Identifying Needs and Opportunities for Local Government Environmental Education and Training in South Africa

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Abstract

Effective environmental management and public engagement with environmental concerns are needed for the attainment of sustainable development goals and socio-ecological balance in local government contexts. This vision is clearly articulated in international environmental policy frameworks and in South Africa's national and regional legislation. However, policy and legislation fall short of identifying the range of a priori *competences required by local government officials and environmental managers before well intended policy can be translated into effective practice. This paper reports on recent research into identifying the underlying competences required for better environmental management and the establishment of education and training processes for local government managers. The research draws on the notion of 'applied competence' put forward by South Africa's National Qualifications Framework, and argues that greater attention needs to be paid to competence-based capacity building processes within local government departments if environmental sustainability and development goals are to be met. The paper draws on the researchers' experiences of formulating a national level generic competence framework for environmental management, and conducting an education and training needs analysis for the Makana Municipality in the Eastern Cape province of South Africa. Early findings suggest that a broad range of competences all have a role in ensuring the capacity and effectiveness of local governments to better manage their local environment. The paper argues that these are significant for the development of environmental education and training programmes in local government contexts.*

Introduction

The role of education and training processes in supporting local governments to fulfil their daunting and significant mandate of environmental management service delivery has been under–researched (and often overlooked) in the field of environmental education in southern Africa (Lotz–Sisitka, 2003). This paper reports on early stages of research and intervention in the sector of local governance in South Africa, and draws attention to axes of tension and new opportunities with the intention of stimulating wider research and responses. In this paper, our interest lies in finding ways, through education and training research, to support local governments to translate their policy frameworks into practice. We suggest that part of the solution might lie in supporting the development of 'Applied Competence' amongst those employed as environmental managers and local government officials (DEAT, 2004), as proposed by South Africa's National Qualifications Framework. Drawing on experiences of working with the Makana Municipality in the Eastern Cape province of South Africa, we describe

how contextually situated education and training processes across *all* levels and sections of local government might begin to generate substantial change at the interface of people and environment. We put forward our experiences not as a completed case study of a 'winning formula', but rather as a tentative 'work in progress' whose orientation and design may prove useful in other research and development programmes focusing on environmental management in local government contexts.

An International Policy Background

It is the general mandate of local governments in South Africa to remediate historically created environmental problems, respond to present-day challenges and proactively manage change towards more socially and ecologically sustainable futures. This close connection between environmental wellbeing and the functioning of local governments first received wide recognition through *Local Agenda 21*, an output of *Agenda 21* of the Rio Summit in 1992. Agenda 21's *Programme for Action for Sustainable Development* set in place policies and programmes to achieve a balance between the primary driving forces of environmental change (resource consumption, pollution and population growth) and the world's natural resource base on which sustainable development depends (MEA, 2005). Chapter 28 of *Agenda 21* recognises that, '… the participation and cooperation of local authorities will be a determining factor in fulfilling its objectives' (UNCED, 1992). By adopting a *Local Agenda 21* strategy, local authorities pursue the wider goals of *Agenda 21* through community consultation processes, partnership programmes and the extension of '… existing institutions working in the field of local authority capacity building and local environmental management' (UNCED, 1992).

A decade after the introduction of *Local Agenda 21,* the *Millennium Development Goals* (UNCED, 2002) prioritised poverty, hunger, illiteracy, disease, discrimination and environmental degradation as the focal points of humanity's plight. Although not explicitly stated, the *Millennium Development Goals* set an international agenda for the content and focus of education and training programmes that should be '… more relevant and responsive to contemporary socio-ecological and socio-economic challenges at local, national and international levels' (Lotz-Sisitka, Hamaamba, Kachilonda, Zondani, Kula, Olvitt & Timmermans, 2005:16).

