Right to Energy – SOS Future' which has secured status as a consultative body to the United Nations. He points out further than national legislation in some European countries, notably the United Kingdom and France, contains explicit provisions conferring a right to electricity upon all citizens.[154]

At the World Summit on Sustainable Development in Johannesburg in 2002, delegates pledged in the conference declaration to 'speedily increase access to such basic requirements as clean water, sanitation, adequate shelter, energy, health care, food security and the protection of

[153] *Joseph* is discussed in detail in Sub-chapter 4.3
[154] Tully, p 31.

biodiversity'.[155] The *Johannesburg Plan of Implementation*, which is the practical plan for implementation of the conference declaration, includes reference to increasing the share of renewables in the energy mix and shifting to cleaner fuel technologies, acknowledging the growing need for energy services to contribute to sustainable development.[156]

From the above it is clear that in the context of international environmental law, access to sustainable energy services, and electricity in particular, is considered to be something that everyone is entitled to. As Bodansky points out, however, there is a divergence between what states may agree to in international treaties and what they do in reality.[157] There is a dearth of international jurisprudence on enforcement of socio-economic human rights, possibly because such rights are dependent on resource availability and are widely acknowledged to be subject to progressive realisation.

It may be speculative to consider how the jurisprudence concerning the human right to a clean environment, and the right to energy and/or electricity services will develop in the international law arena in the future. Some thoughts on how this may occur follow. If litigation should arise in the future relating to energy policy options chosen by states, this could have a number of dimensions. Individuals or groups could claim violation of rights where they suffer energy poverty, as a right per se, or because their energy poverty results in violations of other fundamental rights. Alternatively they could take action against the state to interdict it from producing energy in a manner that exacerbates greenhouse gas emissions and climate change.[158] States could also litigate against each other in an international forum such as the International Court of Justice in respect of grievances regarding their respective emissions. However this seems increasingly unlikely as the most recent meeting of the Conference of the Parties to the United Nations Framework Convention on Climate Change in Paris in December 2015 produced broad international consensus on the actions needed to address climate change. The agreement is non-binding in nature, containing only 'intended contributions' to greenhouse gas emission reductions by the parties.[159] Thus its justiciability and enforceability is weak. If ratified and fully implemented by all the parties, it could give effect to substantial changes globally in the way in which energy is sourced, generated and governed in

[155] WSSD Declaration Article 18.
[156] JPOI, Article 20.
[157] Bodansky, p 105.
[158] An action of this nature was adjudicated in the Netherlands in June 2015. In the matter of *Urgenda Foundation v State of the Netherlands* the Dutch government was ordered to limit the volume of Dutch greenhouse gas emissions so as to reduce them by at least 25% of their 1990 levels by 2020. The judgment has been appealed by the Dutch government.
[159] Paris Agreement, Article 12.

the future. International climate change law and jurisprudence is a new and a developing realm currently, but one which municipalities in South Africa should be cognisant of. In the near future their activites or inactivities in this realm may have implications for them with regard to fulfilment of their governance responsibilities, and attendant delictual liabilities should they fail to fulfil these.

4.3 Domestic jurisprudence relating to the right to energy

There is no direct articulation in South African legislation of a right to energy, or a right to clean energy. However the right to clean energy may be seen as a component of the environmental right contained in Section 24 of the Constitution, since the manner in which energy is generated has a profound effect on whether citizens can enjoy an environment that is not harmful to their health and well-being. Furthermore, clean energy planning and a shift towards renewable sources may be considered to be a substantial component of sustainable development which is a component of Section 24. As mentioned above, energy is a prerequisite for the realisation of some of the fundamental rights contained in the Bill of Rights.

In order to determine the extent to which access to energy fits within the human rights discourse in South Africa, it is useful to consider the jurisprudence of the Constitutional Court with regard to service delivery by municipalities. There are a number of cases in which the Court has made some reference to environmental protection and sustainable development in the context of development rights, of which the most renowned is *Fuel Retailers*.[160] However for purposes of the present discussion the cases which deal with service delivery by municipalities are the most relevant.

There is only one Constitutional Court judgment dealing specifically with electricity – the matter of *Joseph and others v City of Johannesburg and others*.[161]

In *Joseph* the court placed great emphasis on the responsibility of municipalities to provide services in a manner that meets the needs of the people:

> *The provision of basic municipal services is a cardinal function, if not the most important function, of every municipal government. The central mandate of local government is to develop a service delivery capacity in order to meet the basic needs of all inhabitants of South*

[160] Fuel Retailers Association of Southern Africa v Director-General: Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga Province and Others 2007 (6) SA 4 (CC).
[161] 2010 (4) SA 55 (CC).

> *Africa, irrespective of whether or not they have a contractual relationship with the relevant public service provider.*[162]

The court went on to confirm in paragraph 40 of the judgment that municipalities are subject to a duty to provide electricity along with all other services, notwithstanding the fact that there is no right to electricity services contained in the Bill of Rights, as is the case with water. The court took an expansive view of the service delivery obligations of municipalities reflected in the MSA. The MSA does not deal specifically with electricity governance, and there is no right to energy and electricity enshrined in the Bill of Rights, but nevertheless the court chose to put the right to electricity on par with the other fundamental socio-economic rights.

Joseph is a watershed judgment for a number of reasons. Firstly it expressly includes electricity within the suite of services municipalities must provide, saying the following with regard to the provisions in the Constitution, the MSA and the Housing Act regarding municipal service delivery obligations:

> *Taken together, these provisions impose constitutional and statutory obligations on local government to provide basics municipal services, which include electricity.* [163]

The stance of the court that municipalities have a fundamental obligation to provide electricity is all the more cogent if one takes into account that it was made in the context of a situation where the applicants had no contractual arrangements in place with the local authority for an electricity supply or for future payment, and no arrangements were in place for settlement of the outstanding debt on the basis of which the electricity was disconnected.

