

**RHODES UNIVERSITY**

**WORKING FOR ECOSYSTEMS:  
AN ACCOUNT OF HOW PATHWAYS OF LEARNING  
LEAD TO SMME DEVELOPMENT IN A  
MUNICIPAL SOCIAL-ECOLOGICAL PROGRAMME  
WITHIN A GREEN ECONOMY CONTEXT**

THESIS

Submitted in fulfilment of the requirements for the degree of  
MASTER OF EDUCATION (Environmental Education)

**RHODES UNIVERSITY**

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## ABSTRACT

Global climate change alters climatic zones to the extent that species invasion and, in particular, invasive alien plant growth, is regarded as one of the biggest threats to ecosystem functioning. Socio-ecological adaptive management practices have emerged from these threats as opportunities in developing countries where the immediacy of poverty relief acts as a political drawcard and potential for job creation. Local workers in the eThekweni Municipality's 'Working for Ecosystems' biodiversity management programme (WFE) are emerging as micro-enterprise contractors (SMMEs). The transition from worker to entrepreneur has been part of the ethos and long-term planning of the Working for Ecosystems programme at a management level with a view to economic inclusion and realising long-term sustainable livelihoods. Evidence from narratives support claims of transformative outcomes. The findings of this study show that transformation is accessed at various levels: at a management level, at a well-established SMME level and from worker-to-SMME level. These show an "articulation of learning pathways and the connections that are made without a formally structured pathway of learning being in place" (Lotz-Sisitka & Ramsarup, 2013, p. 33).

The routes followed to knowledge, practice and sustainability competences by participants in Working for Ecosystems are examined within the complex constellation of material-economic, social-political and cultural-discursive structures and are *conceptualised as learning pathways*. To fully appreciate the evolving and multidimensional nature of the *emergence of SMME practice learning in the Working for Ecosystems programme*, relational ontology as a perspective was introduced, with the intention of emphasising the relationship between practice, knowledge and context.

Narrative enquiry and extensive data analysis was used as the method to *examine workplace learning pathways*. These *workplace learning pathways* can be enriched by more explicitly integrating observation of local and indigenous knowledge of biodiversity in everyday work and practice. However, intermittent contractual work causes disruption in learning pathways formation and results in a lack of stability in conflict with the aims of the programme's objectives of building capacity and robustness.

Findings show that *skills development in terms of workplace learning* with intersecting, diverse levels of participation and knowledge flow, is particularly important for learning pathways development in the field of invasive alien plant control where divergent values,

norms and levels of practice are operational. Prior knowledge, of either indigenous plants or business functioning mechanisms, scaffolds SMME skills through relevance and connected learning in the two fields of practice pertaining to the Working for Ecosystems programme. Clarity of management roles and solidarity within management enhances SMME functioning and learning pathway development for all participants.

The Expanded Public Works Programmes (such as Working for Ecosystems) are examined as an opportunity for acquisition of knowledge, competence and new skills development. A prime competence for sustainability understanding is interpersonal skills as these form an essential link with most other competences and as such should be foregrounded in training and learning pathway development. Site selection and time in the programme is a critical factor for expansive learning pathways and environmental stewardship development.

Ultimately, in *examining and reflecting on the Education for Sustainable Development and green economy potential*, it is apparent that learning pathway development needs more support to realise the possibility of entrepreneurship and its political and social significance in terms of sustainable livelihoods. There is a need to recognise diversity, multiple ways of knowing and learning, in learning pathways development “to build joint capacity to cope with complex sustainability challenges” (Wiek, Withycombe, & Redman, 2011).

## DEDICATION

As humans enter the Anthropocene, this study is dedicated to our pathways of learning, pathways of learning to be Inter-beings of the Earth.



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## ACRONYMS

ASGISA	Accelerated and Shared Growth Initiative of South Africa
CEBA	Community Ecosystems Based Adaptation
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs & Tourism
D'MOSS	Durban Metropolitan Open Space System
EBA	Ecosystems Based Adaptation
ESD	Education for Sustainable Development
EPCPD	Environmental Climate Change Protection Department
EPWP	Expanded Public Works Programmes
GEAR	Growth, Employment and Redistribution Strategy
IAP	Invasive Alien Plant
IDP	Integrated Development Plan
ISRDS	Integrated Sustainable Rural Development Strategy
MDG	Millennium Development Goals
MoU	Memorandum of Understanding
NDP	National Development Plan
NSDS	National Skills Development Strategy
RDP	Reconstruction and Development Programme
SDI	Spatial Development Initiative
SMME	Small Medium and Micro Enterprise
WESSA	Wildlife and Environment Society of South Africa
WfW	Working for Water
WFE	Working for Ecosystems

# **CHAPTER 1: INTRODUCTION TO THE STUDY**

## **1.1 Introduction**

In the context of growing understanding of and concern for the conservation of complex ecosystems, distinctive programmes have been developed to integrate the social and ecological domains of urban environments. In this study, I explore the nature and practical implementation of one such programme situated within the framework of localised sustainable management and the emerging national green economy in South Africa.

Chapter 1 introduces the context of this study. To describe the context, I situate the Working for Ecosystems programme locally within the eThekweni Municipality, Durban, South Africa, and then shift to a national and global perspective. Locating the programme facilitates an understanding of the hierarchical structures that have enabled Working for Ecosystems to happen and demonstrate how these structures represent forward thinking in urban management practices. In addition, I discuss the purpose of Working for Ecosystems as an intervention, to increase sustainability in the context of climate change, biodiversity decline, poverty alleviation and job creation.

## **1.2 Motivation for the study**

My interest in Working for Ecosystems as an intervention is in locating the myriad of interconnections, in finding the complex structures and dimensions, which all interact and then shift in directions that create multiple pathways. These networked, interlinked pathways, being either people utilising the paths or policies that aim to create directions, are seldom as straight as imagined. The intention is to examine the particular pathways followed in learning by participants, in order to understand how sustainable livelihoods can be achieved utilising the Working for Ecosystems programme as a model. The Working for Ecosystems model potentially serves as an example to support capacity, foster agency, increase resilience and strengthen diversity in eThekweni communities and beyond.

The pathways to learning are set up in two directions; to begin with, to learn the practice of invasive alien plant control in a workplace setting and secondly, to become a Small Medium and Micro Enterprise (SMME) servicing that industry. The participants in the Working for Ecosystems programme are beneficiaries of policies that aim to uplift communities and create

work opportunities. Each participant contributes knowledge to the programme. The knowledge can be prior knowledge (gained through own lived experience), or new knowledge (gained as an outcome of training and social collaboration in the field). As a co-participant, I too am engaged in a pathway of learning. It is not possible to measure these learning pathways in the sense of prescribed deliverables. However, learning pathways in Working for Ecosystems are visible due to regimented practice in the work environment and contractual compliance required as a contractor. Each SMME<sup>1</sup>, as a single director or as a group of directors, negotiates these learning pathways in a unique manner, which cannot be pre-determined and is unique to each participant. Thus, the narratives of the many divergent pathways create a dynamic within the Working for Ecosystems programme's 'happening-ness' (Kemmis, 2010a, p. 11) which is complex, multidimensional and in constant flux.

My own experience and knowledge is multidimensional. It ranges from legal office management in intellectual property to all things botanical and civic. The latter two passions led to a revival of my earlier profession as an educator and social activist when I accepted an offer to mentor and assist a newly formed co-operative in a public-private partnership. The Umvubu Co-operative worked at restoring the riparian zone of the uMngeni River estuary over a two-year period. This in turn led to an opportunity to assist the Wildlife and Environment Society of South Africa (WESSA) to add social-ecological research to the Working for Ecosystems portfolio. Section 3.7 refers to Appendix G which is a copy of the contractual obligations between myself and WESSA. This study forms part of the contractual obligation.

### **1.3 Situating the study: Creating strength in diversity**

The Development Planning, Environment and Management Unit is the umbrella structure of the City of Durban, under which the Environmental Planning and Climate Protection Department (EPCPD) is located. The Working for Ecosystems programme, is a project of the eThekweni Municipality's Climate Change, Biodiversity and Resilience Department, situated within the Restoration Ecology Branch. The Wildlife and Environment Society of South

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<sup>1</sup> The term SMME is a structured concept, but I refer to an entity representing the participants of that SMME, which may be a single director or more.

Africa (WESSA), a non-governmental organisation (NGO)<sup>2</sup>, is the current implementing agent for the Working for Ecosystems (WFE) programme. SMME contractors are the in-the-field practitioners, and represent community stakeholders in the collaborative practice of invasive alien plant removal.

Green open spaces, as part of the Durban Metropolitan Open Space System (D'MOSS), are selected for invasive plant removal as sites of high biodiversity value. Prioritised sites are accordingly allocated funding for biodiversity restoration (eThekweni Municipality, 2012a, p. 13). Traditional areas may also be accessed for restoration work where conservation support is evident, however the jurisdiction of these areas is not fully municipal.<sup>3</sup> These combined areas provide critical ecosystem services for the citizens of Durban, acting as green lungs for an ever-expanding urban environment. It is within these biodiversity hotspots that Working for Ecosystems invasive alien plant removal is prioritised (see Figure 1.1 for the map of current sites). The combined fields of biodiversity restoration and SMME development provide a constructive setting for socio-ecological and socio-economic leverage and redress, through accessing local embedded knowledge (Berkes & Folke, 2002); combining ecology and social systems knowledge (Troster, 2005); and supporting “sustainable development through a skilled, knowledge based workforce” (Park, Majumdar, & Dhameja, 2009). At the same time, an opportunity exists for learning through doing, with an agenda of creating more sustainable livelihoods for Durban’s inhabitants (Roberts, 2011).

This study thus examines workplace learning pathways into the green economy at a local government level, with an emphasis on SMME development. The study examines environmental learning pathways, practice and knowledge development (Kemmis & Mutton, 2012; Cook & Wagenaar, 2012) as well as associated competences (Wiek, Withycombe, & Redman, 2011) based on understandings of how participants emerge from Working for Ecosystems to become green entrepreneurs. To examine these learning pathways, a qualitative research approach is used with narrative enquiry as a method (see Section 3.2.3);

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<sup>2</sup> The NGO term is used since it is more familiar. However, these are now termed non-profit companies (NPCs), or non-profit organisations (NPOs).

<sup>3</sup> Service delivery is municipal and political wards exist in traditional areas. However, there is a dual governance phenomenon where municipal/political and traditional structures function side by side. The traditional areas are invariably less urban and often key areas for biodiversity.

to understand how training, work and learning in Working for Ecosystems is experienced by SMME contractors, as recent contributors to the green economy.

At a broader level, the research seeks insight into how education and training interventions contribute to providing long-term, proactive opportunities, as opposed to short-term employment and a low return on investment in Expanded Public Works Programmes. This has been identified as a national skills development need in the Environmental Sector Skills Plan for South Africa (South Africa, Department of Environmental Affairs [DEA], 2010). Available research on programmes similar to Working for Ecosystems, such as Public Works programmes and Working for Water (WfW) in particular, highlight challenges around sustainable solutions and learning pathways from public works programmes to employment or SMME based livelihoods (McConnachie, Cowling, Van Wilgen, & McConnachie, 2012; McConnachie, Cowling, Shackleton, & Knight, 2013; Turpie, Marais, & Blignaut, 2008; van Wilgen et al., 2012).

