

**SCHOOL OF PUBLIC LEADERSHIP**

**COLLOQUIUM**

**MPHIL IN SUSTAINABLE DEVELOPMENT  
PLANNING & MANAGEMENT**

**8 NOVEMBER 2013**

**SUSTAINABILITY INSTITUTE, LYNEDOCH**



# PROGRAMME

## SESSION 1

<b>08:00 – 08:15</b>	<b>Welcome</b>	
<b>08:15</b>	Ecological Food Sense: Exploring the role food waste flows could play in contributing to food production in Enkanini informal settlement, Stellenbosch	<a href="#"><u>Claire Mollatt</u></a>
08:35	<i>Discussion</i>	
<b>08:45</b>	Towards a sustainable incremental waste management system in Enkanini: A transdisciplinary case study	<a href="#"><u>Vanessa von der Heyde</u></a>
09:05	<i>Discussion</i>	
<b>09:15</b>	Understanding Ethics in Sustainability Transitions: Towards a Sustainable Food System in Stellenbosch	<a href="#"><u>Cris Robertson</u></a>
09:35	<i>Discussion</i>	
<b>09:45</b>	The implementation of Agroecology by selected households at Mazabekweni, KwaZulu Natal: Its effect on their food production, diet and food security	<a href="#"><u>Dougie Strachan</u></a>
10:05	<i>Discussion</i>	
<b>10:15</b>	Seed Freedom or Serfdom: an exploration of sustainable alternatives to consolidation of the seed industry in South Africa	<a href="#"><u>Stefanie Swanepoel</u></a>
10:35	<i>Discussion</i>	
<b>10:45 – 11:15</b>	<b>Tea</b>	

## SESSION 2

<b>11:15</b>	Sustainability as a regional planning tool	<a href="#"><u>Roy Gardener</u></a>
11:35	<i>Discussion</i>	
<b>11:45</b>	Sustainability Benchmarking Process – Pilot	<a href="#"><u>Casper Meiring</u></a>
12:05	<i>Discussion</i>	
<b>12:15</b>	An [outcome] evaluation of the Masupa-Tsela Youth Pioneer Programme implemented by the Eastern Cape Department of Social Development: Mhlontlo Local Municipality	<a href="#"><u>Qaqamba Xalisa</u></a>
12:35	<i>Discussion</i>	
<b>12:45</b>	Extractivism and Transition in Africa: Opportunities and Challenges	<a href="#"><u>Maria Huber</u></a>
13:05	<i>Discussion</i>	
<b>13:15</b>	Barriers to and policy opportunities for the growth of renewable energy technologies in South Africa- rethinking the role of municipalities	<a href="#"><u>Maloba Tshehla</u></a>
13:35	<i>Discussion</i>	
<b>13:45 – 13:50</b>	<b>Closing remarks</b>	



## Ecological Food Sense: Connections between food waste flows and food production in Enkanini Informal Settlement, Stellenbosch

Michelle Claire Mollatt

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### MPhil Programme in Sustainable Development Planning and Management

In this thesis, ways that biological and social aspects of soil quality and food waste management can be incrementally improved in Enkanini, an informal settlement in Stellenbosch, South Africa are explored. In an ongoing pilot project in 2013, food waste was collected by 56 households over five months. It was treated with Bokashi Effective Micro-organisms (Bokashi EM) containing yeasts, lactic acid bacteria, actinomycetes and photosynthetic bacteria. Waste was partially fermented before composting or feeding to Black Soldier Fly (*Hermetia illucens*) larvae. A total of 5851kg of waste was collected, saving the municipality 6m<sup>3</sup> of landfill space. Households generated 5,2kg - 9,6kg of food waste per week. Using the lower figure for the whole of Enkanini (about 2400 households), 50 151kg of food waste could be generated per month. If this were collected and recycled or composted, this would save 51,2m<sup>3</sup> of landfill space per month. The most commonly cited benefit of food waste collections by participants was reduction of vermin in or around their homes. Using transdisciplinary methodology, social learning perspectives and ecological thinking, different methods of managing food waste in Enkanini were explored. Laboratory testing of food waste, compost and soils determined the safety and potential of food waste for recycling and contribution to local urban agriculture, to close the organic waste loop. Nutrient, bacteria and heavy metal tests were done to understand soil ecological conditions and determine the safety of treating food waste with Bokashi EM to make compost. Some samples had high levels of *Escherichia coli* (*E. coli*) bacteria. It was cautioned that vegetables grown on these soils or compost be washed in water that has chlorine added, or that they be boiled before consumption. No traces of *Salmonella* were found in food waste, compost and soil samples, and most were within acceptable limits for heavy metals. Following socially and ecologically sustainable management of Enkanini's food waste requires a combination of management methods. Implementation of incremental *in situ* improvements of food waste management infrastructure as well as of soil conditions were considered more achievable through these combinations.