The bold stance of the court in *Joseph* would seem to strengthen the position of citizens with regard to demanding the provision of socio-economic necessities by the state, irrespective of whether these necessities are included amongst the fundamental rights in the Bill of Rights. The case presents a more service delivery oriented position than that of earlier jurisprudence of the Constitutional Court. However it deals only with a disconnection situation, and does not provide guidance on municipal responsibilities towards citizens who have no access to a service. This is regrettable, and leads one to conclude that the earlier pronouncements of the court in *Grootboom* and *Mazibuko* regarding progressive realisation of socio-economic rights where no

[162] Para 34 of the judgment.
[163] Para 40 of the judgment.

services are in place still hold and apply to the provision of electricity to unelectrified areas.

In *Grootboom*[164] the court took a somewhat cautious and deferential stance concerning the obligations of organs of state with regard to the provision housing, notwithstanding the fact that the litigants in need of housing were in desperate circumstances. Although acknowledging that the rights in the Bill of Rights are interrelated, and that the fulfilment of the socio-economic rights is necessary for enjoyment of the other rights,[165] the court confirmed that what is required on the part of the state with regard to provision of housing was the progressive realisation of the right of access to housing, within its available means.[166] The acceptability of measures taken in this regard, the court found, must be tested by the standard of reasonableness.[167]

In terms of the *Grootboom* judgment, an organ of state will be compliant with its constitutional and statutory obligations if it has a reasonable policy in place for progressive realisation of the right in question. Regrettably the court did not address the question as to whether desperate need may call for urgent measures outside of its routine (reasonable) programmes. Furthermore it would have been useful if the court had considered the issue of reasonableness in relation to budgetary and resource allocation. Expenditure by municipalities on service delivery is determined via its budgeting process. A cogent argument could be made that it would be unconstitutional and unlawful for an organ of state to budget in such a way that it does not prioritise the meeting of basic human needs and the fulfilment of fundamental rights, especially for those in desperate circumstances.

In *Mazibuko,*[168] dealing with the issue of a municipality's obligation to fulfil the right to water,[169] a life-sustaining necessity, the court again endorsed the progressive realisation approach. In this instance the court emphasised the need for state service delivery policies to be continually reviewed, in pursuit of progressive realisation of rights.[170] The general approach of the court with regard to enforcement of the obligations of the state with regard to progressive realisation of socio economic rights is set out in paragraph 67 of the judgment:

> *Thus the positive obligations imposed upon government by the social and economic rights in our Constitution will be enforced by courts in*

[164] *Government of the Republic of South Africa and Others v Grootboom and Others* 2001 (1) SA 46.
[165] Para 23 of the judgment.
[166] Para 40 of the judgment.
[167] Para 41 of the judgment.
[168] *Mazibuko and Others v City of Johannesburg and Others* 2010 (4) SA 1 CC.
[169] Section 27 of the Constitution enshrines a right to health care, food, water and social security.
[170] Para 40 of the judgment.

> *least the following ways. If government takes no steps to realise the rights, the courts will require government to take steps. If government's adopted measures are unreasonable, the courts will similarly require that they be reviewed so as to meet the constitutional standard of reasonableness.*

The judgment goes on to state that government should set targets with regard to progressive realisation of rights and make these known to citizens. It should also give reasons for its policy choices. Citizens can hold government accountable with regard to the reasonableness of its policy choices, and its diligence in giving effect to them.[171]

As in *Grootboom,* the general approach of the court in *Mazibuko* is one of deference to the policy decisions of government. The *Joseph* judgment reflects no such deference to the electricity disconnection policies and processes of the City of Johannesburg. Logically speaking, the right to electricity, insofar as there is such a right, would have to be realised progressively where new infrastructure has to be built. However it is noteworthy that solar photovoltaic systems for domestic homes only require a simple installation and are not linked to the building of infrastructure. [172] Thus it may be that households without electricity may in the future be able to demand of the state that it provide such systems to them.

Grootboom and *Mazibuko* both show the court grappling with the alignment of fundamental rights to the realities of municipal service delivery. It is apparent from these two matters that this is no easy task. *Joseph* provides jurisprudential clarity on the right to electricity, but the judgment is less nuanced and considered, in that it does not deal with provision of this service where it is absent. None of the three judgments under discussion ventures into a full examination of service delivery issues in the context of human rights. There is certainly scope for the further development of the law in this regard.

4.4 Reflection on the powers and responsibilities of municipalities with regard to energy governance, from a human rights perspective

It cannot be said that the right to energy is clearly established as a fundamental human right internationally or domestically. However there is a wide array of international soft law instruments recording the need for energy services in order to sustain an acceptable standard of living, as well as much writing advocating the need to shift the world onto a clean energy path. International and domestic policy instruments oriented this way can be considered to be sources of material to justify energy work by municipalities.

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[171] Para 161 of the judgment.
[172] The usefulness of such systems is discussed further in Chapter 5.

Besides this, municipalities can derive such justification from their powers and responsibilities as delineated in the Constitution and the MSA. In addition, the judgment in *Joseph* verifies that energy is an issue that is being subsumed into domestic human rights discourse.

It is incumbent upon municipalities to determine within their areas of jurisdiction what would constitute progressive realisation of the right to energy in their particular local contexts. What may constitute a reasonable policy for progressive realisation in a particular municipality may not be reasonable in another. Socio-economic assessment of the degree and consequences of energy poverty must of necessity be done in this regard, so as to enable effective energy planning.

Municipalities should be aware that energy issues at local government level are situated within the broader context of a discourse regarding national and supranational energy governance.

Macdonald is vociferous in his criticism of the current politico-economic paradigm which drives energy governance in South Africa. Cheap and reliable electricity is provided to capitalist industry, he says, to the detriment of the poor.[173] He states that the electricity industry in South Africa generates enormous goods for a few, while perpetuating poverty, illness, social exclusion and environmental decay.[174] He does not speak of human rights violations, but his comments clearly touch on human rights issues and open up a debate about ways in which the politico-economic paradigm underpinning energy governance may give rise to human rights violations.