The practice of invasive alien plant control (the work) is an extremely specialised field of knowledge. If relating the task at hand (removing invasive problem plants) to the purpose of the work (increasing biodiversity and consequently resilience) is to happen, it will require an “understanding of the casual link between diversity and function” (Avlonitis, 2011). In order to uncover contextual knowledge of the purpose and significance of Working for Ecosystems work, the participants are part of a process of training, learning and imparting knowledge as a continuous shared course of action. This development is most often social, since team work is the norm. However, in becoming an entrepreneur and company owner (the contractor), different ‘relatings’ are evident (Kemmis & Mutton, 2012; Kemmis & Grootenboer, 2008; Schatzki, 2003). ‘Relatings’ refer to the social dimensions or features of practice where constraints and opportunities shape such practice (see Section 2.6 on practice architectures). A further interest of this study is then to identify how practice and knowledge (through training and workplace learning) enables, (not only) skills development, but also a relational understanding within the work context. Wiek et al. (2011) have used a framework of key competencies for sustainability development as essential integrated skills for problem solving. In order to deepen such understanding, I use Wiek et al.’s (2011) framework to locate possible interlinked competencies evident in Working for Ecosystems participants who form part of this research study (see Section 2.7 on knowledge, competence and practice).

Within the ‘ecosystem’ of Working for Ecosystems (see Section 2.5) there are other key stakeholders who all form part of the ‘ecology’ or ‘practice architecture’ (see Section 2.6) of

Working for Ecosystems (Kemmis, 2007). I situate the project within its multi-layered context to uncover the learning pathways followed by the varied participants. Working for Ecosystems is the conduit utilised as a poverty relief mechanism, through creating a structure within which SMMEs can emerge and contribute, socially, economically as well as ecologically.

## **1.4 Global and national context**

Global climate change alters climatic zones to the extent that species invasion and in particular, invasive alien plant growth, is regarded as one of the biggest threats to ecosystem functioning and the services rendered *by ecosystems to humans for their use and survival*. Climate change effects exacerbate the risk. It is the poor and marginalised communities who are particularly vulnerable to the impacts of climate change and risk (Beck, 1992; Giddens, 2002; Martinez-Allier & Allier, 2003). The Millennium Declaration, Rights and Constitutions (Ghai, 2011) and the United Nations (UN) Framework Convention on Climate Change Kyoto Protocol (UN, 1997) are policies that aim to address global issues of disparate societies and challenges arising from climate change.

The South African Constitution, the Bill of Rights, the National Environmental Management Act, together with the above mentioned global policies, form the base for the White Paper on the National Climate Change Response for South Africa (South Africa, DEA, 2011, p. 34). Programmes such as the Expanded Public Works Programmes (EPWP) and Working for Water are regarded as contributors to achieving sustainable practices through poverty alleviation interventions and climate change actions (Kobokana, 2007; Shackleton et al., 2007; Giqwa, 2011; van Wilgen et al., 2012; Hoeneisen, 2013). Locally, agreements such as the Durban Adaptation Charter for Local Governments formed ‘towards COP17/CMP7 and beyond’ triggered adaptation actions (Ecosystems Based Adaptation) and showcased existing programmes such as Working for Ecosystems (ICLEI Africa, 2012).

South Africa as a dry country is regarded as particularly vulnerable to water and habitat loss due to alien plant encroachment, both on terrestrial and in aquatic habitats. Socio-ecological adaptive management practices have emerged from these threats as opportunities for job creation in developing countries where the immediacy of poverty relief acts as a political draw card (Maia et al., 2011). These ‘green jobs’ are identified as a potential growth area for job creation in South Africa. This research showcases an example of a local municipal intervention aimed at skills development to attain these projected jobs.

Since 1994 various new Government policies have been put in place to address poverty within a framework of job creation; the most recent of these is the National Development Plan (NDP) Vision 2030 (South Africa, 2011). Unemployment, largely a residue from apartheid policies, exacerbated by urban migration and poor access to quality education, is recognised as a fundamental issue limiting development in South Africa. Job creation is an important developmental cornerstone of the NDP Vision 2030, hence green job projections and ‘quantification’ is currently taking place.

Aligned with this, the Department of Environmental Affairs (South Africa, DEA, 2010) refers to the need to strengthen skills development within the green economy and the biodiversity sector a goal that is also reflected in the National Skills Development Strategy (NSDS) III for 2012-2016 (South Africa, Department of Higher Education & Training [DHET], 2011, p. 20). Of importance to this research is Strategic Outcome 6 of the NSDS III: “Encouraging and supporting co-operatives, small enterprises, worker-initiated NGO and community training initiatives”. The Environmental Sector Skills Plan for South Africa states that NGO and SMME contractors, together with industry provide 14% and 64% respectively, of the employment opportunities in the environmental sector (South Africa, DEA, 2010, p. 10). The Biodiversity Human Capital Development Strategy for the Biodiversity Sector, 2010-2030, emphasises scarce skills, but it also emphasises capacity development and competences in the green economy (*ibid.*, pp.14-22), both of which are key enquiry areas of this research.

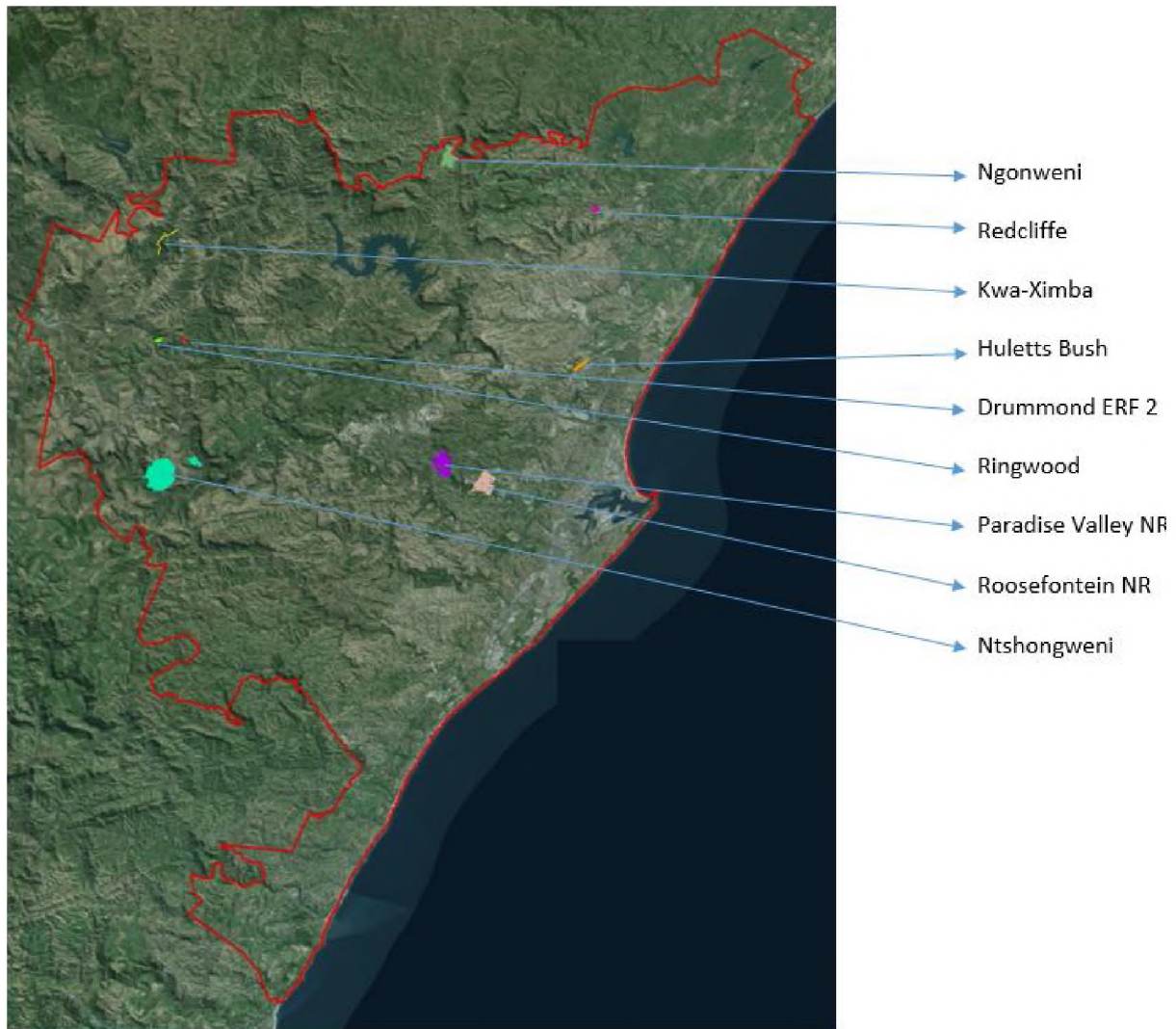
## **1.5 Cities context**

Historically, cities have developed where access to ecosystems services can best be utilised as resources for supporting growth. Increased urbanisation threatens the quality of ecosystem functioning and human well-being (Millennium Ecosystem Assessment, 2005). This phenomenon has led to an increase in research with the aim of understanding the “importance of social drivers in the resilient provision of ecosystems services” (Robards, Schoon, Meek, & Engle, 2011; Cartwright et al., 2013; Stokols, Lejano, & Hipp, 2013; Dahlberg, 2015). It is estimated that an additional 60% of land globally will be ‘urban’ by 2030 (eThekweni Municipality, 2012a). The Integrated Development Plan (IDP) for cities, as a five-year strategy of the greater NDP Vision 2030, forms part of a new approach in terms of which local government in South Africa must “facilitate and ensure the provision of infrastructure, services and support, thereby creating an enabling environment for all citizens to utilise their

full potential and access opportunities” (eThekweni Municipality, Annual Review, 2013/2014). Model 2.1 shows how Working for Ecosystems is related to the Integrated Development Plan (IDP) structure and policy implementation.

Climate change is a threat to ecosystem resilience, especially to a city on the coast, such as Durban, which falls within the eThekweni Municipal area. The eThekweni Municipal area extends along the east coast of South Africa from the uMkhomazi River in the south to uThongathi River in the north, a length of coastline 97 kilometres long, containing 16 estuaries and 17 catchments, with 4 000 kilometres of rivers. Since the establishment of the Environmental Climate Change Protection Department (EPCPD) in 1994, the municipal area has extended in size from 300 km<sup>2</sup> to 2 290 km<sup>2</sup> covering “a highly urbanised city core to a tribally controlled rural periphery” (eThekweni Municipality, EPCPD. 2015a). The map in Figure 1.1 shows the Working for Ecosystems implementation sites within the eThekweni municipal area.

Adaptation to climate change is regarded as critical to future resilience and sustainable development (Carmin, Anguelovski, & Roberts, 2012; Shackleton & Shackleton, 2012; Cartwright et al., 2013; Roberts & Diederichs, 2002; Roberts, 2008; Roberts, 2010; Midgley, Marais, Barnett, & Wågsæther, 2012; Rogers et al., 2013). Access to the green economy and creating small businesses with long-term sustainability in mind is part of a ‘bouncing forward’ theory that involves supporting growth of the green economy (Roberts & O’Donoghue, 2013, p. 169). Learning pathways, training and skills development are evident in several participants in this study as competences, knowledge and environmental stewardship. This workplace situated learning assists in a strategic thinking consciousness which in turn supports the ‘bouncing forward’ theory.