Proceedings of the 2002 World Summit on Sustainable Development (WSSD) conceded that too little had been achieved at global, national and local levels in mobilising policy visions into practice (Keeley & Scoones, 2003). Beyond the WSSD, hopes for future municipal successes were once again invested in policy, this time in the *Local Government Declaration* (IULA, 2002), in which leaders recommitted themselves to the targets of *Agenda 21*, and the *Declaration of Sustainable Development by African Mayors* (Thale, 2002). The latter reaffirmed commitment to the goals of sustainable development and to building on progress already made (although it should be noted that public and politicised commitments such as these do not necessarily demand rigorous and critical engagement with the complex discourse of sustainable development nor its implications). In this Declaration, a priority commitment was to empower and reinforce the capacity of local government to become efficient and effective managers and play a pivotal role in creating a more sustainable future (ICLEI, 2001).

Most recently, the draft implementation plan of the *United Nations Decade of Education for Sustainable Development* makes the connection between the goals of sustainable development and the functioning of local government. It explains how local governments, as '… the closest level of government to the people, tasked with the delivery of public programmes and services, have a key role in improving the quality of people's lives and achieving the goal of sustainable development' (UNESCO, 2004:42).

In the light of such international policies, it is surprising to note the scarcity of research over the past decade into environmental education and training in local government contexts in southern Africa. The research reported here developed from a concern that insufficient attention to environmentally-oriented education and training processes within local governments in South Africa could jeopardise the country's progress towards long-term socio-ecological balance and sustainability.

Post-1994 transformations in the national education and training system in South Africa introduced the concept of 'lifelong learning' within a 'competence-based system'. In line with international trends, critics argued for a broadening of the conception of competences to something more than discrete skills isolated from their context or underpinning knowledge and understanding (Kraak, 1999). Broad competences are thus those which:

> … prepare workers to face the challenges posed by the new global economic context – adaptability in the face of change, understanding and participation in the management of work roles and production systems, taking responsibility for contingencies, quality control, innovation and flexible responses … competencies which are impossible to develop in narrow training systems. (Kraak, 1999:52)

The most recent broadening initiative has been the development of the idea of Applied Competence which involves a combination of three distinct categories of competence – foundational, practical and reflexive.

Applied Competence as a Guiding Framework

The notion of Applied Competence was first presented in the *Green Paper on a Skills Development Strategy for Economic and Employment Growth in South Africa* (DoL, 1997) and also appears in the *Norms and Standards for Educators* (DoE, 2000). In these documents, Applied Competence is upheld as a mechanism for enabling transformation in an outcomes-based education system.

The Education and Training Practices Project (NTB, 1998) identified important links between Applied Competence and successful policy implementation. The project reports that although policy is centrally made, it is 're-made' during implementation as the people tasked with realising the policy into practice give it identity and form.

> If this is the reality of how transformation happens, the evidence points to the importance of equipping those who will be responsible for turning policy into practice with the skills

to do so. Improving the 'professional judgement' of users has become an important focus in achieving transformation. (NTB, 1998:31)

Applied Competence, which arises from the combined application of a person's practical, foundational and reflexive competence, is regarded as particularly useful because (in an environmental management context for example) it helps to clarify what an environmental manager needs to know and should be able to do. *Practical Competence* is the demonstrated ability to perform a set of tasks. This may include contributing to the development of an Integrated Management Plan, implementing public participation and community involvement mechanisms, or managing ecosystems in ways that promote biodiversity. This is seen as the 'practical' dimension of effective environmental management practice. *Foundational Competence* is the demonstrated understanding of what a practitioner is doing, and why. It includes, for example, practitioners' knowledge of relevant environmental legislation, their understanding of the significance of educational processes, the effects of air pollution or concepts such as 'biodiversity' and 'sustainable development', etc. *Reflexive Competence* is the demonstrated ability to connect what is *known* with what is *done* so that practitioners can learn from their actions and make adaptations for improved practice. Although easily overlooked, this dimension of reflexive competence is of significance to environment and sustainability-focused education because it requires practitioners to reflect critically on the work they do, possibly even challenge the *status quo*, and proactively seek ways of improving practice within their areas of responsibility.