The Reconstruction and Development Programme of 1994 lamented the neglect in providing energy for the domestic household sector up to the time of its drafting.[175] It enunciates a vision of 'electricity for all'.[176] Thus there was an acknowledgement by the new democratically elected government that electricity is a fundamental need. However, as pointed out by Van Heusden, writing in Macdonald,[177] electricity was subsequently rolled out on a business rather than a social benefit model. Access to electricity became a function of ability to pay. Furthermore, as stated by Ruiters, also writing in Macdonald, poor households have often been supplied with a low amperage supply of electricity which trips frequently, and they have been required to pay approximately double the tariff paid by the mining and manufacturing

[173] Macdonald, p 27.
[174] Macdonald, p 18.
[175] RDP Programme, Clause 2.7.3.
[176] RDP Programme, Clause 2.7.7.
[177] Macdonald, p 266.

industries.[178] These factors clearly open up questions about systemic deficiencies in governance of energy matters, which impede the fulfilment of the right to energy.

Dugard, also writing in Macdonald, undertakes a rights-based analysis of electricity services in South Africa, and concludes that the right of equality of electricity services includes the right to redistributive policies that address socio-economic inequality.[179] Her focus is mostly based upon inequalities in access to electricity and the violation of Section 9 of the Constitution associated therewith. She poignantly argues that the commercialization of electricity services detracts from fundamental rights:

> *Access to sufficient affordable electricity of an adequate quality is intrinsically linked to positive and transformation and developmental goals that underwrite South Africa's Constitution.*[180]

She argues further that not only that there is inequality in access to electricity, but that the opportunity is lost for the use of electricity to use electricity in a developmental way, and that this retards the fulfilment of the developmental duties of government. This is a cogent argument which relates not only to domestic service provision, but also to economic development and job creation.

The issues highlighted by Dugard provide valuable food for thought for municipalities regarding their obligations to uphold the Bill of Rights and to deliver sustainable municipal services. Her concept of using electricity in a developmental way is one which can be used in considering integrated development planning methodologies.

Bond and Erion, also writing in Macdonald, express the view that the current energy governance regime in South Africa, particularly in its soft treatment of polluting industries, perpetuates environmental injustice in South Africa:

> *....while generating enormous carbon emissions, energy is utilised in an extremely irrational way. The unjust system leaves too many without access, while a few large corporations benefit disproportionately.*[181]

Their argument places energy governance within the realm of environmental justice. This is a broad subject, a full discussion of which is

[178] Macdonald, p 273.
[179] Macdonald, p 293.
[180] Macdonald, p 296.
[181] Macdonald, p 270.

beyond the ambit of this dissertation. However it is valuable for municipalities to be aware of the linkages between energy governance and environmental justice issues.

The adequacy of environmental regulation and a means to address the environmental problems caused by the energy sector is questionable internationally, and in South Africa, especially with Eskom having been given a reprieve by national government with regard to compliance with air quality legislation. If environmental regulation does not address the major source of pollution, this is a legitimate concern to be addressed in the human rights context, with reference to Section 24. Municipalities enjoy powers with regard to local air quality governance, and are this strongly positioned to address this issue.

Municipalities should furthermore be aware that there is a discourse underway internationally regarding the linkages between poverty and energy deprivation Bradbrook laments the fact that the crucial role of energy in poverty alleviation in developing nations has been belatedly recognised. There is no escape from poverty without access to energy services, he states. He advocates the recognition of energy as a human right internationally.[182]

It is important for all organs of state, including municipalities, to consider that shifting to cleaner forms of energy may have significant spin-offs for the fulfilment of all the socio-economic rights. Florini and Sovacool explain this notion as follows:

> *Ending poverty, reducing hunger, avoiding major disease and health effects, and reducing environmental degradation are all connected to cleaner forms of energy supply.*[183]

Municipalities also need to be cognisant of the links between poverty and human rights. Woolard, in her *Overview of Poverty and Inequality in South Africa*, emphasises that poverty is associated not only with a lack of money, but also with a lack of dignity.[184] Features of poverty include alienation from kinship and community, food insecurity, crowded homes, basic forms of energy, unemployment, and family fragmentation. Thus poverty, of which energy poverty is part, is associated with many human rights shortfalls. Holistic planning for poverty upliftment, including addressing energy poverty, needs to be a component of the integrated development planning function of municipalities. This is a particularly difficult task in

[182] Bradbrook, pp 3 & 11.
[183] Florini and Sovacool, p 11.
[184] Woolard, p 3.

South Africa, since it is one of the most unequal societies in the world, according to Woolard.[185]

The phenomenon of urbanisation and its attendant demand for housing, water, food and healthcare, all of which constitute fundamental rights in South Africa, places an ever-increasing demand on municipalities to consider how these demands will be met. This inevitably means that municipalities must consider their role in service provision, and in provision of energy, which interfaces with all the matters mentioned, from a human rights perspective. Integrated development planning must include prioritisation of budget allocation for fulfilment of socio-economic rights, and sourcing funding for this purpose from other spheres of government or international sources.

In this chapter it has been shown how matters of energy governance, particularly the right of access to energy services, are coming to be regarded as being situated within the sphere of human rights. It is unlikely that this trend will diminish or reverse, with the increasing dependence of societies on energy for their development and well-being. The next chapter deals with fundamental issues which municipalities must confront if they are to become and remain active roleplayers in energy governance in their areas of jurisdiction, and fulfil their obligations with regard to service delivery and upholding of human rights.

[185] Woolard, p 7. The GINI Index of the World Bank shows that in the year 2011, South Africa was the most unequal society in the world in terms of income inequality.