**Figure 1.1: Working for Ecosystems implementation sites within the eThekweni Municipality, Durban**

## **1.6 Focus on skills development in the EPWP**

Skills development in the EPWP is workplace based with a focus on training and the acquisition of competences, which ultimately enhance capacity and entry into the economy as worker or entrepreneur, although this is seldom the result (McCord, 2004; Giqwa, 2011). The EPWP subscribes to “decent employment through inclusive economic growth” (South Africa, 2010a, EPWP Outcome 4, p. 13). EPWP training, if applied as a skills and capacity building programme, has the potential to assist in the implementation of these objectives. This inclusion in economic structures is evident as Working for Ecosystems contractors are now able to act as employers (as opposed to remaining at the labourer level). An extract from the interview with a young entrepreneur of Thinking Imvelo (Pty) Ltd is evidence of a societal concern:

*in the last month 60 to 70 people were employed from our company around our community because that opportunity came because of the team we have and the work we have been doing... what they earning is not enough because you find that there are people who were doing invasive alien plant work since 2006 when we started in Ntshongweni and they still getting R100 ... (11-Int Ph2 Thinking Imvelo)*

Working for Ecosystems is funded by the eThekweni Municipality and strongly aligns itself to EPWP criteria in respect of skills development and poverty alleviation. In emphasising a critical difference in focus between EPWP and Working for Ecosystems, Nxele, who is the Programme Manager of the Restoration Ecology Branch stated:

*The focus of our programmes and that of EPWP are not the same, EPWP is more human-centric and our programmes are ecosystem-centric **through** community involvement, which means through our operations, communities benefit in more ways than one and it is that community benefit that attracts interest from Public Works and yes we do provide them with the data, but we are not EPWP. (B. Nxele, email communication, February 13, 2014)*

The eThekweni Municipality's Climate Change, Biodiversity & Resilience Department has adopted Community Ecosystems Based Adaptation (CEBA) as a core strategy in its work of linking the fields of biodiversity enhancement and climate change mitigation to economic justifications (eThekweni Municipality, EPCPD, 2011, p. 22). Working for Ecosystems upholds three critical concepts, *biodiversity*, as an imperative to improving sustainability, *climate change* as an ecological risk for a coastal city with increasing urbanisation and service delivery requirements, and *green project implementation*, an economic justification to access and to distribute funds. Working for Ecosystems uses these themes to convince the Unicity structures of the continued value and relevance of its work.

Working for Ecosystems training and workplace learning is a skills development approach that aligns itself with regional and national policy in respect of EPWP as well as global climate change resilience strategies. Enhancing the practice of the SMME contractors as well as their long-term sustainability in the green economy is seen as an important strategy for strengthening the capacity to adapt to change. This capacity or disposition, which exists individually, but is engaged collaboratively in civic transformation, is evidence of sustainable action. Sustainable action is achieved through engagement in practice. Enhancing and understanding practice is related to the research problem of this study which I discuss next in Section 1.7.

## 1.7 Research problem: Skills development learning pathways policy and practice

The research problem centres on several dynamic interventions and relationships which are in place, interconnected and mutually dependent on one another. How well these connections function and serve the goal (for people in the programmes to have decent lives) determines the success or failure of the outcomes.

Enhancing skills through designated learning pathways, based on policies that facilitate implementation in practice, is a multidimensional intervention that is applied to resolving the problem of creating a decent life. In education and training system development, however, such processes are often ‘sanitised’ and ‘abstracted’ into unit standards and structural training programmes, that bear little resemblance to the realities of the multidimensional interventions required to develop practices (Giqwa, 2011; RU SAQA, 2013).

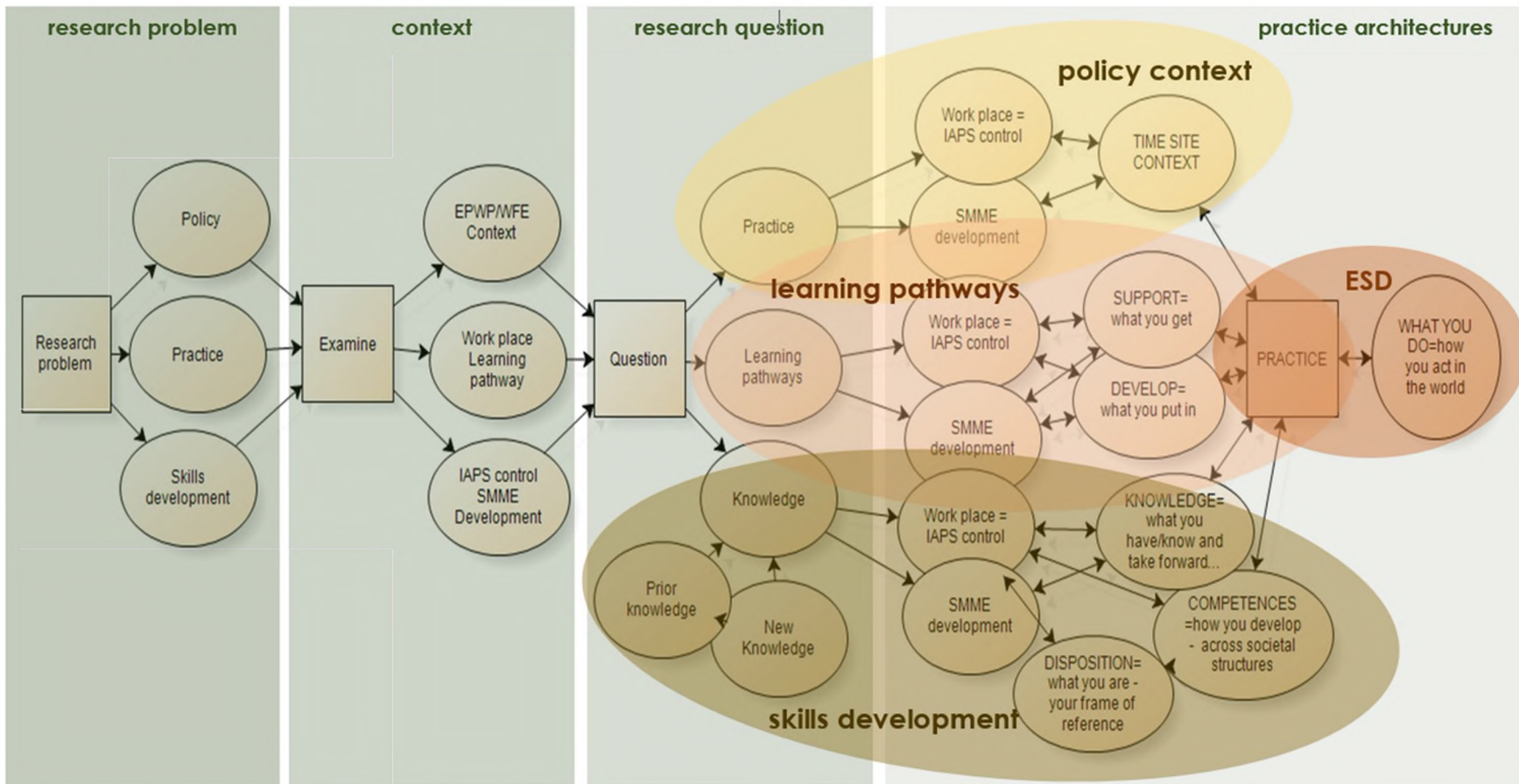
Kemmis, Edwards-Groves, Wilkinson, and Hardy (2012) suggested that the multidimensionality of these interventions may become more visible via practices (see more detail in the conceptual and theoretical framework in Chapter 2), which provide a more nuanced perspective on the kinds of education and training interventions that could be developed within an occupational education and training context. Kemmis et al. (2012) explained these interventions as “orchestrated arrangements – in particular cultural discursive, material economic and social political arrangements, all held together in the different kinds of projects people pursue in their practicing” (p. 34).

Model 1.1 was created to examine and understand *learning pathways* and the dynamics of Working for Ecosystems as a multi-dimensional intervention. It became necessary to clearly situate Working for Ecosystems, as well as understand in a systematic manner what the research problem, questions and findings set out to examine. I later created Model 2.1 (located in Section 2.4) to examine and understand the multi-dimensionality of Working for Ecosystems *within policy structures*.

It is recognised that ‘entrepreneur’ is an economically framed social construct (Maia et al., 2011), with potential material benefits for those currently subjected to poverty, but little is said about the learning pathways into SMME contractors. Even less knowledge is available on learning pathways into SMME contractors from a green economy perspective. It is the intention of this study to contribute to the understanding of learning pathways into a green economy, especially at general worker level. As shown in Model 1.1, practice is influenced

by time, site and context, learning pathways by support (what you get) and development (what you put in), knowledge (what you have/know and take forward), disposition (what you are, your frame of reference), and competences (how you develop across societal structures). All the aforementioned are interrelated and become visible in practice, in how you act in the world (what you do).

**Model 1.1: Indicating the research problem of examining learning pathways and the dynamics of Working for Ecosystems as a multi-dimensional intervention**



The research problem examines structures and actions - policies (structures) with the objective of skills development (social-economic actions) through associated workplace practice, training and learning pathways.

The context within which the WFE programme is situated is examined as an EPWP/WFE setting. WFE's focus is on workplace learning pathways in invasive alien plant control (social-ecological) and SMME practice (social-economic).

The research questions focus on the dual practice of IAPs control and SMME functioning - how knowledge, as prior knowledge, knowledge acquired through training and workplace learning transforms understanding and application of knowledge in workplace

The practice architectures/arrangements of WFE are multidimensional and influenced by time, site, context and learning pathways through support (what you get) and development (what you put in), knowledge (what you have/know and take forward), disposition (what you are, your frame of reference), and competences (how you develop across societal structures). These domains and actions are interrelated and become visible in practice, in, how you act in the world (what you do). *The penultimate goal is to understand how social learning can assist in achieving sustainable development practices.*

In the next section I examine the research problem through listing the purpose and questions, on practice, learning pathways and knowledge. These three paradigms each examine situated learning in the workplace in the field of invasive alien plant control, as well as SMME development practices.

## 1.8 Research purpose and research questions

The purpose of this study, as mentioned above, is to examine workplace learning pathways into the green economy at a local government level, with emphasis on SMME development. The goal of the research is ultimately to assist in improving SMME functioning in the economic and environmental paradigms. The aim is then to understand through participants' narratives, what influences practice, and how to improve practice. How are practice and knowledge intertwined and interrelated? (Model 6.1 in Section 6.5 displays key competencies for sustainability). Whilst the research focus is learning pathways and the structures that support learning in the Working for Ecosystems programme, it is the participants and the relational realms (within which participants operate) that determine the flows of influence, networking and dynamic interplay.