Figure 1. The balanced interaction of practical, foundational and reflexive competences combine to constitute Applied Competence
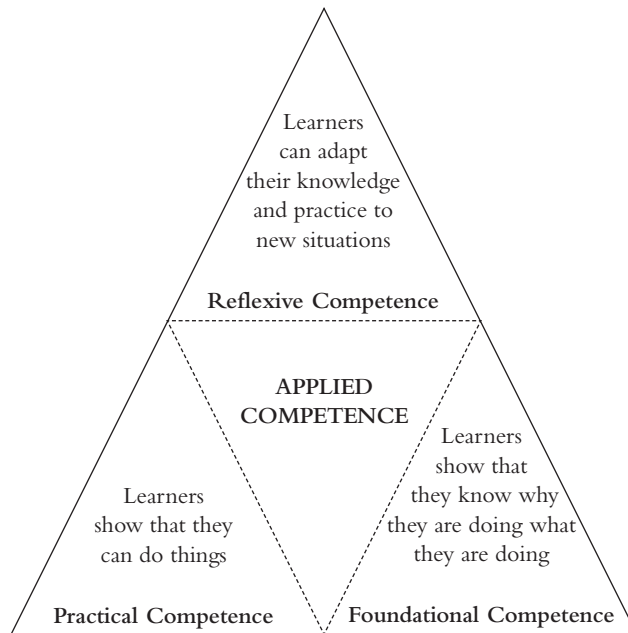
(Source: Le Roux, 2001:11)

Initiating a Small-Scale Research Project

In considering the scope and significance of local governments' mandate in South Africa, two separate but related questions are raised. Firstly, what types of competences are required of environmental managers? Secondly, what types of education and training interventions would support and enable the development of such competences? Insights towards answering the first question came through a small research project commissioned by the national Department of Environmental Affairs and Tourism (DEAT) in 2004, which was conducted by researchers from Rhodes University (lead author included) (DEAT, 2004).

The commission called for an analytical study of the education and training needs implied in current national environmental legislation. These needs are described as 'implied' because legislation does not refer to them explicitly; rather, they are implied through the mandatory activities of environmental managers, as stipulated in the legislation. For instance, the Protected Areas Act of 2003 requires that the development of a management plan for a protected area '… must contain at least … procedures for public participation' (RSA, 2003a:32). Similarly, the Biodiversity Act requires that the authority, before exercising power in terms of this Act must '… allow public participation in the process' (RSA, 2004:80). It is explicit here that governmental communication strategies should enable and promote participation from all sectors of society around these environmental concerns. However, the *underlying* skills and competences needed by government authorities or environmental managers in order to develop and implement such participatory communication strategies are *not* made explicit, only implied or assumed to be in place.

In consultation with DEAT, the following pieces of environmental legislation were selected for analysis in the study: the National Environmental Management Act (NEMA; RSA, 1998a); the Environmental Impact Assessment (EIA) Regulations under Section 24(5) of NEMA (RSA, 1998b), as amended; the Marine Living Resources Act (RSA, 1998c); the World Heritage Convention Act (RSA, 1999); the White Paper on Integrated Pollution and Waste Management for South Africa (RSA, 2000a); the NEMA: Air Quality Bill (RSA, 2003b); the NEMA: Protected Areas Act (RSA,2003a); and the NEMA: Biodiversity Act (RSA, 2004).

Individual interviews were conducted with senior staff of five management sections of DEAT: Air Quality; Chemical and Hazardous Waste; Environmental Impact Assessment; State of Environment; and Protected Areas. The purpose of these semi-structured interviews was to learn directly from departmental staff what education and training needs they identified with regard to environmental management in their directorate, and what capacity building programmes, if any, were already in place or planned. Information from these interviews was used in combination with the detailed desktop study of legislation to identify (i) key legislation steering practice in the various directorates, (ii) education and training needs, priorities and trends, and (iii) opportunities for building on existing skills development programmes or qualifications, or for initiating future programmes.