CHAPTER 5
TAKING A BROAD VIEW OF THE ROLE OF MUNICIPALITIES WITH REGARD TO ENERGY GOVERNANCE

5.1 Introduction

In previous chapters it has been established that energy governance and energy security are very much the concern of municipalities. There is a strong legislative framework indicating this, and the Constitutional Court has categorically stated that the provision of electricity is a fundamental service delivery obligation and confers a right upon citizens, notwithstanding that it is not explicitly dealt with in the Bill of Rights.

In the Constitution and the MSA municipalities are conceptualised as developmental agencies. Energy is interwoven with every aspect of socio-economic life and development, and therefore municipalities cannot undertake their developmental role without simultaneously undertaking energy governance and dealing with the issue of energy security.

The powers and responsibilities of municipalities with regard to energy governance have been considered in previous chapters within the context of national legislation and policy, and international environmental law trends. These remain subject to developments in national and provincial legislation in the future, and to the principle that municipalities may not contravene national or provincial legislation or pass by-laws in conflict therewith.

In this chapter consideration is given to ways in which municipalties can embrace and actively pursue a role in the realm of energy governance.

5.2 Understanding the consequences of inaction or 'business as usual'

There is a broad consensus amongst writers on energy matters, both from a legal and a non-legal perspective, that it is imperative that energy governance models globally must change and move onto a more sustainable path. Municipalities must educate themselves and their citizens in this regard.

Cities in particular need to be aware that they have a cardinal role to play in energy governance, due to the fact that a high percentage of the world's energy is consumed in cities. This is the rationale for the establishment of the C40 Cities Group.[186]

[186] A more detailed explanation of the activities of this group can be found in Section 3.3.

Davies, writing with reference to the United States of America, but with equal relevance to other countries, emphasises the need to embrace opportunities for energy sector reform:

> *A failure to transform the way in which we regulate energy would be a missed opportunity of enormous proportions.*[187]

Macdonald vociferously states the importance of moving away from the current trajectory of business as usual in the energy sector in Africa:

> *Business as usual in the electricity sector will be an environmental catastrophe in much of Africa.*[188]

Macdonald goes on to say that the electricity restructuring programme in Southern Africa has gone 'terribly wrong', in that it generates enormous goods for a few, but at the same time perpetuates poverty, illness, social exclusion and environmental decay, and provides a platform for capital growth. This is a serious indictment on the way electricity services have been delivered to date in South Africa, and substantiates a strong poverty relief orientation on the part of municipalities.

Moving away from business as usual in the energy sector requires working with issues that drive the need for change. These include climate change, air quality and energy security, as explained by Bauen.[189]

In the Africa Progress Panel Report is further emphasised that a realignment of energy systems with ecological systems is urgently necessary, and the consequences dire if this does not occur:

> *To eradicate poverty, create jobs and sustain growth while limiting greenhouse gas emissions, we must fundamentally realign the energy systems that drive our economies with the ecological systems that define our planetary boundaries. The consequences if we fail are beyond estimation.*[190]

Having understood the gravity of the need for energy sector reform, municipalities need to conceptualise ways in which they can lead by example, lobby for reform nationally, and engage with the private sector to drive the reform process.

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[187] Davies, p 74.
[188] Mc Donald, p16.
[189] Bauen, p 893.
[190] Africa Progress Panel Report, p 28.

5.3 Prioritising energy security

South Africans are well aware of the importance of energy security, having endured many months of 'load shedding' in recent times due to the national power grid being unable to meet demand.

Barton et al offer a useful definition of energy security:

> *We define energy security as a condition in which a nation and all or most of its citizens, and businesses, have access to sufficient energy resources at reasonable prices for the forseeable future, free from serious risk of major disruption of service.*[191]

They go on to say that there are three 'faces' to energy security. Firstly, there is a limit of vulnerability to disruption of the service. Secondly, there is adequate supply to cater for rising demand, at reasonable prices. Thirdly, energy related environmental issues are to be addressed.[192] Behind these 'faces' is the fundamental requirement of system integrity. With our current system in South Africa of centralised energy governance and transmission of electricity from far-flung power stations, maintaining energy system integrity is a mammoth task.[193]

Turton and Baretto express the view, which seems uncontestable, that security of supply in the energy sector demands a diversification of energy technologies and sources.[194]

It is incumbent upon municipalities to make their own assessment of how to deal with energy security issues at local level. This may involve one or more of several solutions, including own investment in renewables and encouraging the private sector to similarly invest, and exploring battery storage options.

It is a dilemma for municipalities that when consumers, businesses and industries install their own renewable energy generation facilities and detach themselves from the electricity grid, the municipality may suffer revenue loss from lost electricity sales. Thus municipalities may not wish to encourage energy-independence. However the potential loss of revenue should be weighed against the risk of energy insecurity, with its attendant social and economic costs.

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[191] Barton et al, p 5.
[192] Barton et al, p 5.
[193] Barton et al, p 7.
[194] Turton and Barreto, p 2249.

5.4 Integrating energy planning and climate change planning

Municipalities have to consider how to manage climate change in both its aspects – mitigation of its causes, and adaptation to its effects. Because energy and climate change are intertwined, with energy governance being primarily responsible for global warming, the two issues need to be considered in synchronisation, and if possible managed together.[195] This is because poor energy regulation globally is responsible for the crisis of global warming. Davies suggests that climate change serves as a cogent imperative to spur on better regulation. Policy and environmental science must be intertwined, he says, in seeking alternatives to the world's energy systems.[196]

Farah and Rossi write of the 'multiscalar effects' of climate change and energy security issues, which due to their all-pervasive nature fall to be addressed at all levels of government and civil society.[197]

Flatt emphasizes the need to understand and explore energy and environmental, and economic, trade-offs that form part of the energy and climate change scenario.[198] Energy generation options need to be weighed up against the need for energy to power the local economy, and fully evaluated with due cognisance of their external socio-economic and environmental effects.