In order to better understand *the emergence of learning pathways towards SMME development in the Working for Ecosystems programme*, this study focuses on the story of Working for Ecosystems, invasive alien plant removal (as workplace practice) and SMME practices narrated by SMME contractors in collaboration with the researcher, and other significant role players; to grasp how participants in Working for Ecosystems view/experience the practice in which they are involved, how these have changed over time, and what competences and knowledge/s are involved. The research problem described in the section above arose from the broad questions stated in the research proposal (Burger, 2014) for this study. These research questions are repeated here. Relevant actions are underlined and goals are italicised:

Goal 1: relates to the framework - structures and policies in place

- examining the context of EPWP programmes (such as Working for Ecosystems) as an opportunity for acquisition of knowledge, competence and new skills development in relation to SMME practices
  - placing skills development, job creation, entry-level skills development, youth development in the green growth sector

Goal 2: relates to practice

- examining workplace learning pathways as a means of acquiring knowledge, and competence in relation to SMME practices
  - placing workplace learning pathways in the context of the National Qualifications Framework (NQF), including relevant definitions of learning

Goal 3: relates to training

- examining skills development in terms of workplace learning, training and learning pathways towards action competence, capacity building towards entrepreneurship and social-ecological adaptive management
  - placing skills development in the context of Human Capital Development as outlined in the ESSP

Goal 4: discursive level - sustainable livelihoods / ESD potential / EE in SMME education

- reflecting on the above goals and components throughout the research study in the application of everyday practice of the work and management of Working for Ecosystems to understand learning pathways into SMME development
  - reflecting on the transition from worker to entrepreneur
  - reflecting on all of the above, in order to elaborate on recommendations and findings based on the entire study
  - recommendations for additional research important to this study

Learning pathways which form the focus of the study are located in the environmental sector, in the realm of adult learning in the workplace. *This study has a particular interest in a case where a general worker transitions to a fully functioning SMME, in understanding the specific learning pathways, motivation and disposition as well as access and agency, which occurred.* In the final section of this chapter I provide an overview of the chapters of the study.

## **1.9 Overview of the study**

The seven chapters in the study examine the research problem and associated questions. I briefly describe the content of each chapter in this overview.

Chapter 1 introduces and situates the study locally, but within the national and global

challenge of climate change issues and associated risks for urban environments. The Working for Ecosystems programme as a biodiversity management tool administered in a municipal context and management strategy of ‘bouncing forward’, is explained. The chapter summarises how the programme implements policy in respect of economic upliftment and social justice, as well as management of natural resources for biodiversity enhancement and long-term sustainability.

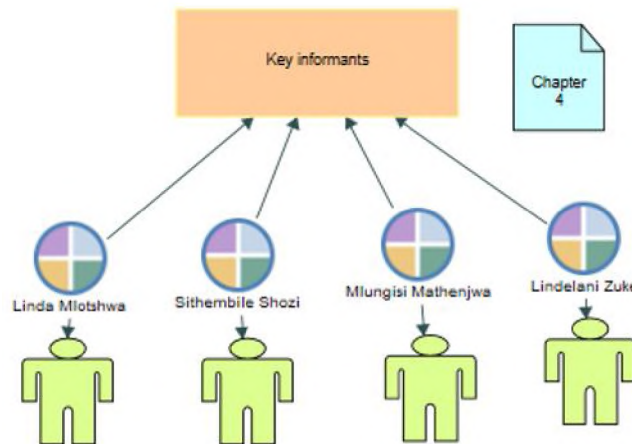
Chapter 2 contains an overview of the literature relevant to this study. Learning pathways are investigated in the socio-ecological context of knowledge, competence and practice. The context of Working for Ecosystems as a public works prototype is examined through a review of EPWP as a tool for skills development, training and capacity building with the aim of poverty alleviation. The eThekweni municipal application of Working for Ecosystems is explored as a model, a multi-dimensional intervention, which links workplace practice and learning for sustainable livelihoods, within the specific context of invasive alien plant control and SMME development, as well as the broader context of the ‘green economy’. In order to situate the study within environment, biodiversity, education, and job creation, the Environmental Sector Skills Plan for South Africa serves as the prime reference point pertaining to government policy.

Chapter 3 is a description of the qualitative research design as well as the methodology used to examine learning pathways of SMME contractors and WESSA field managers as key facilitators, within the context of the Working for Ecosystems programme. I describe the narrative approach and interpretive orientation utilised in obtaining and generating data for the study. Phase 1 of data collection focuses on tracing the Working for Ecosystems timeline and key practices. Phase 2 examines narratives of participants in respect of changing practice. Phase 3 examines competences and sustainability narratives and pathways followed, in becoming SMMEs and possible environmental custodians. I describe the process of data management and analysis using NVivo 10 software as a tool. Ethics and validity is expressed as a fundamental consideration throughout the research process.

Chapter 4 contains presentation of data in respect of the *timeline* towards environmental stewardship and SMME development. Time in the Working for Ecosystems programme is used as a reference point for exposure to practice in the work of invasive plant removal as well as entrepreneurial and administrative skills. I refer to four participants (whom I regard as critical key informants) and their contribution to this research study through their in-depth knowledge of the Working for Ecosystems programme from its inception to the present.

Model 1.2 is a representation of the four participants who provided in-depth knowledge of the Working for Ecosystems programme.

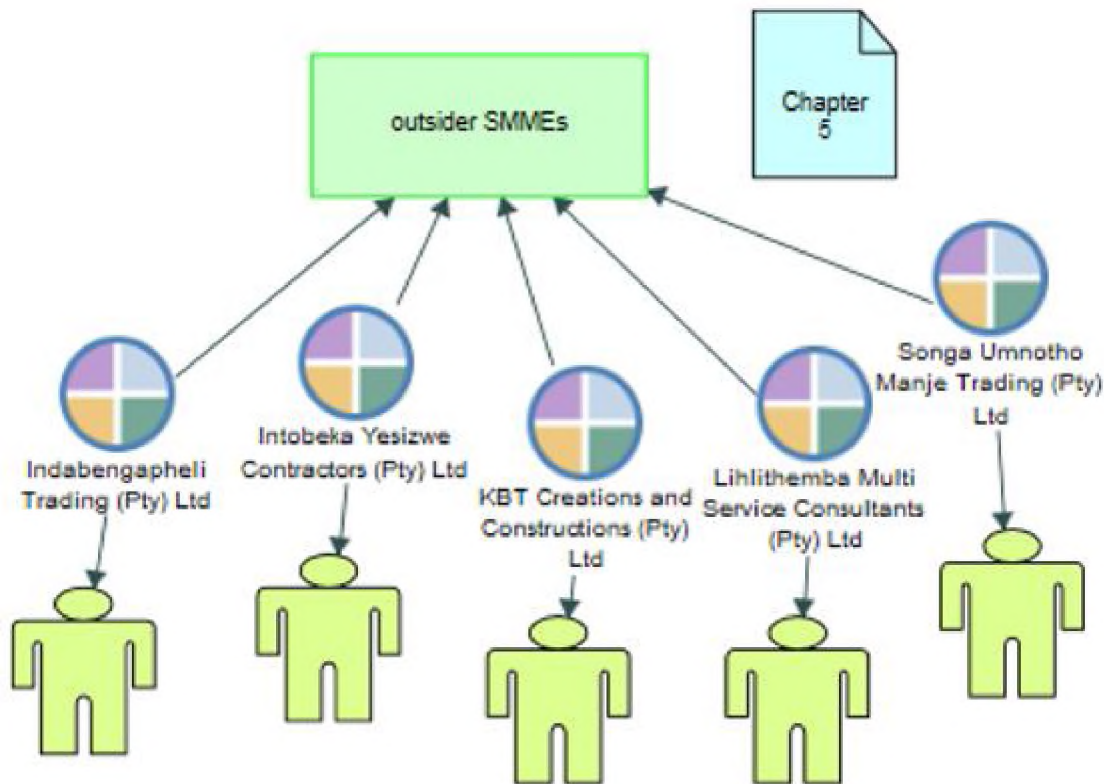
### Model 1.2: Key informant interviewees in Chapter 4



The timeline of Working for Ecosystems is used as the framework for an understanding of transition processes that have enabled skills development and learning pathways from worker to SMME contractors. In addition, Chapter 4 contributes to an understanding of how critical interpersonal skills contributed ultimately to developing environmental stewardship, participants over time. These interpersonal skills form the basis for further sustainability actions.

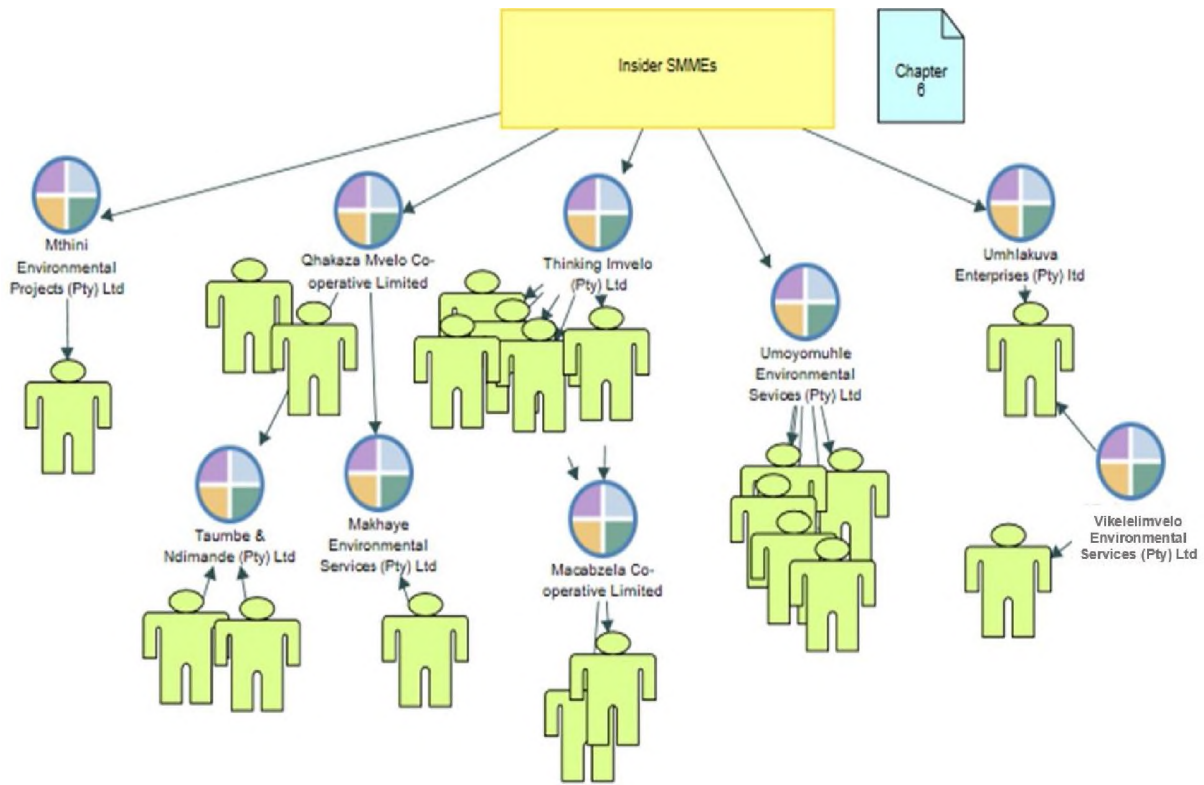
Chapter 5 contains presentation of data in respect of *changing practices and knowledge* as a reciprocal process. 'Practice architecture' is used as a means of locating practice and learning as an intertwined process of *sayings* (communication), *doings* (production) and *relatings* (social connection) within the individual and social realms "mutually constituted through practice" (Kemmis & Grootenboer, 2008, p. 51). Narratives in respect of practice in the learning of invasive alien plant control and in becoming an SMME serve to enable understanding of how pathways to learning are negotiated by participants. This chapter groups five SMME contractors who formed companies *prior to* their engagement in the Working for Ecosystems programme. Each SMME is owned by a single director. Model 1.3 is a representation of these 5 SMMEs and their companies. These pathways of access assist in providing an understanding of learning pathways as SMMEs *outside* of the Working for Ecosystems programme.