In order to have a consistent framework within which the environmental legislation could be analysed, categories were generated into which extracts of legislation could be categorised. The broad applicability of the National Environmental Management Act (NEMA; RSA,

1998a) and its over-arching legislative imperatives made the act an appropriate document from which broad categories of implied competence could be generated. A carefully focused reading of NEMA generated the following broad categories of competence:

- Environmental Competence
- Education & Training Competence
- Management/Planning/Administrative Competence
- Legislative Competence
- Communications Competence
- Social Justice/Ethical Competence
- Monitoring/Evaluation/Research Competence

These categories provided a well-structured framework to organise and then analyse the various dimensions of the other selected environmental management legislation. Each piece of legislation was carefully read and extracts referring to an imperative or deliverable were allocated to one or more of the above-mentioned categories. This process generated a detailed summary of the various competences associated with the selected legislation. Many legislative extracts were found to apply to more than one category. This overlap was not regarded as problematic and in fact emphasised the prevalence of cross-cutting, interrelated competences and activities associated with effective environmental management.

Figure 2 illustrates, through using a sample from the NEMA: Air Quality Bill of 2003 (RSA, 2003b), how one small piece of environmental management legislation pertaining to local municipalities can be analysed to identify what categories of competence are required to support effective environmental management.

Figure 2. Analysis of an extract of the Air Quality Bill of 2003, showing how extracts were analysed in terms of the categories of implied competence
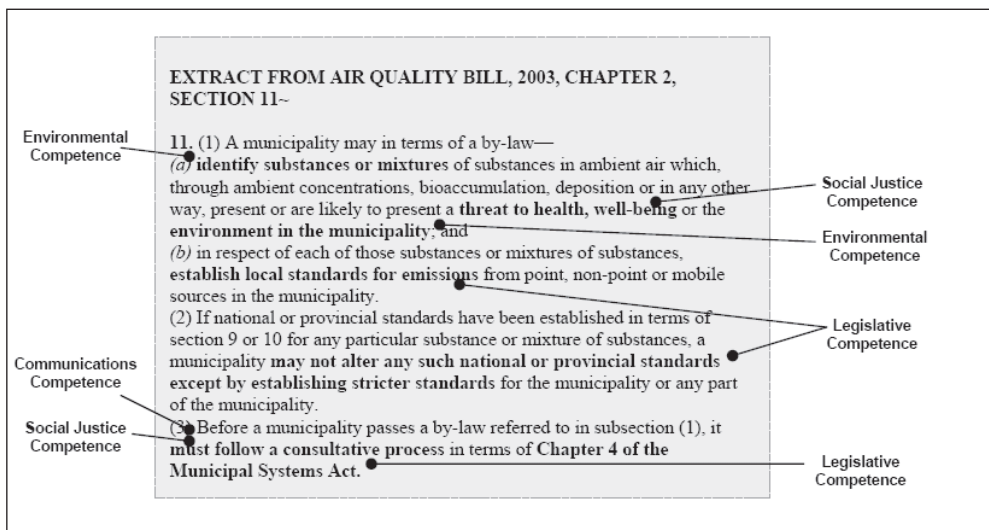
The tabulated summaries produced from this first level of analysis needed to be restructured for a second level of more detailed analysis. Extracts were regrouped according to the categories of competence. The significance of analysis during this second level of analysis was the inference of more specific education and training needs. Using the notion of Applied Competence, each extract was analysed in terms of its implied Foundational, Practical and Reflexive Competences. In total, 49 tables were generated to capture the types of knowledge, skills, understandings and activities called for across the seven selected pieces of environmental legislation. Table 1 below is an adaptation of one of these 49 tables. Using extracts from only the World Heritage Convention Act of 1999 (RSA, 1999), the table provides a breakdown of the three dimensions of Applied Competence in relation to a focus on Social Justice/Ethical Competence. In this way, similar tables were generated for each piece of selected legislation and for each category of implied competence (see DEAT, 2004 for more detail).