The issues described above are global in nature, and municipalities only have authority to regulate within their areas of jurisdiction. However they are able to, and should, exert influence over national and international action in the energy and climate change sphere. This is so particularly in the case of cities, which are responsible for a large proportion of global energy consumption. The role of cities was vividly played out at the recent Conference of the Parties to the United Nations Convention on Climate Change in December 2015.[199] Ways in which municipalities can exert influence include leading by example, facilitating and encouraging private sector efforts, policy and other forms of advocacy, and dialogue and engagement. Within the national context, they have rights to represent their communities in terms of Section 38 of the Constitution. They also have a strong voice as a commenting authority with regard to draft legislation and regulation.

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[195] In this regard see Davies at p 81.
[196] Davies p 82.
[197] Farah and Rossi, p 243.
[198] Flatt 'Adapting energy and environmental policy for climate change', p 657.
[199] Details of the climate change advocacy efforts by international local governments at the conference can be found on http://www.iclei.org/climate-roadmap/advocacy/unfccc/2015-paris-cop21cmp11.html. (Accessed on 16 January 2016.)

5.5 Renewable technologies and off-grid configurations

Winkler et al provide a useful definition of sustainable energy:

> *Sustainable energy is energy that provides affordable, accessible, reliable energy services that meet economic, social and environmental needs within the overall developmental context of society, while recognising equitable distribution in meeting those needs.*[200]

Sustainable energy is an aspect of sustainable development, which is a cornerstone of the municipal developmental function. Sustainable development involves taking social, economic and environmental considerations into account in all undertakings. However as pointed out by Winkler, Davidson et al, there has been a growing awareness since approximately the 1980's of man's propensity to cause harm to the environment, sharpened by the now widely acknowledged phenomenon of climate change.[201] Thus the environmental element of sustainable development has gained more weight in recent times, particularly in relation to the selection of energy sources.

Energy technology choice is a vital aspect of pursuing a sustainable energy agenda. Although the environmental benefits of renewable energy are widely known, social, political and economic circumstances may dictate what is a suitable energy technology choice for a particular situation. As stated by Buscher, energy technology choices should not be seen as ends in themselves, but should be aligned to the needs of those they serve.[202]

The whole context of energy technology choice has changed dramatically in the recent past, with the cost of renewable energy dramatically reducing. In South Africa it is now cheaper that coal-fired electricity. This has the effect of dramatically broadening options for municipalities and energy consumers. Mc Daid explains that renewable technologies, which were previously prohibitively expensive, are now economically viable:

> *…. renewable technologies are viable in areas of the world that are much poorer in renewable resources than South Africa. Renewables are economically viable, and it is technically possible to produce large amounts of electricity using these technologies, sufficient to satisfy even the needs of the greedy captains of industry.*[203]

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[200] Winkler, Davidson et al, p 20.
[201] Winkler, Davidson et al, p 20.
[202] Buscher, p 3953.
[203] Macdonald, p 248.

Echoing Mc Daid, Mc Donald argues cogently that there is no want of alternative strategies for South Africa's future energy development. These include solar and wind power, decentralising governance and better demand management. Strategies of this nature could be deployed quickly with significant effects on sustainability and equity, he argues.[204]

In the Africa Progress Panel Report of 2015 entitled *Power, People, Planet*, mention is made of the vast range of opportunities that exist for adoption of new technologies to facilitate access to energy. It is emphasised that these go hand in hand with possible new innovative business models. An example given in the report is the integration of solar and mobile telephone technologies.[205]

Further in this report it is emphasised that adoption of low carbon energy sources can satisfy two of the biggest challenges in Africa, being generation of power and connectivity.[206] The report also provides valuable information with regard to the shift in renewable energy prices from being prohibitively expensive to being cost-competitive in less than a decade. It is mentioned that there has been a sixty eight percent decrease in the price of solar energy since 2010, and a forty two percent decrease in the price of wind energy in the same period, across Africa.[207]

Connection to the grid is costly, Winker, Davidson et al point out, and thus has created the necessity of looking at off grid power generation, especially in environments which currently have no grid access.[208]

Flatt explains that decentralised energy production is now a technically and financially viable proposition:

> *Large progress could be made in climate change mitigation and in the electricity sector by distributed generation and micro-grids.*[209]

The OASYS Project is a project in rural India which illustrates the potential for off-grid solutions for communities. It is a community-managed system of 250 households with a community solar photovoltaic power plant. The benefits felt by the community are not only the benefit of the renewable technology but also the benefit of ownership, training and capacity building, linkages with income-generating projects, and socio-economic development

[204] Macdonald, p 461.
[205] Africa Progress Panel Report, p 19.
[206] APP Report, p 28.
[207] APP Report, p 38.
[208] Winkler, Davidson et al, p 23.
[209] Flatt 'From DNA to PVC', p279.

of the community as a whole.[210] Projects of this nature can serve as models for municipalities to follow in rural areas in South Africa. It should be noted however that projects based on solar power as their energy source are only viable in environments with abundant sunshine.

From the perspective of municipalities, a new world has opened up in the energy governance sphere, with renewables and off-grid solutions having suddenly become financially viable. This creates new impetus for municipalities to drive energy reform towards renewables, whilst at the same time fulfilling their service delivery obligations.

5.6 A variety of areas in which municipalities can engage with energy issues

There are many different areas in which municipalities can become pro-active in the realm of energy governance, notably those mentioned hereunder.

5.6.1 Energy efficiency

Energy efficiency is considered by energy planners to be an optimal energy management method, because it does not require the acquisition or establishment of new equipment and infrastructure. As pointed out by Winkler, Davidson et al, much can be done to improve demand efficiency in domestic, commercial and industrial contexts.[211]

Energy saving interventions can be implemented by municipalities in a number of ways. A command and control approach can be taken and consumers can be charged penal rates for heavy consumption. Alternatively, municipalities can educate consumers on energy saving measures through information drives and campaigns. Incentivisation is also possible through recognition of consumers who save energy.