**Model 1.3: SMME contractors formed outside of Working for Ecosystems interviewed in Chapter 5**



Chapter 6 presents data in respect of *knowledge, practice and sustainability competences* in an analytical framework proposed by Wiek et al. (2011). Environmental stewardship has been added as a competence to the Wiek framework. This adapted framework contains environmental understanding, ethics and a deeper level of connection to nature, but also to people. The concept as it is used in this study entails a process of increasing awareness of the interconnections between man and environment. Four SMME contractors are examined in-depth. The remaining five contractors are summarised looking only at the specific learning pathway of each. These SMMEs were all *formed inside* the Working for Ecosystems programme. Model 1.4 is a representation of these nine SMMEs, the directors or members and the contracting entities. In some cases, company ownership has changed over time due to directors resigning and creating new allegiances or choosing to work as sole directors.

**Model 1.4: SMME contractors formed inside Working for Ecosystems interviewed in Chapter 6**



Chapter 7 uses the data generated from the study to create analytical statements that emerged from the research. It is a discussion of the research findings in respect of learning practice, as workplace learning in the removal of invasive alien plants, as well as managerial and entrepreneurial skills and developing competence and knowledge over time in the practice as functioning SMMEs. This is the concluding chapter and it recommends further research possibilities in respect of understanding how pathways of learning lead to SMME development in the context of social-ecological programmes within the emerging green economy.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter starts off with providing a background to the poverty alleviation structure of the Expanded Public Works Programmes (EPWP). The function and purpose of EPWP as a tool for job creation is discussed. Here an overview of the prior research on poverty and the EPWP is presented in tabular form. In the case of Working for Ecosystems, the programme has evolved from one which employed local workers, to one which appoints SMMEs as contractors situated within a national economic structure. The study is an account of how pathways of learning lead to SMME development based on the ideology of EPWP programmes and applied in a municipal social-ecological programme of the EPCPD of the eThekweni Municipality.

The core interests of the study, centre on the development of skills to access learning pathways, individually or collaboratively, which facilitate integrative competence, knowledge and sustainability. Participant narratives serve as a participatory enquiry for in-depth interpretations of the stories of learning pathways experienced by the SMME contractors and those who manage the programme.

Kemmis' theory on practice architectures assists in examining practice skills around the work of invasive alien plants (2010a). Wiek et al.'s (2011) analysis of sustainability competences serves as a theoretical lens for a deeper understanding of the invasive alien plants work. Relational ontology is the 'connective tissue', so to speak, to understand the bundles of practice, knowledge and competences (Stetsenko, 2008; Cook & Wagenaar, 2011).

I end the chapter with an intention to create a link between narrative enquiry as method and research on climate change as part of the bigger picture around education for sustainability.

### **2.2 EPWP programmes and SMME development learning pathways**

EPWP is frequently criticised since the programmes are too short to allow proper training and skills development to develop to a level of employability or self-empowerment (McCord, 2004, 2005, 2008; Kobokana, 2007; Gwiqa, 2011; Mfusi & Govender, 2015). As mentioned in Section 1.8, the Environmental Sector Skills Plan for South Africa states the following in

relation to EPWP programmes and SMME development learning pathways (South Africa. DEA, 2010):

*... EPWP Phase 2 will seek to contribute to more sustainable job creation mechanisms ... If skills development (in the environmental sector EPWP), as practised in Phase 1 of EPWP, enables each of the 375 000 workers to gain two days of training for every 22 days worked, then potentially 375 000 people will benefit from nine days of training each (for 100 days of work), involving 3.4-million-person training days. If this training is carefully developed with attention to quality and output value, this presents a significant opportunity for developing entry level skills for the environmental sector, particularly for new potential growth areas and/or for youth development as is currently being identified in green economy and green job strategies ... For this training to be of maximum benefit, there is a need to further improve the sustainability value of the skills programmes offered ... (pp. 23–24, my emphasis).*

McCord (2008) in discussing Expanded Public Works Programmes and training in the environment, economic and social sectors has the following to say relevant to the context of this study:

*The environment component of the EPWP aims to build on pre-existing programmes with annual employment levels of approximately 30,000, comprising employment opportunities of longer duration... The intended exit strategy in this sector is for work placement in permanent jobs in forestry, commercial fisheries, tourism and horticulture, using the skills acquired during program employment. However, given the lack of demand for additional labour in the sectors, at least two of the main programmes in the environment sector, Working for Wetlands and Working for Water, which have already been operational for several years, have periodically suspended the exit strategies and chosen instead to retain workers for multiple years rather than disgoring them back into unemployment once the original term of the temporary period of public works employment has been completed (see for example Ndoto & Macum 2005)*

*The economic sector ... focuses on stimulating micro-enterprise through 'venture leadership' projects which will entail 3 000 SETA-funded learnerships. The participants will be assisted to establish SMMEs and allocated public sector 'learning contracts', while also gaining a formal NQF qualification. The EPWP estimates that each SMME will employ up to 3 people, bringing the total number of temporary employment opportunities created up to only 12,000 (p. 566; my emphasis).*

McCord (*ibid.*,) refers to EPWP documentation (EPWP, 2005) which in turn refers to an agreement with the Department of Labour to create a 10-14-day training course which would have accredited unit standards for life skills, HIV and AIDS awareness and preparation for work (p. 566). The proposed training referred to here by McCord exists within the Working

for Ecosystems programme implemented by WESSA, which trains but will also outsource training where necessary. Training in Working for Ecosystems is discussed in Section 6.5 and refers to the training for invasive alien plant control by the WESSA business unit WES (33Doc Ph1 SAQA Unit standards applied to the WFE WESSA Basic Training course content; 34Doc Ph1 Training Manual Basic Facilitator; 35Doc Ph1 Training Manual Basic Worker). Table 6.1 and Appendix J, elaborate on the unit standards applied for the Working for Ecosystems training. Appendix K is a copy of the SAQA Registered Qualification New Venture Creation (SMME) NQF level 2 and level 4. Whilst there is currently a system of support and mentoring in respect of business skills for SMMEs within Working for Ecosystems (which is not accredited), the learning pathways exist and the possibility of accreditation is an opportunity to access theoretical knowledge of running a small business (see goals and outcomes listed in Appendix K).

A change observed in the Working for Ecosystems programme is that several SMME contractors are emerging from within the working teams. *The transition from worker to entrepreneur has been part of the ethos and long-term planning of Working for Ecosystems at a management level with a view to economic inclusion and realising long term sustainable livelihoods.* Sver (2011) in his narratives of the foundational years of Working for Ecosystems remarks “these commercial entities would have the potential to contract directly with eThekweni Municipality, or indeed other organisations or individuals” (7Doc Ph1 GS). The current contractors have become managers. WESSA site managers have become trainers and facilitators. These managers reflect environmental stewardship as capacities which have been nurtured through the Working for Ecosystems programme over time. Reports, minutes of meetings and audits confirm that work quality in Working for Ecosystems is high. This indicates that skills associated with invasive alien plant control have been well learnt. However, contractors as SMMEs require several additional competences which, in Working for Ecosystems, are not contained in formalised training; hence the research question pertaining to the *competences and dispositions* required to straddle the social-ecological, economic and political domains (see Section 1.8).

SMMEs form part of entrepreneurial ecosystems which are related to socially embedded structures of market systems, economic franchise and policy implementation. I have been able to locate abundant research on narrative enquiry as a research method in economic and business journals, where the concept ‘entrepreneur’ as an economic construct is researched (cf. Downing, 2005; Jones, Latham & Betta, 2008; Mills & Pawson, 2012; Costin, Dodd,

Hynes, & Lichrou, 2013; Phillips, 2013). The ‘green economy’ would appear to be an economic-social-ecological production in which the concept ‘entrepreneur’ also features, especially in green economy job creation discourse, as exemplified for example in the Green Jobs report (Maia et al., 2011), and in EPWP training discourse as outlined above.

### **2.3 Poverty as a disqualifier to a decent life**

How has the Green Economy concept crept in to the discourse of Environmental Education? Is this pragmatism? Or are we possibly trying to create change from within? Welzer (2011), in his essay on how the concept of ‘growth entered our souls’ links the development of a more equitable society in the post war period of western Europe to governmental responsibilities to maintain the status quo of peace and prosperity and states:

*The close coupling of the normative idea of social peace to continuous economic growth is probably most responsible for making limitless growth paradigmatic for today’s economic and social policies. Institutional infrastructures regulate growth; the material ones manifest it; and mental infrastructures translate it into lifeworlds.*  
(p. 12)

Two studies significant to this research examine the contexts of both poverty and EPWP programmes. Giqwa (2011) looks at learning pathways as situated learning and training in the formal context of unit standards and the application of EPWP skills development. Kobokana (2007) probes understanding of the concept biodiversity, and beneficiaries’ perceptions and knowledge of the goals of EPWP. Both examine poverty as the starting point for their studies.

Giqwa (2011, pp.17-23) examines perceptions of poverty and disintegration of traditional family structures with increasing urbanisation. Giqwa (*ibid.*) refers to Sayed (2008) and argues that the concept of poverty differs as to who is asking and within which framework; that of a human capital perspective; or, within policy and development structures such as ‘The World Summit of Sustainable Development of 2002’ and the ‘Millennium Development Goals’. She reiterates the complex understanding of poverty which forms the background to the establishment of the South African, Public Works programmes.

Kobokana (2007, pp. 14-20) includes economic shifts such as ‘growth’ (GEAR) replacing ‘redistribution’ (RDP); strict conservation policies incorporating social justice and environmental legislation linking sustainable development culminating in the 2003 Growth and Development Summit – which contributed to EPWPs, and influenced the expansion of poverty relief programmes. These were intended to provide short-term employment and

training to lead to improved livelihoods for the poor, youth, women and people with disabilities (ANC, 2002).

Public Works programmes which focus on job creation and poverty relief are not unique to South Africa. Bharti and Bansal (2013), in a paper entitled “Collaborative learning for ecosystem services in the context of poverty alleviation”, discussed their research in respect of a programme ‘Supporting Urban Sustainability’ (SUS) in India. They discovered that “reflective studies of collaborative learning for urban development projects are relatively uncommon” (p. 61). Kethoilwe and Jeremiah (2013) referred to a “poverty-reduction approach to community education and sustainability” in Botswana and a process of “developing capability and agency”. These authors confirmed that a *multifaceted approach* is required in poverty alleviation policies. They referred to learning as collaborative (citizens and city planners) and social (a women’s cooperative), albeit in differing contexts.