Table 1. Dimensions of Applied Competence as identified within the category of Social Justice/Ethical Competence, based on extracts from the World Heritage Convention Act of 1999

Extract from World Heritage Convention Act (RSA, 1999)	Foundational Competence	Practical Competence	Reflexive Competence
'Promote empowerment and advancement of historically disadvantaged persons in projects related to World Heritage Sites' (Section 3) *'Cultural and natural heritage management must be sensitive to the people and their needs and must equitably serve their physical, psychological, developmental, cultural and social interests'* (Section 4)	• Have knowledge and understanding of ways in which historically disadvantaged persons can be empowered • Understand the context, aspirations, capacity and needs of people associated with the World Heritage Site	• Develop and implement strategies to empower and advance historically disadvantaged persons	• Reflect critically on previous empowerment projects and identify appropriate strategies and orientations • Evaluate proposed or existing empowerment projects in relation to social, ecological and economic sustainability • Assess the extent to which people's interests are being met through their association with the World Heritage Site, and propose recommendations where necessary

Extract from World Heritage Convention Act (RSA, 1999)	Foundational Competence	Practical Competence	Reflexive Competence
'*Development must be socially, culturally, environmentally and economically sustainable*' (Section 4)	• Understand the concept of 'sustainability' in relation to social, cultural, ecological and economic development	• Plan or oversee development associated with a World Heritage Site in socially, culturally, ecologically and economically sustainable ways	• Critically reflect on planned or existing developments of a World Heritage Site in relation to their sustainability • Make recommendations for more sustainable development alternatives
'*An Authority has … the following duties in connection with a World Heritage Site under its control, namely to − (a) develop measures for the cultural and environmental protection and sustainable development of, and related activities within, World Heritage Sites …*' (Section 13)	• Understand concepts of 'sustainable development', 'cultural pro–tection' and 'environmental protection' • Have knowledge of the World Heritage Site, in particular its cultural and environmental status • Have knowledge of activities that threaten or benefit the World Heritage Site	• Plan and conduct activities for the benefit of the ecological status of the World Heritage Site • Plan and conduct activities for the development and/ or protection of cultures associated with the World Heritage Site	• Reflect on tensions and nuances associated with the concept of 'sustainable development' • Critically evaluate activities planned and undertaken towards the cultural and environmental protection and sustainable development of the World Heritage Site
'*Ensure the identification, protection, conservation, presentation, and transmission of the cultural and natural heritage to future generations*' (Section 13)	• Recognise and understand the nature and significance of cultural and natural heritage • Have basic knowledge of how to protect and conserve both cultural and natural heritage • Have knowledge of ways to transmit cultural and natural heritage to future generations	• Identify cultural heritage • Identify natural heritage • Protect and conserve cultural heritage • Protect and conserve natural heritage • Present and transmit cultural heritage to future generations • Present and transmit natural heritage to future generations	• Reflect on the status and significance of cultural and natural heritage in the context of a World Heritage Site • Consider and evaluate alternative ways of presenting and transmitting cultural and natural heritage

(Adapted from DEAT, 2004)

The 49 tables were analysed as a complete set so that emerging trends could be identified. It was during this phase of analysis that significant factors such as the recurrence or predominance of certain competences, or the apparent absence of others, came to the fore. Analysis revealed that effective environmental management hinges upon a wide range of cross-cutting knowledge, skills and values: interpreting policy and legislation, contributing to the development of integrated management plans, compiling annual reports, working according to financial plans, liaising with interested and affected parties, initiating projects/programmes, responding to ethical tensions and social justice issues, etc. The findings made it clear that, beyond efficient managerial skills, local government managers at all levels also require sound knowledge and understanding of social and environmental concepts and processes, for example the functioning of ecological systems, tensions around sustainability and sustainable development, application of the precautionary principle, risk identification, risk management and stakeholder participation (DEAT, 2004).