Macdonald argues for more stringent energy efficiency regulation by government.[212] Municipalities can lobby national government in this regard. Bruce describes the successes of energy efficiency planning and governance in the European Union, based on a comprehensive action plan including involvement of the banking industry to finance energy retrofitting projects.[213]

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[210] Energy Resources Institute of India (no page numbers).
[211] Winkler, Davidson et al p 40.
[212] Macdonald. p 463
[213] Bruce, p 35.

5.6.2 Cross-sectoral energy planning

Of all spheres of government, municipalities are best placed to integrate energy planning with planning in other spheres to ensure alignment of energy provision and social and economic development.[214] Energy is a cross cutting component of integrated development planning which municipalities are obliged to undertake. Energy usage is important in all aspects of local activity, including households, schools, medical facilities, transport, information and communications, agriculture, industry and commerce. Winkler, Davidson et al point out that there are opportunities for synergies to be found between sectors of society with regard to energy management.[215] These considerations can be applied by municipalities in the course of their integrated development planning and spatial planning processes.

5.6.3 Electricity tariff management

The FBE Policy of government has not fulfilled it purposes successfully. Ruiters, writing in Macdonald's *Electric Capitalism,* expresses the strong view that the purported provision by government of free basic electricity to households represents a 'very frugal approach' on the part of government. He mentions several drawbacks to the system of provision of free basic electricity - it does not meet the basic needs of households, there is insufficient infrastructure to implement it, it requires proof of household income, and there must be agreement regarding the installation of a prepaid meter.[216]

Although municipalities all purchase electricity from Eskom at the same price, and although their tariffs have to be approved by NERSA, they have a measure of discretion as to how their tariffs are structured, as these are set as municipal tariffs in terms of the MSA. Some municipalities have opted for an inclining block tariff system, in terms of which heavy users pay a higher rate than small users. This has the effect that households with modest demand and usage are subsidised to a degree by those with heavy consumption. However this mechanism for assisting the poor is under-utilised, says Ruiters.[217] Macdonald echoes Ruiters' sentiments, calling for more progressive block tariffs.[218]

[214] This is argued by Winkler, Davidson et al at p 81.
[215] Winkler, Davidson et al, p 97.
[216] Macdonald, p 248.
[217] Macdonald, p 296.
[218] Macdonald p 463.

5.6.4 Moving into energy generation

As mentioned in Chapter 2, there is no restriction in legislation on categories of persons to whom electricity generation licences may be granted. Generation for own use is not regulated and does not require a licence.[219] Thus there is wide scope for municipalities to use on site generation facilities to power their own operations.

Many municipalities are currently in possession of electricity generation licences, issued prior to the coming into force of the ER Act.[220] For example, the City of Cape Town has a licence for the generation of hydroelectric power at its Steenbras Dam facility. Currently the Minister of Energy only permits independent power producers to sell electricity to Eskom.[221] The way is open for municipalities to apply for a determination by the Minister to allow them to purchase power from independent producers, or to sell power generated by themselves to customers. If such a determination were to be declined, the decision could be subject to administrative review.

5.6.5 Dovetailing renewable energy and local economic development

Municipalities can establish manufacturing clusters within their jurisdiction for incentivising the manufacture of renewable energy technologies. They can designate or zone land for this purpose and provide financial incentives for industry operators who successfully establish industries that promote renewable energy and create employment. Initiatives of this nature are justified in terms of the empowering legislative framework as discussed in Chapter 2 and Chapter 3.

5.6.6 Liberalising local government legislation to favour renewable energy

As the sphere of government tasked with land use planning and building development management,[222] municipalities have the power to pass by-laws relating to the zoning of property for renewable energy installations, and the placing of infrastructure on buildings. Municipalities can also play a role in ensuring favourable thermal

[219] In terms of Section 7, read with Schedule II of the ER Act, generation of electricity for own use is exempt from the requirement for a generation licence.
[220] This issue is also discussed in sub-chapter 2.3.
[221] The Minister's powers to make determinations regarding who may purchase electricity are also discussed in Chapter 2.
[222] Both of these are included in Part B of Schedule 5 to the Constitution.

performance of buildings, especially houses, to the extent that this is not already dealt with by national regulation.[223]

5.7 Tackling energy governance 'from the bottom up'

Bekker et al stress that electrification of communities is a 'public problem'. Energy poverty must be addressed in an integrated way with along with local economic development.[224] Besides being a public problem as stated by them, it is also very much a social problem, given that energy poor households endure harm to their health and well-being through using unsafe and unhealthy fuels. Farah and Rossi emphasise that energy sector analysis can be misleading if restricted to international and national issues, and that a proper understanding of energy governance issues is best gained at local level.[225]

It is incumbent upon municipalities as part of their integrated development planning and service delivery obligations to undertake energy planning in a participatory way and with due cognisance of the expressed needs of communities.[226] Thus energy planning and service delivery must start with an auditing and assessment process, and must be undertaken in an ongoing consultative manner.

Jarvis and Sovacool, writing generally with reference to all countries, set out what they consider to be conditions in order for an energy governance system to be credible and legitimate. These are sufficient capacity, autonomy, accountability, transparency, predictability, participation and integrity.[227]

Krupa and Birch, writing on energy future scenarios for South Africa, point out that the South African legal system has available tools and societal structures to facilitate debate and deliberation between the public, private and non-governmental sectors, and that these can be put to good use to develop a medium-term energy plan. There is fertile ground, they say, for participatory development in the energy sector and inclusion of previously marginalized voices.[228]

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[223] Spalding-Fecher & Williams mention this at p9. The South African Renewable Energy Guide for Local Government contains a success story relating to the Witsands Housing Project near Cape Town, where the City of Cape Town worked in conjunction with the project consultants to optimally design and orient the houses built for optimal thermal performance.
[224] Bekker et al, p 3126.
[225] Farah & Rossi, p 238.
[226] Chapter 4 of the MSA enjoins municipalities to ensure participation by communities in the affairs of the municipality.
[227] Jarvis and Sovacool, p 4350.
[228] Krupa and Birch, p 6257.