## **Towards a sustainable incremental waste management system in Enkanini: A transdisciplinary case study**

Vanessa von der Heyde

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As the global population grows and more countries industrialise, waste streams will grow proportionately. Current waste management practices and product manufacturing processes dictate that a large proportion of waste ends up in a landfill or incinerator. The predominant manufacturing design is a linear, one-way model that extracts resources for manufacture, which eventually end up in a landfill or incinerator, rendered useless. This is an unsustainable use of resources, not only of the ones that were extracted to manufacture the product, but also of the land used to dump waste. Along with this goes the increasingly significant issue of food waste and the issues of global hunger and food insecurity. It is estimated that globally one third of all food that is produced is wasted, equalling a total of 1.3 billion tonnes of food waste a year. Wastage of food causes a loss of potentially valuable food sources, or a potential resource for other processes, such as composting or energy generation. The poor are normally the first affected by limited or dwindling resources, and as yet, there are no significant signs of poverty alleviation. Worldwide, there is a proliferation of informal settlements, or slums, and how to deal with these settlements has formed part of international political and societal discourse for a long time. In South Africa, policies dictate that informal settlements should undergo an incremental, in situ upgrading process, where possible. Although this marks a positive development from the previous housing policy, substantial uptake on the ground has as yet not occurred. Consequently, this study attempted to combine the issues of waste management, in particular of food waste, and incremental upgrading of informal settlements through a transdisciplinary case study that focuses on upgrading the food waste management system in Enkanini, an informal settlement in Stellenbosch, South Africa. A waste characterisation study undertaken by Stellenbosch Municipality showed that food waste makes up a substantial part of the waste stream generated in Enkanini. As informal settlements often lack adequate waste collection services, the food waste poses a health risk by breeding pathogens and attracting pests. Through a transdisciplinary approach, an alternative food waste treatment method was piloted in Enkanini in partnership with Stellenbosch Municipality and Probio (Pty) Ltd. The method used bokashi substrate to treat food waste with microorganisms. This was then processed further into compost through the sheet mulching method and by black soldier fly (*Hermetia illucens*) larvae. The outcomes were assessed according to the environmental, social and economic sustainability of this method of waste processing and indicated a positive impact in all three of these categories.



## Understanding Ethics in Sustainability Transitions: Towards Social Learning for Sustainable Food Systems

Christian Anton Robertson

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This thesis explores the importance of an appropriate understanding of ethics in sustainability transitions. Through a conceptual analysis, it finds that the dominant understanding of modernist ethics is unsuitable to the contexts of contingency in sustainability transitions, and that the participatory understanding of ethics as a complex system presents a far more adequate approach to the ethical complexity of socioecological systems. In particular, the strategy of 'practising provisionality' is suggested, which understands the process of ethical decision-making as a process of social learning. This argument is further supported by a critical reflection on the food system context. The present dangers and future uncertainties of sustainability transitions are issues of incredible complexity. Socioecological interactions can have unpredictable impacts on our ability to the needs of both current and future generations, like realising a sustainable food system. Moreover, there are difficult decisions that we also to make in such dilemmas, like the extent of natural resource exploitation, where normativity plays a large role. This means that these complex issues are also ethical issues. The importance of understanding ethics in sustainability transitions is, therefore, of great importance, since we will want to believe we are making the 'right' choices in these changing contexts. However, the understanding of ethics that dominates traditional scientific thinking and academic inquiries represents a paradigm of thought that is insensitive to complexity of socioecological systems, and is therefore, inadequate in addressing the ethical complexity of sustainability transitions. In the context of food systems, this is demonstrated in the linear emphasis on food production that dominates the ethics of realising sustainable food systems. This thesis argues that a more appropriate way of thinking about ethics in times of contingent contexts and socioecological change would have to account for complexity. In an acknowledgement of the complexity of ethics, it is argued that every decision has elements of moral consideration, and that there is also no way to know objectively whether the respective decision was morally 'right' or 'wrong'. Such an understanding of complex ethics would, therefore, emphasise the importance of recursively reasoning through every ethical decision to address any reductionisms of complexity; adopting an attitude of modesty and openness towards dialogue, and adopting a student mentality of social learning that would improve upon one's complex ethical reasoning. Subsequently, the paradigmatic shift of a complex approach to ethics is more adequate in understanding ethics in sustainability transitions.