From these findings, a generic competence framework was developed to guide future development of qualifications, skills programmes and learnerships (Table 2). This generic framework was developed with the intention of strengthening existing environmental management practices, and supporting the translation of environmental legislation from policy into practice.

Table 2. A generic framework to guide the development of environmental management qualifications, skills development programmes and learnerships

Categories of Competence	Practical Competence	Foundational Competence	Reflexive Competence
Environmental Competence			
Education & Training Competence			
Management/Planning & Admin. Competence			
Legislative Competence			
Communications Competence			
Social Justice & Ethical Competence			
Monitoring/Evaluation & Research Competence			
Implications for National Qualification Framework (NQF) Levels 5–7	*At these levels, the scale of operation is broader (international, national or provincial), with more managerial responsibility, and more reflexive skills being required.*		
Implications for NQF Levels 2–4	*At these levels, there is a stronger focus on practical and foundational competences; work is conducted with guidance and support, and reflexivity is limited to locally situated practice.*		

Developing the Study in the Context of the Makana Municipality

The Makana Municipality continues to experience rapid population growth due to migration from nearby farms as land-use patterns change from labour-intensive commercial farming to less labour intensive and more profitable game farming (Hamaamba, 2004). A housing survey conducted in 2003 estimates the population of the Makana municipal area to be approximately 124 000 people (Rudolecky, 2004, in Hamaamba, 2005). This rapid population movement has resulted in the establishment of large informal settlements without basic amenities, a situation which is exacerbated by the apartheid-linked backlogs in service provision.

The Makana Municipality employs about 586 employees. It also has 24 councillors from 12 community wards and 12 proportional representatives from different political parties. From these 24 councillors, six are elected to chair six different portfolio committees and six serve in the Environment, Disaster Management and Heritage portfolio within Makana Municipality (Hamaamba, 2004).

The Reviewed Integrated Development Plan of 2004 identified some of the development priorities as: access to potable water, improved sanitation, health care and environmental health, more opportunities for education and training, job creation, poverty alleviation, housing provision, land distribution and community safety (Makana Municipality, 2004). In response to these and other environmental issues, the Makana Municipality committed itself to Agenda 21, the National Environmental Management Act (NEMA) and the Johannesburg Declaration on Sustainable Development, by initiating a project called the Local Environmental Action Plan (LEAP) in January 2004 (ARC, 2003). One of the key deliverables for LEAP is the establishment of an environmental education and training strategy for municipal employees in line with the Reviewed Integrated Development Plan for 2004.

DEAT's generic competence framework and its associated recommendations were taken forward in the development of the Makana Municipality's Environmental Education and Training Strategy (Lotz-Sistika *et al.*, 2005). This was the first opportunity to combine a generic competence planning framework (developed in a national context) with the specific characteristics and challenges of a local municipal government to develop an accessible and multi-levelled environmental education and training strategy. The scope of this paper does not allow for a detailed account of the final strategy document, but focuses instead on the preceding contextual profiling and needs analysis that, in combination with the DEAT findings, informed the strategy's development (Hamaamba, 2005).

A small-scale needs analysis of education and training needs in the Makana Municipality
The small-scale research project was designed as an interpretive case study within the Makana Municipality to investigate the education and training needs of municipal employees. Findings were used to inform the development of a broader Environmental Education and Training Strategy as part of the LEAP, described above.

To establish a sound understanding of the context and background of local environmental issues and the perspectives of municipal employees, four profiles were developed: a profile of environmental issues in the Makana Municipality, a profile of organisational needs, a learner

profile and a profile of community perceptions of local environmental management issues. A group of municipal employees was identified, consisting of senior and middle management officials, technicians/professionals, manual workers and municipal councillors. With this selected group of employees, a sequence of individual questionnaires, focus group discussions and individual interviews generated detailed information about employees' experiences, descriptions of environmental issues faced in their work, their current levels of education, and further education and training needs.