Krupa and Birch go on to articulate their support for off-grid solutions as a means of democratising power provision, addressing the needs of marginalised people, address environmental degradation, and reduce vulnerability of geographically remote and poor people.[229]

Municipalities are best placed amongst the three spheres of government to promote or institute a process of energy governance on a 'bottom-up' basis. As a priority, they should seek to gain an understanding of their citizens' needs and aspirations with regard to energy, and conceptualise energy development programmes to fulfil these.

Bond and Erion, writing in Macdonald, stress the need for a dialogue between corporates, environmentalists, community groups and trade unions regarding equity in energy governance issues.[230] Municipalities could play a leading role in facilitating this.

5.8 Dealing with energy provision in rural areas

Provision of energy to communities which are not suitably situated to connect to the electrical grid is a task which many municipalities must undertake. Bugaje suggests a framework for providing for the energy needs of rural communities, based on research done across several African countries. He recommends the use of solar photovoltaic technology for households and community buildings, and development of solar thermal appliances for cooking and water heating. Rural service centres are required for maintenance of the technological interventions introduced.

As long ago as 2001 Greenpeace published a report on the state of energy in South Africa in which it recommended that clusters of renewable micro-grids be established for people living in remote areas, and stated that this is a central tool for providing sustainable electricity to the poor.[231]

Municipalities which have unelectrified rural areas within their boundaries should urgently embrace the possibilities associated with off-grid rural electrification solutions. It should be borne in mind, however, that off-grid systems can also be applied in new areas of development in the urban context.

[229] Krupa and Birch, p 6259.
[230] Macdonald, p 379.
[231] Greenpeace report, p11.

5.9 Overcoming system inertia

Van Heusden, writing in Macdonald, stresses the need to overcome inbuilt systemic underdevelopment of services for people of colour in Souith Africa.[232]

With the South African energy supply industry having followed a particular path of centralised supply and transmission, and with Eskom as the sole electricity provider, for many years, a locked in situation has been established. Goldthau and Sovacool point out that changing the development path of the industry due to its increasing inefficiency and ineffectiveness is imperative, but that this will not be easy.[233] However, they emphasise that it is necessary to make this change, and that it is incumbent upon all actors in the industry to play a role. In particular, it is important that energy consumers be empowered to make smart energy choices, and if necessary to lobby for the power to do so. Municipalities can play a role in this regard by educating consumers, as intermediaries between consumers and government and as representatives of communities.

Municipalities should understand that the current negative effects of energy production and consumption are following a destructive path globally. The two major uncertainties facing the global energy system – the risk of disruption to supply, and the risk of anthropogenic climate change – must be dealt with in a combined policy environment, say Turton and Barreto, otherwise the energy system will be locked into a particular development path, which could be disastrous.[234]

5.10 The power of norm setting

As the sphere of government closest to communities, municipalities are well placed to establish norms and communicate these to other organs of state and the private sector.[235] This is an idea enthusiastically posited by Flatt, who points out that local governments across the world have traditionally been guardians of local health and safety and thus already have credible status with regard to addressing environmental issues.[236] Norm creation by municipalities can be done by educational programmes, by overt campaigning, by leading by example, or by targeting sources of degradation in the municipal area with

[232] Macdonald, p 254.
[233] Goldthau and Sovacool, p 234.
[234] Turton and Barreto, p 2248.
[235] At p 466 in 'Act locally, affect globally', Flatt cites research which has shown that social control by norm setting is enhanced when there is closer proximity to citizens.
[236] Flatt 'Act locally, affect globally', p 456.

regulatory interventions. Flatt also points out that in many municipalities the mayor has the power to influence public opinion. Thus municipalities have many opportunities to influence communities with regard to energy efficiency and choice of energy sources.

Salkin writes of the importance of local government as innovators in the renewable energy sphere. He expresses the view that changed behaviours and creative solutions, when viewed collectively, can found a 'local environmentalism'.[237]

Xi et al, writing with reference to work done in energy planning in a Chinese city, led by local champions, emphasise the role of local leadership in fostering communication and interaction when undertaking energy planning and transformation.[238]

Theron et al write of the process of engagement between municipalities and communities with regard to energy reform as a process of 'mutual social learning or conscientisation'. Social capital is a powerful tool for change, they say.[239]

In our new constitutional order in South Africa communities have a much greater voice than in the past for influencing decision making. This is due not only to the inclusion of socio-economic rights in the Bill of Rights, but also to the broad locus standi provisions in Section 38 of the Constitution. Furthermore, the non-governmental organisation sector has many resources at its disposal to drive the process of fulfilling community needs. Municipalities can play a role as co-ordinators and facilitators of initiatives for change in the energy governance sector.

5.10 Engaging with the private sector

In South Africa the national transformation of the energy sector towards onto a more sustainable path will take time, especially if public resources alone are utilised. However municipalities have a structured methodology at their disposal to enter into public private partnerships with the private sector in order to secure private sector investment into infrastructural and other projects, being Section 120 of the Local Government: Municipal Finance Management Act[240] read together with the Public-private Partnership Regulations promulgated thereunder.[241] This dissertation does not permit a

[237] Salkin, p259
[238] Xi et al, p 6008..
[239] Theron et al, p 13.
[240] Act No. 56 of 2003.
[241] These regulations were published in GNR.309 of 1 April 2005.

full analysis of municipal public-private partnerships. However it is important to note that they are conceptualised in the legislation as a vehicle for transferring capital investment cost and risk to the private sector party, whilst securing valuable services for communities.