The local eThekweni Working for Ecosystems programme and the national Working for Water programme are examples of South African programmes initiated as poverty relief and job creation interventions. These programmes are also regarded as conduits for training, for learning skills as workers and entrepreneurs, and for creating a capability set that enables participants to access new skills for further mobility in a working world. These research studies in developing countries provide insight into the background of Working for Ecosystems as a local, municipal programme. I refer to the broad purpose of this study, set out in Section 1.8 as well as Model 1.1, and describe how each designated chapter connects to the research goals of the study:

- Chapter 4 describes the timeline of the Working for Ecosystems programme itself as well as an overview of the transition period from worker to SMME within Working for Ecosystems (in the narratives of three field managers and an educational officer);
- Chapter 5 describes SMMEs established outside of Working for Ecosystems and their learning pathways beyond and within Working for Ecosystems; and
- Chapter 6 examines SMMEs established within Working for Ecosystems and their learning pathways only within Working for Ecosystems.

Government policies in respect of poverty alleviation, biodiversity management and economic regulations are listed in Table 2.1. The content for Table 2.1 is extracted from Giqwa (2011) and Kobokana’s (2007) research theses to provide an understanding of how certain policies have been, and are used, to create sustainability within urban social-ecological environments.

**Table 2.1: Government’s use of policies and planning to alleviate poverty and create sustainability in the environmental sector  
(Adapted from Kobokana (2007) and Giqwa (2011))**

Government Policies to Combat Poverty in South Africa 1994-2006	
Policy	Motivation
Reconstruction and Development Programme (RDP) – 1994	To combat poverty, the (then new) government of South Africa launched the Reconstruction and Development Programme (RDP) which aimed to eliminate poverty through “the following actions: eliminate hunger, provide housing, water and sanitation, raise education and training for children and adults, protect the environment and improve health sciences.” (Giqwa, 2011, p. 23)  “The intention of RDP was to integrate growth, development, and reconstruction in order to provide access to basic services to poor people.” (Kobokana, 2007, p. 12)
Public Works Programme (PWP) – 1994	“The second priority detailed in the Reconstruction and Development Programme was job creation through the Public Works Programme (PWP) and an integrated qualifications’ framework was recommended as a response to enable learners to progress to higher levels of education from any starting point. It emphasised that job creation should cater for women, youth and the disabled.” (Giqwa, 2011, p. 24)
The Constitution (Act No. 108 of 1996): Section 24 of the Bill of Rights (Chapter 2) - 1996	While not a policy as such, the Bill of Rights requires “secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.” (Kobokana, 2007, p.15-16)
Growth, Employment and Redistribution (GEAR) - 1996	“The Growth, Employment and Redistribution (GEAR) strategy is a macro-economic framework that was introduced in 1996, two years after the implementation of the RDP [...] One of the guiding principles of GEAR is that poverty reduction over a long-term is not possible without sustained economic growth.” (Kobokana, 2007, p. 12)  “GEAR has been criticized for being too concerned with boosting investor confidence than with embracing the main goals of the RDP, which included economic growth, employment and redistribution” (Adelzadeh, 1996, cited in Kobokana, 2007, p. 13).  “Despite these criticisms, government proceeded with spearheading with GEAR related programmes, such as the Spatial Development Initiative (SDIs) [...] SDIs targeted areas in the country, having both unrealised economic potential and great need, with ecotourism as a primary focus.” (Kobokana, 2007, p. 13)

Skills Development Act - 1998	<p>“A key legislative Act defined in 1998 is the Skills Development Act which requires all companies with employees of over 50 to pay a one percent levy to fund skills development. This effectively brought a stronger focus on skills development into workplaces, and also led to the establishment of the SETA system. The main purpose of the Skills Development Act is to: Develop the skills of the South African Workers; Improve the life of workers; Improve productivity in the workplace; Encourage the workers to use the workforce as an active learning environment; Assist the unemployed to enter the world of work.” (Giqwa, 2011, pp. 33-34)</p>
Millennium Development Goals - 2000	<p>“Millennium Development Goals (MDGs) were adopted at the United Nations in year 2000 ... in response to the MDGs the South African Government introduced integrated development programmes such as urban renewal, integrated rural development and Expanded Public Works (EPWP) as efforts to meet the Millennium Development Goals and its own poverty alleviation programme.” (Giqwa, 2011, p. 24)</p>
Integrated Sustainable Rural Development Strategy (ISRDS) - 2001	<p>“The government formulated a ten-year plan, the Integrated Sustainable Rural Development Strategy (ISRDS), which aims to bring real change to South Africa’s poorest areas.” (Kobokana, 2007, p. 13)</p>
The Expanded Public Works Programme - 2003	<p>The Expanded Public Works Programme (EPWP) can be seen as a regrouping of the PWP programme of 1994.</p> <p>“The Expanded Public Works Programme is one of the South African Government’s short-term programmes aimed at the provision of additional work opportunities coupled with training.” (Kobokana, 2007, p. 18)</p> <p>“This programme is labour-intensive in nature and is aiming at promoting economic growth and sustainable development by offering people part-time jobs while they gain various skills.” (Kobokana, 2007, p. 20)</p>
Provincial Biodiversity Strategy - 2004	<p>“National Environmental Management: Biodiversity Act 10 of 2004: This Act deals with the management of South Africa’s biodiversity, protection of species, and ecosystems and provides for sustainable use of biological resources. It provides for a planning and monitoring regime through a national biodiversity framework, bioregional plans and biodiversity management plans and the coordination and alignment of these management planning instruments.” (Kobokana, 2007, p. 17)</p>
National Biodiversity Strategy and Action Plan - 2005	<p>The National Biodiversity Strategy and Action Plan (NBSAP) sets out a framework and a plan of action for the conservation and sustainable use of South Africa’s biological diversity and the equitable sharing of benefits derived from this use.</p>
The Accelerated and Shared Growth Initiative of South Africa (ASGISA) - 2006	<p>“The Accelerated and Shared Growth Initiative of South Africa (ASGISA) was launched. ASGISA promises to create more jobs and halve poverty by 2014.” (Kobokana, 2007, p. 14)</p>

Each of the above policies has a focus relevant to the governmental portfolio it represents. These policies indicate ideologies and often rely on implementation strategies for grassroots effectiveness. Model 1.1 (in Section 1.7) on the practice of Working for Ecosystems and Model 2.1 (in Section 2.4) on the State of the Environment reports, aim to assist in understanding the context of this study, in respect of how policies infiltrate societal functioning at macro, meso and micro levels (Stiglitz, Sen, & Fitoussi, 2009; Ostrom & Cox, 2010; Westin, Hellquist, Kronlid, & Colvin, 2013).

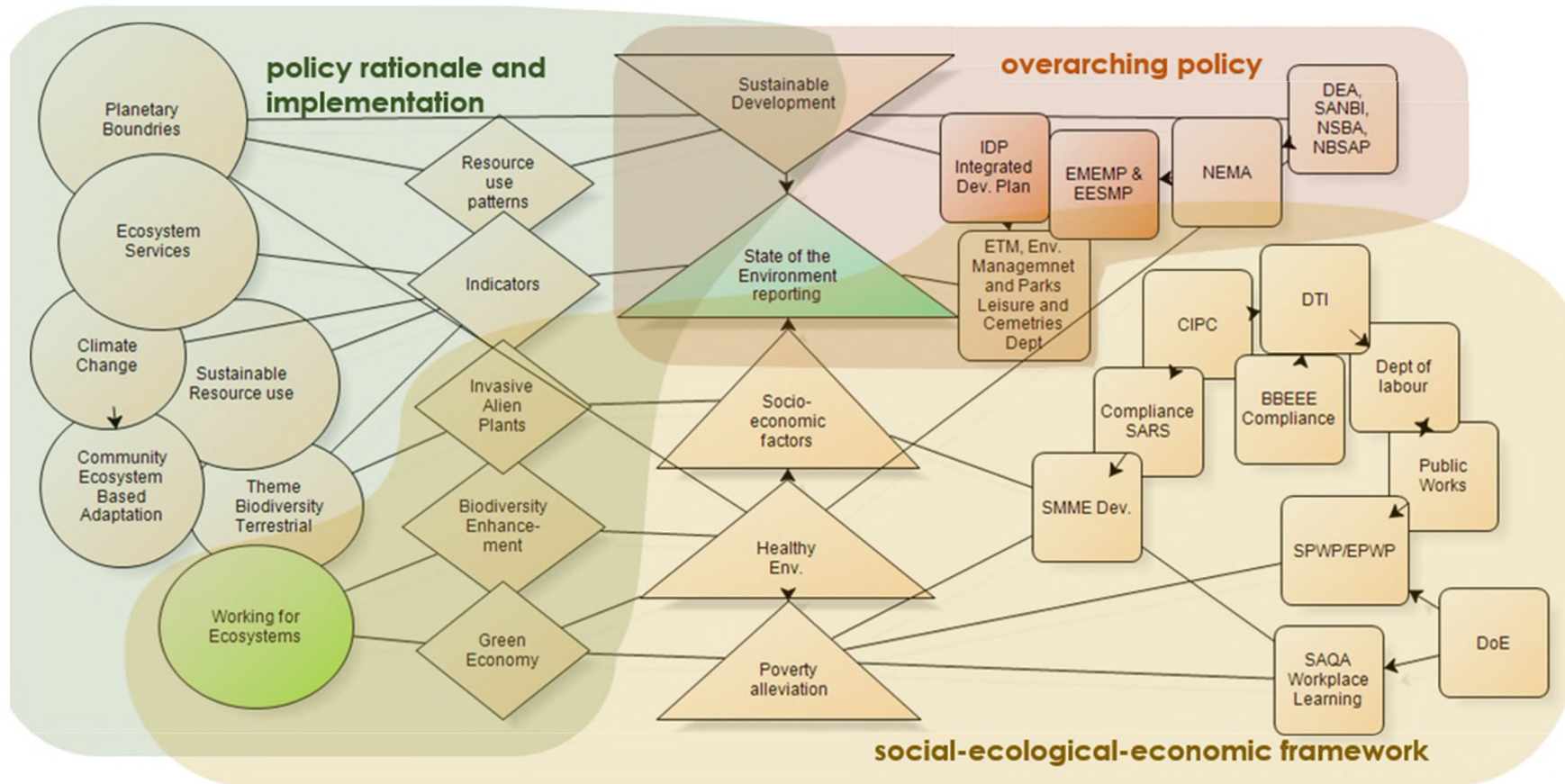
The following statement by Amartya Sen (2001) is so powerful that I include the extract in this discussion on reducing poverty and improving livelihoods as a means of transformation of a society. Sen (2001) reminds us that in the local context of social-ecological research we need to stay alert to the following:

*in analysing social justice, there is a strong case for judging individual advantages in terms of capabilities that a person has, that is, the substantive freedom he or she enjoys to lead the kind of life he or she has reason to value. In this perspective, poverty must be seen as the deprivation of basic capabilities rather than merely as lowness of incomes, which is the standard criterion of identification of poverty... the extreme case of insecurity is the certainty of deprivation, and the absence of any chance of avoiding that fate. The first and most immediate contribution of successful school education is a direct reduction of this basic deprivation – this extreme insecurity... (p. 87, my emphasis)*

The next section examines how climate change affects the poor first and foremost (Neluvhalani, 2007; Shava, Zazu, Tidball, & O'Donoghue, 2009a; Shava, O'Donoghue, Krasny & Zazu, 2009b; O'Donoghue, Shava, Zazu, Dirksen, & Atiti, 2013), and how Working for Ecosystems as a programme seeks to create resilience in and for the local urban communities within the eThekweni municipal area. Devine-Wright (2013) emphasised this phenomenon of “thinking global and acting local” through belonging to a community; because of experiencing a sense of place, climate change can become a local reality instead of a distant problem (p. 62).