The profile of community perceptions of local environmental management issues was developed by reviewing articles in two local newspapers between January 2003 and June 2004, identifying the major environmental themes and recording their frequency. Reviews of both newspapers indicated that issues of sanitation, waste management, livestock management and fire risk were the priority environmental management concerns. These issues resonated exactly with those identified by municipal employees in the questionnaires, focus groups and interviews (Hamaamba, 2004).

Analysis of diverse responses to these issues indicated that there was a need for improved environmental management capacity in the Makana Municipality. Three key areas of capacity building needs were identified, the first of which is improved capacity for interacting with residents of the Makana community. Respondents to the questionnaires indicated that greater attention needed to be given to 'community-based planning', and that municipal officials should be equipped with the '… skills to address and interact with communities' (Hamaamba, 2005:73). Data revealed that education and training programmes need to be initiated more broadly than with municipal officials only. Some respondents noted that training '… should focus on providing 'primary environmental education for the whole community' of the Makana Municipality, to enable municipal officials to address environmental issues and risks' (*ibid*.:74). The study concluded that consideration needs to be given to how education and training can build and support improved management capacities within the municipality and also strengthen community interactions and relationships.

Legislative competence was recognised as a significant dimension of effective environmental management. The study found that education and training programmes should enable managers and officials to develop skills in interpreting, analysing and implementing relevant legislation such as ISO 14000, the Municipal Structures Act (RSA, 1998d), the Municipal Systems Act (RSA, 2000b), and the National Environmental Management Act (NEMA; RSA, 1998a) of 1998. Responding to local environmental issues identified in the contextual profile requires an understanding and ability to implement more specific legislation such as the Agriculture and Conservation Act (RSA, 1996), the Water Services Act (RSA, 1997), and various Integrated Waste Management policies.

The third desired area of capacity building was in the area of management, in particular financial planning and budgeting. Municipal employees explained that the development of skills to source funding was much needed, and some alluded to direct and indirect connections between effective planning, community involvement, fundraising and the ability to respond more efficiently to local environmental problems (Hamaamba, 2005).

Emerging insights into education and training needs for better environmental management

Findings of the study conducted in the context of the Makana Municipality resonated very strongly with those of the earlier and more generic study of competences implied in environmental legislation (DEAT, 2004). Most dominant were calls for the development of greater management competence, legislative competence and communication competence, as well as more in-depth knowledge of environmental issues and risks.

Adapting DEAT's national environmental management competence framework to the contextual needs of the Makana Municipality, Hamaamba (2005) developed a more specific competence framework. This framework (see Table 3 below) uses slightly adapted categories of competence and demonstrates how the practical, foundational and reflexive dimensions of Applied Competence can be used to scope the extent of education and training required for improved environmental management in the context of local government. The examples used (drawn from work with the Makana Municipality and the responsibilities of councillors, professionals and upper-level managers) are likely to resemble the mandates, activities and challenges of most other southern African local governments.

Table 3. Competence framework for managers, professional and councillors of the Makana Municipality

Environmental Management Competence	
Practical Competence	• Identify priority environmental management issues and risks
Foundational Competence	• Understand the causes and effects of issues (long-term causes and effects as well as short-term causes and effects) • Understand the way in which environmental issues and risks are interrelated (e.g., sanitation and illegal dumping) • Understand socio-cultural and technical aspects of environmental issues (e.g. livestock issues)
Reflexive Competence	• Ability to make and evaluate decisions, and consider the complexity of environmental issues and risks • Ability to assess alternative solutions
Legislative Competence	
Practical Competence	• Implement relevant legislation in relation to these issues, e.g., NEMA • Implement legislation and make by-laws, as required in the local government context
Foundational Competence	• Understand relevant legislation for environmental management in local government • Understand legislation in its broader socio-political context • Understand the relationships between different legislation and related implications for environmental management in local government context
Reflexive Competence	• Critically review legislation and its implementation at local government level in response to environmental management issues