The usefulness of public-private partnerships for energy projects is not unique to South Africa. They are an acknowledged vehicle for infrastructural projects across the world. For example, Yamusa and Ansari write of their potential for this purpose based on research of the potential of renewable energy projects in Nigeria and Algeria. [242]

5.11 Holistic planning including externalities

Winkler, writing in Winkler, Davidson et al, points out that the challenge for state entities in South Africa in undertaking energy planning is finding a balance between affordability, providing services to the poor, and complying with South Africa's international greenhouse gas mitigation commitments.[243] Thus holistic planning is required.

Winkler suggests that in order to ensure optimal energy planning, future scenarios have to be evaluated, and information disseminated to the private sector to enable market participants to drive the energy system. External cost accounting and longer term planning are essential to the process, he points out. An understanding must be sought of the relationship between the real cost of energy and economic growth, so as to balance these considerations.[244] The 'real cost of energy' must include an assessment of the cost of the negative consequences of the current energy system. This entails a sensitive economic analysis, because these negative consequences reach into the socio-economic sphere in a profound manner.

5.12 'Leapfrogging'

Mc Daid expresses the view that African countries, where there is currently litte or no energy provision, have the opportunity of 'leapfrogging' over the installation of outdated unclean technology and immediately take up available renewable technologies. Thus, he says, they experience freedom from pollution, taxes and the risk of resource depletion.[245] This vision of leapfrogging is endorsed by the SAMSET report.[246] This report furthermore states:

[242] Yamusa & Ansari, pp 155 & 156.
[243] Winkler Davidson et al, p 24.
[244] Winkler, Davidson et al, p 35.
[245] Mc Daid, p 253.
[246] SAMSET report, p 6.

> *Strengthening the role of local government is important to diversify energy governance and promote robust, locally appropriate solutions.*[247]

Thus a role is envisaged in the report for municipalities to assist communities in the making of energy choices which will enable communities to 'leapfrog' past outdated technologies.

5.13 Deriving energy from waste

In terms of Schedule 5B to the Constitution 'refuse removal, refuse dumps and solid waste disposal' is designated as a local government matter. Waste management is a major responsibility for South African municipalities. It is regulated in terms of the National Environmental Management: Waste Act ('NEMWA') and its regulations, and sometimes in addition by provincial legislation and municipal by-laws.[248]

The general duty of the state with regard to management of waste, which resides mostly with municipalities, is set out in Section 3 of NEMWA:

> *In fulfilling the rights contained in Section 24 of the Constitution, the State, through the organs of state responsible for implementing this Act, must put in place uniform measures that seek to reduce the amount of waste that is generated, and where waste is generated, to ensure that waste is re-used, recycled and recovered in an environmentally sound manner before being safely treated and disposed of.*

The principles stated in this section are commonly known as the 'waste hierarchy', since they lay down waste management techniques in order of priority. The first priority is the reduction of waste generation. This is followed by re-use, recycling and recovery, in order of priority, and then by safe treatment and disposal. Thus it is no longer lawful for municipalities to dump all waste in landfills without following the principles of the waste hierarchy.

In recent decades many technologies have been developed for the beneficiation of waste and the deriving of energy from waste. A full consideration of these is outside the scope of this dissertation. However useful insight into some of the available technologies can be found in the 2013 report of the World Energy Council entitled *World Energy Resources: Waste to Energy.* Scrutiny of this report reveals a range of waste processing

[247] SAMSET report, p 6.
[248] Act No. 59 of 2008.

technologies which municipalities could undertake, of their own volition or together with private sector role players. These include thermo-chemical conversion techniques, such as combustion, gasification, pyrolysis and liquefaction, which can produce heat and electricity or a variety of fuels. They also include biochemical techniques such as anaerobic digestion, fermentation, microbial fuel cells and trans-esterification, which produce a variety of gases and fuels.[249] In addition, municipalities can extract gas from landfills, which can be used as a fuel, including for generation of electricity.

Technologies for deriving energy from waste open up many new opportunities for municipalities, not only to find new energy sources which may be less costly and environmentally harmful that coal-fired electricity, but also to offer their communities environmental and health benefits from better managed, less or smaller landfills. The technologies to derive energy from waste are innovative and may be expensive, which may render waste to energy projects suitable for public-private partnerships, in order to attract private investment capital.

5.14 Conclusion: taking a broad view of the role of municipalities with regard to energy governance

In this chapter various ideas have been presented as to how municipalities can embark on broadening their involvement in matters of energy governance. This is not necessarily an exclusive list – energy is a rapidly evolving field, with new technologies constantly under development.

The most significant of the issues raised in this chapter is that the rapid development of renewable technologies and their new-found affordability has massively expanded possibilities with regard to municipalities pursuing localised energy solutions.

Spalding-Fecher and Williams take a positive view of the future scenario for energy sector reform in South Africa. They point out that the sector now responds to externalities such as economic efficiency, social equity and environmental sustainability, which were not considered in the past. Thus, they say, the present time is a time of opportunity for change in the sector.[250]

Chapter 6 which follows ties together the various threads of discussion regarding municipalities' role in energy governance.

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[249] World Energy Council, p 7b.6.
[250] Spalding-Fecher & Williams, p 8.

CHAPTER 6

CONCLUSION: MUNICIPALITIES AND ENERGY GOVERNANCE

The thrust and focus of this dissertation has been to show that municipalities have a positive role to play with regard to the governance of energy matters within their areas of jurisdiction.

Municipalities should understand and embrace their autonomy and responsibility, principally derived from the Constitution and the MSA, but also reinforced by other national legislation and international and domestic policy, and apply this in taking an active stance in the sphere of energy governance. In so doing, they should bear in mind the cardinal role that energy plays in sustainable development and the fulfilment of fundamental needs and rights of people. They can embrace this role in the knowledge that they are supported by the domestic legislative and policy framework, and by a developing trend in international and domestic policy, and in domestic jurisprudence, to consider access to energy as being a topic worthy of consideration in the human rights discourse.

In taking on an active role in the energy sphere municipalities should educate themselves and their constituents about and pursue ways in which they can ensure that energy is provided to their communities in such a way that socio-economic upliftment and energy security is assured.

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