## **2.4 Locating Working for Ecosystems**

The issue of skills development is extremely pertinent in South Africa. It connects to the importance of job creation and skills shortages in the environmental sector in the context of this study as well as economic and social justice leverage in the broader national context. Opportunities for work within Working for Ecosystems are not guaranteed.



Model 2.1: Multidimensionality of Working for Ecosystems within policy structures

Model 2.1 entitled the ‘multidimensionality of Working for Ecosystems within policy structures’, demonstrates the complex constellation of overarching policy structures and policy implementation rationale. Working for Ecosystems, the project, is located within a social-ecological-economic framework as a mechanism related to policy implementation with the overarching goal of creating sustainable livelihoods.

As shown in Model 2.1, facilitating SMMEs to emerge from the Working for Ecosystems programme requires relational supporting mechanisms that drive and enable processes for action at a grassroots level.

The Working for Ecosystems programme falls within the scope of the eThekweni Municipality's implementation of the Integrated Development Plan (IDP), Chapter 2, 2006-2011 of the Municipal Systems Act No. 32 of 2000. The eThekweni Environmental Management Policy (EEMP) (eThekweni Municipality, 2005), as well as the eThekweni Municipality's Environmental Services Management Plan (ESMP) (eThekweni Municipality, 2001), function as local legislation for good governance and compliance. The Integrated Development Plan (IDP) (eThekweni Municipality, 2003) necessitates State of the Environment reporting (see Section 4.2.3). The Department of Environmental Affairs (DEA), and SANBI act as the government's environmental custodians. The overall objective of the DEA is to act as the responsible agent for 'trusteeship of the state's biological diversity' (Government Gazette, No. 26436, 2004). To this end legislation on South Africa's National Biodiversity Framework (Government Gazette No. 32474, 2009) legislates but also explains relationships between the National Biodiversity Framework (NBF) and other national policies and strategies, such as the NSBA (National Spatial Biodiversity Assessment) and the NBSAP (National Biodiversity Strategy and Action Plan). All of which are shown in the overarching section on policy in the model above.

Legislative requirements led to annual State of the Environment reports being prepared by the City's Climate Change, Biodiversity & Resilience Department (refer to Section 4.2.4 for greater detail). All the aforementioned legislation is located under the umbrella of sustainable development with the DEA and its subsidiaries functioning as responsible departments.

To situate SMME learning pathways and display the multidimensionality of Working for Ecosystems it became necessary to create a visual image of the location of Working for Ecosystems within the systems surrounding it. This visual image is represented in Model 2.1 above and is further explored in Section 2.5 where I examine Working for Ecosystems as a 'practice organisation'.

## 2.5 Working for Ecosystems as a practice organisation

The above section located Working for Ecosystems, the programme, as a systemic intervention with the aim of having an impact across multiple dimensions. In order to fully explore the programme within the context of this study, the current section now situates Working for Ecosystems, within societal structures, operating as a mechanism where the interrelationships between policies and actions are examined. This process triggered a perspective that Working for Ecosystems itself is a type of social-ecological system, which influences and is influenced by its relationships. It was then a natural next step to approach Working for Ecosystems as practice organisation which behaves as a living thing.<sup>4</sup> It is, however, understood that it is the participants who shape and influence the WFE social-ecological system. This approach is applied by Kemmis et al. who further developed their own theory of practice as a ‘Theory of Ecologies’ (2012, p. 33).

In an elaboration of ‘practice architectures’, practices are regarded as ‘living things’ and are interconnected with other practices. Kemmis et al. (2012) used Capra’s (1996; 2004) principles of ecological relationships to *locate practices as patterns* of human existence corresponding to ecological functioning in nature. This concept is further explored in examining the practice of Working for Ecosystems through the *narratives of the participants* to expand on Working for Ecosystems as a ‘living thing’ interconnected with other practices influenced by relationships, in a manner similar to an ecological system (see Section 5.4.1).

The premise on which this research is based, is that all things are connected. The complexity of these interrelationships is shown through unravelling the threads that weave their way in and out, within and beyond the practice of Working for Ecosystems. These threads attempt to map the interlacing of practice and participants as an ontology that is socio-materially constructed. Kemmis et al. (2012) stated:

*How might we conceptualise practices as forms or arrangements that come into existence when people step into them and begin to enact them, perhaps with variations? Like practice theorist Schatzki (1996, 2001, 2002, 2010), we are exploring how practices exist as orchestrated arrangements – in particular cultural discursive, material economic and social political arrangements, all held together in*

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<sup>4</sup> An SMME can be viewed in a similar manner.

*the different kinds of projects people pursue in their practising. In our view, these clusters of arrangements prefigure the social world for those who come to inhabit a practice of a particular kind... we want to show how practices have a kind of existence – a life – beyond the lives of those who practice them, and beyond the apparent transitoriness of the utterances, activities and social connections that people say and do and make when they engage in practices. (p. 24)*

Schatzki (2006), in examining **what organisations are** as ‘they happen’, referred to an organisation (as we would refer to Working for Ecosystems), and stated that “like any social phenomenon, [an organisation] is a bundle of practices and material arrangements” (my emphasis). He identified practice through “unfoldings of the performances and events that are the happening of the organization” as “structured spatial-temporal manifolds of action such as political practices, cooking practices, recreational practices and religious practices”. Secondly, Schatzki examined the “co-occurrences of the teleological past, present, and future in organizational actions” (as in Chapters 1, 4, 5 and 6 of this study). He then went on to say that:

*An organization is more than what there is to it in real time [as it happens]. It also embraces the persisting structures of its practices and its enduring material arrangements ... that the perpetuation of the practice structure should be understood as organizational memory ... The happening of an organisation, therefore, is the performance of its constituent actions. (pp. 1863-4, my emphasis)*

According to Schatzki (2006), a practice has two basic components, that of actions and structure. Actions are connected to the events and the “concept of happening” (p. 1864). Actions are performed and performances happen. A structure (organisation) is comprised of an **evolving** set of items such as:

- understandings (knowing how);
- rules (knowing what to do);
- teleological-effective structuring (acceptable orderings); and
- general understandings (nature of what is to be done).

To Schatzki, practice arrangements were “assemblages of material objects – persons, artefacts, organisms, and things” (2006, p. 1864) and other nets of practice arrangements that function as “bundles to which the net comprising the organisation is closely tied” (2005, p. 476). These are a series of actions that make up, or possibly are taken up, as ‘happenings’ as described in Model 2.1 of the multi-dimensionality of Working for Ecosystems within policy structures and which show the practice arrangements and associated structures.

The conceptual framework of a practice assists an understanding of knowing-in-practice across scales and paradigms, unpicking the ‘interplay’ or ‘inbetweenness’ between structure and agency (Archer, 1996, p. 697). To understand the relationships and interconnections within Working for Ecosystems, as well as how it functions and connects to other networks, I created Model 2.1 as a simplified overview of the concepts and theories. Model 1.1 shows the many connected steps in this study in understanding the practice arrangements between Working for Ecosystems as invasive alien plant control work and the learning pathways followed to become an SMME within this practice arrangement.

In the next section, I discuss Kemmis et al.’s theory (2012) of ‘practice architectures’ which builds on Schatzki’s theory of social learning and understanding of organisations (evolving from societal actions and structures).

## **2.6 Practice architecture development of action competence and changed practices over time**

Development of sustainability competence and associated forms of action competence over time appears to require a range of ‘functionally linked’, yet reflexively applied, competences. These require wider systemic engagement with systems knowledge, forms of valuing, as well as working with others, and doing things (i.e. experience). Kemmis (2010a), in a paper entitled “What is to be done” develops a concept of ‘practice architectures’ which sheds light on the nature of practices as a key ‘intervention point’ in and through which learning pathways can emerge. He describes practices as a combination of “sayings, doings and knowings” (p. 421). Kemmis indicated that it is not only the *learning* of practice in a *work* place organisation, but also the ways in which the “*practice* is constructed, enabled and constrained” in the practice setting (Kemmis et al., 2013, p. 34).

Kemmis (2010b) also suggested that action research may be a valuable form of research for exploring practices and learning, as such research “aims to explore new ways of doing things, new ways of thinking, and new ways of relating to one another and to the world” (p.10). However, action research is aimed more at ‘changing practices’. In this research, I seek rather to gather insights into the learning pathways that are associated with existent practices as these have already emerged over time. Kemmis (2007) has offered useful ways of thinking about changing practices when he suggested that action research approaches can involve “*changing three things: practitioners’ practices, their understandings of their practices, and the conditions in which they practice. These three things – practices, how we understand*

*them and the conditions that shape them – are inevitably and incessantly bound together with each other*” (unpaged). This insight is useful in interpreting narratives of change associated with SMME learning pathways, as it allows a consideration of how the SMME practitioners’ practices may have changed, how understandings of their practices may have changed, how the conditions of their practices may have changed over time. Currently little knowledge exists of their changing practices. Ramsarup (2015) concurred in her research on ‘pathways with destinations in the environmental sector and the EPWP programmes’ and stated “there is very little knowledge of artisan, entry-level occupations, and these two are poorly defined in occupational systems and learning pathways development terms” (p. 132).

Table 2.2 (Kemmis & Grootenboer, 2008, p. 51) is a diagrammatic representation of the structural frameworks of a practice architecture where constraints and opportunities shape practice across levels and dimensions. These dimensions reflect the context of the research questions of this study where “sayings, doings and relatings” serve as broad categories or features of practice. The broad categories necessitated greater reflexivity and refinement to locate sub-themes from the research data.

**Table 2.2: Individual and extra-individual realms mutually constituted through practice (Kemmis & Grootenboer, 2008. p. 51)**

INDIVIDUAL	←————→		EXTRA-INDIVIDUAL
Knowledge and identity	Mediated through generic practices	In collectively-shaped social media	Structures
Understanding and self-understanding	<i>Communication</i> ( <i>‘Sayings’</i> )	<i>Language</i>	Cultural-discursive (languages, discourses)
Skills, capacities	<i>Production</i> ( <i>‘Doings’</i> )	<i>Work</i>	Material-economic (physical, natural worlds)
Solidarities, values, emotions	<i>Social connection</i> ( <i>‘Relatings’</i> )	<i>Power</i>	Social-political (lifeworlds, systems)

Kemmis has discussed modes of understanding as ‘dialectically-related’. He claimed “the aim of thinking in dialectical terms is to think relationally... how the individual is made by the social and the social is made by individuals” (Kemmis et al., 2013, p. 21). He referred to how we ‘look’ at, or view practice, when we research practice. A research approach as ‘individual-social’ and/or ‘objective-subjective’ positioning, results in shifting of views and

changes of perspectives. As a result, meaning of ‘sayings’, ‘doings’ and ‘relatings’ will also shift depending on the particular standpoint of the observer or participant. The standpoint from which the practice is viewed “places us in a particular kind of relationship with the sayings and doings and set-ups and relatings of a practice” (*ibid.*, p. 30). The conceptual framework in Table 2.3 that follows, illustrates these clusters of relationships of practice (Kemmis, 2009). The ‘set-ups’ pertain to ‘objects’ and ‘things’ and how these are viewed from a perspective or standpoint of the observer of the particular practice. The table 2.3 refers to ‘activities/work’ and ‘set-ups’ in respect of the material-economic domains of practice.