# The design, implementation and assessing of an agroecological cropping system by rural KwaZulu-Natal households; its effect on their diet and food security

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## MPhil Programme in Sustainable Development Planning and Management

This thesis documents a Participatory Action Research (PAR) project conducted from 2011 to 2013 in a rural communal area in southern KwaZulu-Natal, South Africa. The area is a microcosm of the global environmental and socio-economic polycrisis; with adult unemployment at 50 percent, 73 percent female-headed households, heavy dependence on government social grants and a food system reliant on purchased food. Eight, mainly female-headed households (the co-researchers), assisted by the student researcher, implemented and assessed a cropping system, designed on agroecological principles, on their abandoned garden plots. The objective was to grow culturally acceptable food crops to supplement their household diets and positively affect their food security. The student researcher provided the necessary infrastructure, including goat-proof plot fences, hand tools, a grain hammermill, seed, and fertilizer. The literature review, which also used early 1900's photographs and contemporary isiZulu language as evidence, revealed the agroecological basis of pre-colonial agriculture. However, colonial and apartheid influences destroyed this knowledge base. The cropping system design utilized practices from this pre-colonial era combined with current agroecological techniques. The agroecological techniques employed on the plots included non-inversion tillage of planting pits using garden forks, precision placement of phosphate fertilizer and animal manures, open pollinated seeds, east-west orientated strip cropping, soil surface mulches, crop rotations including legumes and the use of chickens to control pests. Dryland crops included maize, beans, sweet potatoes, and butternuts, with small trial vegetable patches on some plots. The research identified a method to calculate the planting frequency of these vegetables to ensure a constant annual supply, however further research is needed. The dryland crops supplemented household diets between harvests. The formation of structured groups amongst the households proved vital to the success of the cropping system, providing mutual labour assistance, shared decision-making, building knowledge and moral support. The importance of dialogue and trust, reinforced by the student researcher's ability to communicate in isiZulu with the co-researchers, formed the basis of both the PAR, and Focus Group Discussions, used to qualitative assess the cropping system. During these, the households reported a good understanding of the agroecological principles of the cropping system, a willingness to continue with it post research, and positive benefits, including better health, and money saved on food purchases, redirected to improve their asset base. The World Food Programme (2008) Food Consumption Score Analysis Method (FCS), modified to show the percentage contribution of homegrown food to the FCS, provided the quantitative assessment of the cropping system. The FCS scores rose during the research, with homegrown food contributing over a third of the FCS at times. The co-researchers suggested instituting group '*stokvels*' - an informal group saving mechanism, regulated by peer commitment that is unique to the Black South African community - to finance inputs and maintain infrastructure post research. The financial implications of these '*stokvels*' was calculated. Due to the initial success of the PAR, the research recommends a method to extend the cropping system to more households, utilizing state finance to provide the infrastructure, and the co-researchers imparting technical knowledge through farmer-to-farmer extension.



## Seed politics: An exploration of power narratives in the South African seed industry

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This study attempts to unravel the contradictory power relations shaping South Africa's seed system and to explore spaces of system intervention that could allow alternate seed systems to emerge. As a base for the agricultural sector, the seed system plays an important role in determining the type, quality and cost of seed supplied to the country's farmers. By extension then, it also partly determines the type, quality and, to some extent, the cost of food sold to the country's citizens. Ownership of seed germplasm, protected through plant breeders' and intellectual property rights, is a contentious, current issue. Debate on international and national levels focuses on possible health issues related to consumption of genetically modified food, ethical considerations around ownership of plant life, monopolisation of seed markets, and the implications of biodiversity loss on food security and climate change adaptation. The first article (*Contesting the credibility of consolidation of the South African seed industry*) examines how historic and current power relations (on a global and local level) have shaped the 'modernistic' direction of South Africa's seed system, which is now dominated by two US-based multinational companies. The contradictions between this direction and state policy are highlighted, focusing particularly on issues of food security, biodiversity and climate change. Article 2 (*Imagining a sustainable South Africa seed system*) unpacks the assumptions on which the current system is based, in order to provide space for a new 'narrative' around seeds to emerge, motivating for a collaborative 'imagining' of a sustainable seed industry, based on a social learning approach. Points of system intervention are suggested and expanded on. In both articles, the complexity of seed systems is outlined providing a framework for understanding the interconnectedness of system elements, intervention points and potential for non-linearity. The study weaves together theory drawn from a diversity of themes to expose how the 'hidden' faces of power (entrenched in economic hierarchies and institutions) predetermine the path of the system and whom it benefits and whom it excludes. These themes include economics of consolidation, innovation theories, patenting issues, South African policy documents, international treaties and agreements, systems theory and complexity thinking, social learning, industrial and agro-ecological farming methods, agricultural productivity, and climate change. The study promotes social learning as a tool that could unlock the potential of the seed system to contribute to the urgent issues South Africa faces around biodiversity loss, food insecurity and climate change.