Planning Competence	
Practical Competence	• Participate in integrated planning through formulation of Integrated Development Plan (IDP)
Foundational Competence	• Knowledge of how to formulate the IDP and how to identity issues that need attention, and how to develop the IDPs in such a way that they take into account other relevant policies which contribute to improved environmental management in the local municipality
Reflexive Competence	• Critically review the IDP through implementation of monitoring procedures, and other development concerns, as outlined in the IDP
Project Management Competence	
Practical Competence	• Implement the specific projects, such as the proposed LEAP implementation projects
Foundational Competence	• Develop knowledge of designing and monitoring the intervention projects
Reflexive Competence	• Critically evaluate the projects and ongoing monitoring to ensure improved environmental management in the local municipality
Financial and Budgeting Competence	
Practical Competence	• Cost and manage the funds
Foundational Competence	• Develop knowledge of how to cost projects, organise fundraising ventures and draw up budgets, which should all contribute to improved environmental management in local municipality
Reflexive Competence	• Critically review the budgets in order to allocate funding in priority areas and on time
Communication Competence	
Practical Competence	• Involve community in projects and decision-making, and strengthen interdepartmental communication, which improves environmental management
Foundational Competence	• Develop knowledge of the existing structures and strategies for working with communities, such as ward committees • Build capacity in improved community interaction through effective use of councillors, arranging community meetings, lobbying either through media or public meetings
Reflexive Competence	• Critically review and evaluate the community programmes in order to improve communication strategies and ensure community wellbeing which is also linked to social justice competence
Social Justice Competence	
Practical Competence	• Implement projects such as recycling of waste, with a view to creating jobs for the community and the alleviation of poverty
Foundational Competence	• Develop knowledge and understanding of the scope of job-creation projects linked to improved environmental management in the local municipality context
Reflexive Competence	• Critically review projects which are aimed at improving quality of life and redress, while improving environmental management projects

(Source: Hamaamba, 2005)

Openings for continuing research

Work done by the Rhodes University Environmental Education and Sustainability Unit with the Makana Municipality, as well as wider research with DEAT into the desired competences for better environmental management, has opened a challenging dimension in the field of environmental education and training. Undoubtedly, local governments have a significant role to play in the attainment of sustainable development goals and the meaningful implementation of international and national environmental legislation. Early findings suggest that education and training for municipal staff, and environmental managers in particular, can be guided by the development of a competence framework based on the three dimensions of Applied Competence. This, supported by broad-based and consultative contextual studies of environmental issues and municipal education and training needs, can inform the scope and depth of education and training activities across all levels of municipal hierarchy and responsibilities.

Early research in the local governance sector suggests a need for a break from the conventional view of environmentally-oriented education and training being limited to education staff or community extension officers. Most commonly, education and training for better environmental management is limited to those most *directly* responsible for such management. However, the recent experiences and insights outlined in this paper suggest that, due to the cross-cutting nature of environmental concerns and the network of systems that affect them, the scope of education and training should be widened to other areas, and through all levels of skills and responsibilities. In conceptualising education and training for improved environmental management, we should be thinking beyond the most obvious (and still essential) 'natural sciences' and 'environmental management' qualifications. It is the cumulative effect of synergistic relationships across *all* areas of local governance that sufficiently strengthens local environmental management for socio-ecological balance (and hence sustainability) to become realisable. Building capacity, for example, towards better financial management, public communications, law enforcement, ethical and equitable practice, research and project management within a municipality is central to improved environmental management. With a range of appropriate competences developed, and cross-cutting environmental management systems in place, local governments should be better placed to translate the ideals of international and national environmental policies into effective practice.

Notes on the Contributors

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