## **Sustainable Regional Development: Developing a Sustainability Assessment Framework for District and Metropolitan Integrated Development Plans**

Roy Gardener

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### **MPhil Programme in Sustainable Development Planning and Management**

Achieving the goal of sustainable development (SD) and sustainability has proven to be a difficult task, *inter alia*, because the definitions of the terms are fuzzy, ambiguous and are interpreted differently depending on the context. The spatial scale at which sustainability should be addressed varies from site specific to the global level. The niche area, which has had little attention specifically in the South African context, is the regional scale. Integrated Development Plans (IDPs) are just one means by which sustainability can be mainstreamed into regional development planning within the South African context. IDPs are seen as holistic, multi-sectoral, strategic plans for district, metropolitan and local government, required in terms of national legislation. Legislation and guidelines on IDPs suggest that their purpose should be to contribute to sustainable development, but it is questioned whether this is the case. Sustainability Assessments (SAs) can be seen as instruments to direct decision-making towards sustainability, and the purpose of this study was to review current IDP Assessment Frameworks (AFs) used by national and provincial governments to assess IDPs, specifically in the Western Cape, from a sustainability perspective. A literature review was conducted to establish the meaning of sustainability and sustainable development in the context of regional planning, the challenges facing regional planning, and the issues that need to be addressed in IDPs in order to promote sustainability. The objective of the study was to present new and innovative ways of addressing SD and sustainability at a regional scale, as well as identifying lessons learnt through examining and assessing policies and plans both locally and abroad. The literature review highlighted lessons that can be learnt from systems and complexity thinking, transdisciplinary approach, transition management, resilience and regional innovation. The use of Impact Assessments (IAs) and Sustainability Assessments (SAs) from other countries, as well as South Africa, also proved valuable. A review of existing IDP AFs was performed, to determine where the gaps are and whether the principles of regional sustainability are incorporated into current AFs. It was established that current IDP AFs do not adequately assess sustainability issues in district, metropolitan and cross-border regional plans. Current AFs lack depth from a sustainability perspective, and therefore a new Sustainability Assessment Framework (SAF) is proposed for metropolitan and district IDPs. This SAF highlights nine (9) domain-based categories relating to sustainability that should be used as informants of IDPs. These are: (1) Resilience and Resilient Governance, (2) Transition Management, (3) Transdisciplinary approach, (4) Complexity and Systems Thinking, (5) Regional Innovation Systems and Technology, (6) Resource and Environmental Planning, (7) Use of Strategic Environmental Assessments, (8) Social and Economic Planning and (9) Infrastructure Planning. Further informants into the SAF were goal-based categories derived from the Western Cape Strategic Plan. These tie in with the National Development Plan and Millennium Development goals. Different indicators were then developed to achieve these goals and were used to rate, weigh and score IDPs based on a scorecard that was developed. The overall 'sustainability rating' of the IDP could then be calculated. The value of the study is that the proposed SAF can be used to guide the crafting, designing and improvement of current IDPs that scored poorly when examined against the SAF. It also serves as a basis from which the governmental spheres can expand on in order to create fully integrated and sustainable IDPs.





## **Developing a Sustainability Benchmarking System: A case study of the Provincial Government Western Cape's immovable asset assessment pilot project**

Casper Johannes Knoetze Meiring  
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Building structures have a major impact on the quality of the macro-climates of the world, in particular in terms of pollution and environmental costs associated with their creation, operation and maintenance. Global trends emerging to make buildings more efficient, effective and sustainable led to the question of how one can establish how sustainable existing buildings are. A number of building rating tools, like LEED, BREEAM and Green Star, already rate and certify buildings in terms of their environmental performance, but seem to fall short of establishing overall building sustainability performance. It also does not address what is to become of existing buildings, as these tools mainly focus on new developments and major renovation work. When these concerns are combined, the objective of the Provincial Government Western Cape (PGWC) to comply with the Government Immovable Asset Management Act, Act no.19 of 2007 (GIAMA), which requires that all government buildings be assessed in terms of their sustainability, links to the problem statement of this study. This in turn led to a number of research questions being asked. The first of these questions are what lessons can be learnt from currently available rating systems and would it be possible to track and monitor the sustainability performance of a building over time? This triggered a series of related questions: What role can benchmarking play in establishing and tracking a building's sustainability over time? How can benchmarking help to identify which part of a building's overall sustainability is most in need of resourcing, to bring it closer to overall sustainability? How can capital and maintenance expense budgets associated with the building life-cycle be effectively utilised to bring buildings closer to overall sustainability? How can the availability of detailed information pertaining to the costs and benefits of green investments in existing buildings help building owners to identify the best initiatives to invest in? The methodology used in this study to answer the above questions is based on two research approaches. The first part of this study will make use of non-empirical research in the form of a literature review to establish and define the knowledge framework to be used in the second case study portion of the study. The methodology used for the case study was based on applied research, where the real life problems associated with the development of a sustainability benchmarking process for the PGWC was documented. The results of the study found that all the propositions associated with the research questions was in principle correct, but it was found that there is a missing link between theoretical knowledge of sustainability benchmarking and the legislative requirement of GIAMA, and that is a universal standard for collection the required data.



## **An evaluation of the Masupa-Tsela Youth Pioneers Program implemented by the Eastern Cape Department of Social Development & Special Programs within Mhlontlo Local Municipality**

Qaqamba Xalisa

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### **MPhil Programme in Sustainable Development Planning and Management**

Since the advent of democracy in South Africa, the government has prioritized youth development in the country. The strides made by government include setting up institutional arrangements, developing policies and implementing programs targeting young people in the country. However, despite the efforts made to develop young people, the youth transition to adulthood is still extremely difficult, more especially for unemployed black females who reside in rural areas. Youth unemployment is the biggest problem affecting the youth in South Africa and globally, and the majority of the unemployed youth have been categorised as 'Not in Education, Employment or Training' (NEET). Being unemployed and also not being in education or training to prepare for future employment, limits future employability of the NEETs. The Department of Social Development and Special Programs in the Eastern Cape Province implemented the Masupa-Tsela Youth Pioneers Programme (MYPP) to intervene in the high rate of youth unemployment in the Province. The program in the Province was never evaluated and as a result there is no evidence of the success or failure of this youth program. This study evaluates the implementation of the MYPP with a particular focus in Mhlontlo Local Municipality within O.R. Tambo District Municipality in the Eastern Cape Province. Mhlontlo Local Municipality is a rural municipality characterized by high youth unemployment, high youth poverty, low levels of education among youth and low literacy levels among adults. The purpose of the study was to explore and discover whether the intended outcomes of the MYPP were achieved and what the specific challenges of the youth were. Evaluation research is used in this study to explore the MYPP. According to Mouton (2001: 569) evaluation research assesses the conceptualization, implementation, and impact of development programs and projects. The data collected during this study, through focus groups, interviews, questionnaires, and document review, revealed that the program mostly achieved its intended outcomes, although there are areas that need to be improved in the future implementation of the program. However, the goals and outcomes of the MYPP were not adequate to address the size of the challenge. On the basis of the findings of this study, the researcher recommends outcomes based planning in the Department, up-scaling of the programme, as well as improved participation of the youth in the programmes designed to improve their lives.



## Extractivism and Transition in Africa: Opportunity and Challenges

Maria Huber

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Existence of natural resources in a majority of African countries has been identified to support further development due to continuously increase in commodity revenues. However, the resource curse presents critical aspects of resource intensive economies such as short-term benefits of commodity revenues, limited economic diversification and unstable government. Due to natural resource abundance in Africa, extractive industries are essential in the domestic economic system, although the disadvantages based on the resource curse theory question the support of commodity revenues in Africa's development. South America views the issues of extractive industries from a different perspective by analysing the related developmental approaches namely conventional extractivism, neo-extractivism and post-extractivism. While South American countries are in different transition phases of extractivism, Africa is dominated solely by conventional extractivism. This results in varying degrees of social and environmental impacts on the African continent. However, Africa's transition towards neo- or post-extractivism will limit the challenges of resource curse and offers a more sustainable resource management of the extractive industries. The Environmental Kuznets' Curve (EKC) supports the principle of developed and recently industrialised countries by relying on the economic development, which will reduce environmental degradation automatically by achieving a specific turning point. The three phases of EKC can be related to different stages of economic development, as well as to the three extractivism approaches. Therefore, transitions from conventional extractivism to neo-extractivism and finally to post-extractivism have to occur to stabilise economic development and reduce environmental degradation. Within this process of transition towards more sustainable extractivism approaches, the principle of "Sustainable Structural Transformation" (SST) is applicable. SST was described in the UNCTAD report (2012) as a tool to reduce environmental impacts while continuing to provide for the demand of an increasing global population. Neo- and post-extractivism approach supports the concept of SST, which primarily emphasise more efficient technologies, new economic activities, labour productivity and regulations. The foundation of SST is based on resource decoupling in order to separate economic developmental process from natural resource extraction while minimizing environmental impacts. For the application of SST and thus for the transition of extractivism reinvestment is essential to create a diversified economy. While reinvestment can take place in various forms, the World Bank (2011) identified three types of wealth namely natural, produced and intangible capital contributing to the total wealth of a country. However, developing countries prioritise natural wealth in comparison to other forms of wealth; therefore, reinvestment has to take place in intangible and produced capital in order to achieve sustainable development in Africa. UNCTAD (2012) considers SST as a framework without an attempt of creating a "one-size-fits-all" solution. This understanding is crucial for the transition from one phase of extractivism to another. Depending on the context of a country, tools have to be adapted to support the needed transition. These existing differences are presented in the case studies of Nigeria and Botswana, which are two developing countries in Africa but they present different stages of extractivism and resource management.



## **Barriers to, and policy opportunities for the growth of renewable energy technologies in South Africa: Rethinking the role of municipalities**

Maloba G. Tshehla

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### **MPhil Programme in Sustainable Development Planning and Management**

Amid the climate change crisis of the 21<sup>st</sup> century, South Africa faces its own, tailor-made challenges. In its attempt to contribute to the global effort to mitigate climate change and achieve sustainable development, South Africa faces the challenge of a history steeped in cheap electricity - the curse of an abundance of coal. The municipality, as the lowest leg of governance, currently finds itself at a tough nexus; needing to provide constitutionally mandated basic services and ensure economic development while contributing to the country's sustainable development. This thesis, via a complex systems approach, explores the major barriers and policy opportunities in the implementation of renewable energy technologies (RETs) by municipalities embedded within the larger ambit of the South African government, as they attempt to address what the author has termed the 'municipal dilemma'. What is especially interesting with the complex systems approach are the notions of learning and therefore the adaptability of complex systems, and its relevance of this notion to the South African context'. From a literature analysis of policy, through to a specific case study of Hessequa municipality, this study sought to assist municipalities in addressing this dilemma. South Africa's energy and municipal management policy, starting from the Constitution, is found to be conducive to the growth of RETs. Furthermore, there are clear channels through which municipalities can engage with these new technologies to address the municipal dilemma. What is seen to hinder this process is a web of institutional, political and therefore regulatory barriers stemming from the over-politicization of the country's energy sector - a direct result of a long history entrenched in coal-fired electricity generation. What was found lacking in the South African energy debate was the perspective of the municipality itself, which is ultimately tasked with catering for the energy needs of South African citizens while participating in national efforts. Numerous common themes were highlighted in the local and global context and in a specific case study which form the basis of the conclusions of this thesis. The notion that municipalities are best positioned to be influential in the growth of RETs is reinforced by the literature explored and through a complex systems approach. To effectively play their role, municipalities must: (a) be creative and courageous in their development of appropriate policies to support RETs; (b) align their efforts with provincial and national programmes and simultaneously influence these programmes through municipal experience; (c) take advantage of systems in place, such as the Integrated Development Plan (IDP) process, to gradually build capacity within the municipality to manage increasingly complex RET implementation; (d) develop long-term strategies which, as per the tenets of complex systems theory, must feed from and into the ever-changing national and global landscape. This thesis posits that the municipal dilemma not only needs to be addressed, but offers the municipality a unique opportunity to rethink its role in the South African context. What has been found is that appropriate policies already exist, but simply require municipalities to take their place as custodians of sustainable development.