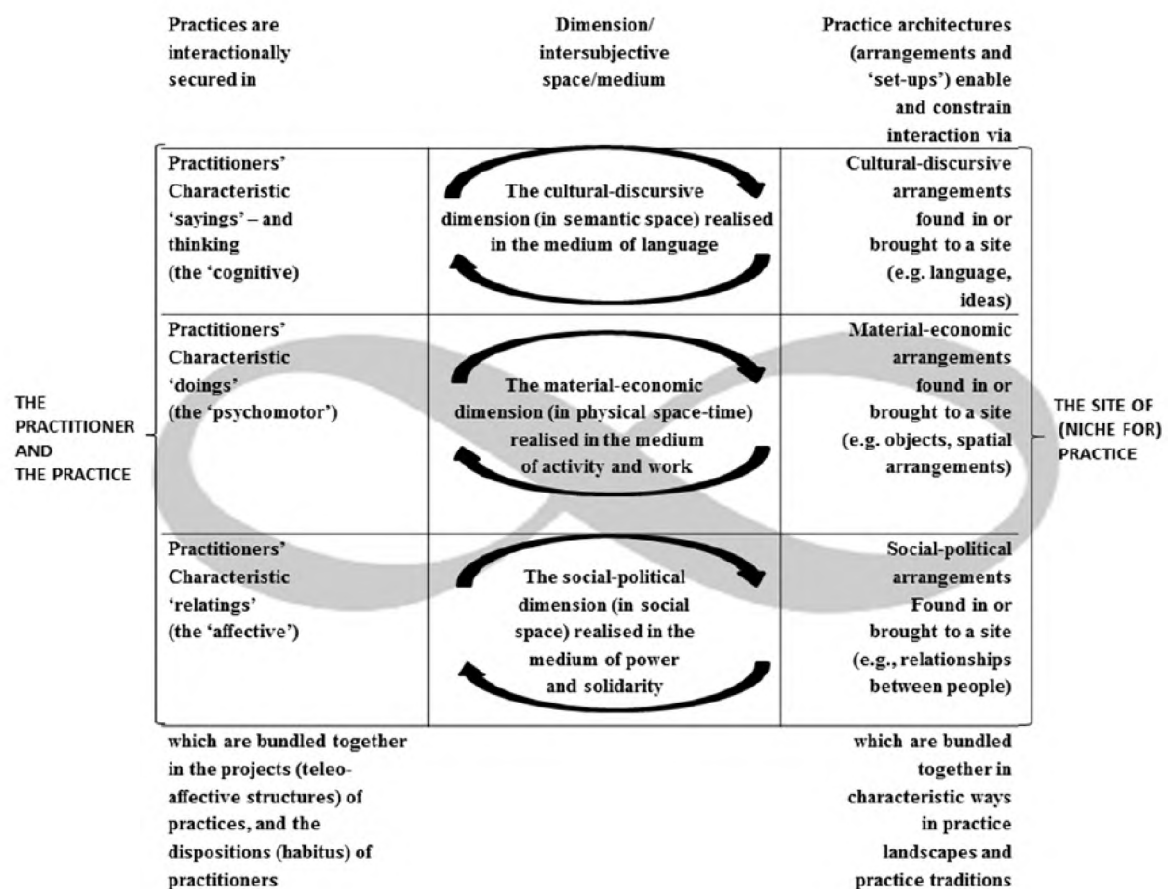
**Table 2.3: Relationships between the different traditions in the study of practice (Kemmis, 2009)**

<b>Focus:</b>	<i>The individual</i>	<i>The social</i>	<i>Both:</i> <i>Reflexive-dialectical</i> view of individual- social relations and connections
<b>Perspective:</b>			
<i>Objective</i>	(1) Practice as individual behaviour Discourses/language Activities/work; set- Social connections /power	(2) Practice as social interaction Discourses/language Activities/work; set- Social connections /power	
<i>Subjective</i>	(3) Practice as intentional action Discourses/language Activities/work; set- Social connections /power	(4) Practice as shaped by tradition Discourses/language Activities/work; set- Social connections /power	
<i>Both:</i> <i>Reflexive- dialectical</i> view of subjective- objective relations and connections	(5) Practice as constituted and reconstituted by human agency and social action Discourses /language Activities/work; set- Social connections /power		

In more recent research, Hemmings, Kemmis and Reupert, (2013) depicted the theoretical framework of practice architectures with specific reference to how changing a practice involves changing the practice architectures that support those practices. This is shown in Table 2.4. The practice itself is dynamically influenced by the composite structures that form

the practice arrangements evidenced in bundles of “sayings” (as interlocutors as shared language of the theme/traditions of Working for Ecosystems), “doings” (as interactions in shared locations in space and time in the workplace) and “relatings” (as interrelationships in relational conditions that shape, enable or constrain the practice)”. Hence the practitioners shape the practice of which they are a part.

**Table 2.4: Theoretical framework of practice architectures**  
(Hemmings, Kemmis, & Reupert, 2013, p. 475)



## 2.7 Knowledge, competence and practice in EPWP (Working for Ecosystems) workplace learning contexts

Environmental education processes (as knowledge sharing and learning processes) and community development or work and learning projects such as the Working for Ecosystems project (situated social learning contexts for sustainable development practices) are complex and multidimensional. Knowledge in environmental education is connected to how knowledge building and learning takes place for environmental understanding and

practice (O'Donoghue et al., 2013). The Working for Ecosystem's concern is with competence acquisition, in and through training and invasive alien plant control practices, to support potential learning pathways for entrepreneurship as well as a wider understanding of social-ecological issues.

Wiek et al. (2011) conducted a broad review of literature on sustainability competences in education for sustainable development programmes, in order to assess which key competences are regarded as critical abilities to adopt new learning pathways for a more sustainable future. They listed five core concepts of competence and practical applications for each. These included: *systems thinking competence* (in Working for Ecosystems, this would involve understanding the biodiversity, ecosystems and social-ecological systems related to invasive alien plants); *anticipatory competence* (in Working for Ecosystems, this would, for example, lie in being able to assess risks associated with the non-removal or the removal of invasive alien plants); *normative competence* (in Working for Ecosystems, this would involve being able to make 'good judgements' or 'ethically informed choices' as to how to deal with invasive alien plants and other forms of biodiversity in specific contexts); *strategic competence* (in the Working for Ecosystems context, this would involve knowing what to do when and how); and *interpersonal competence* (in the Working for Ecosystems context, this would involve being able to work successfully with others on invasive alien plant control practices). For SMME development associated with invasive alien plant control, these competences may differ; for example, systems thinking competence may involve understanding of economic/value chain systems, while strategic competence may involve strategic business decision making, and interpersonal competence may involve being able to work successfully with clients and customers, not only with those working on the invasive alien plant control practices. This research seeks to understand these competences and their development in the Working for Ecosystems programme, as they relate to mainstream invasive alien plant practices and to SMME development practices within a learning pathways framework.

Important to this research is not only the specific competences and how they develop in and from practices, but also how these competences are 'functionally linked' (Wiek et al., 2011). Wiek et al. defined competence not as individually differentiated competences as briefly discussed above, but "as *a functionally linked* complex of knowledge, skills and attitudes that enable successful task performance and problem solving" (my emphasis) which links to the point made by Kemmis et al. (2013) above on practices. Wiek et al. (2011) suggested further

that *transformative competences* can be developed “with respect to real-world sustainability problems, challenges and opportunities” via ‘points of intervention’ or engagement in practices. In relation to Figure 2.1 shown below, I would regard Working for Ecosystems practices of invasive alien plant control as the ‘point of intervention’ through which ‘functionally linked’ competences can potentially develop. Currently there is little knowledge of, if or how this occurs in the Working for Ecosystems programme, and how this contributes (or not) to learning pathways into SMME development.

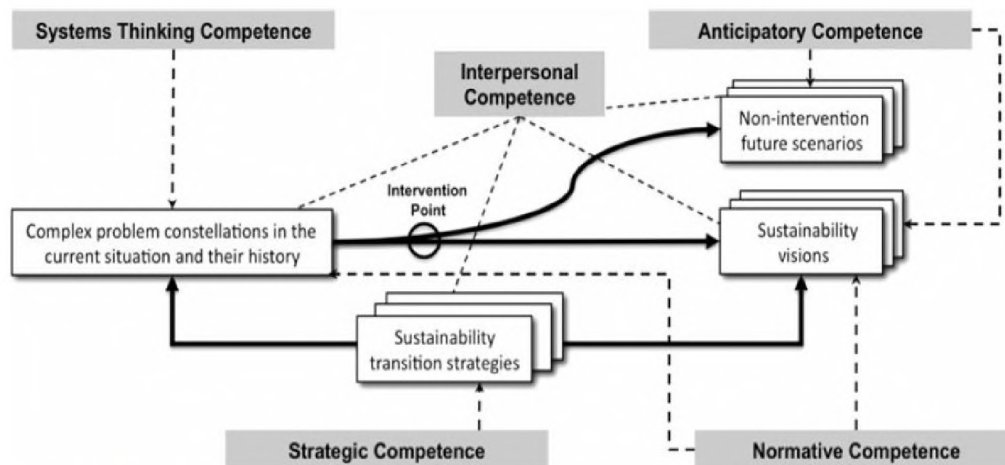


Fig. 2 The five key competencies in sustainability (shaded in grey) as they are linked to a sustainability research and problem-solving framework (see Fig. 1). The dashed arrows indicate the relevance of individual competencies for one or more components of the research

and problem-solving framework (e.g., normative competence is relevant for the sustainability assessment of the current situation as well as for the crafting of sustainability visions)

**Figure 2.1: Competence in Sustainability, Sustainability Research and Problem Solving Framework (Wiek et al., 2011)**

It is possible to participate, be capable in some of the invasive alien plant practices (e.g. herbicide application), but not acquire systems or social-ecological knowledge as to why invasive alien plants are being removed; hence it is important to examine the ‘point of intervention’ and the ‘functionally linked’ set of competences as per the Wiek et al. (2011) framework. Criticisms of ‘fragmented’ competence development without clear knowledge foundations have been levelled against EPWP programmes (Kobokana, 2007; Giqwa, 2011) and vocational training (Wheelahan, 2007; 2009; Fenwick, 2008). The lack of a ‘functionally linked’ set of competences associated with key practices can therefore be one of the potential problems that may contribute to inadequate learning pathways for workers in EPWP programmes.

Mogensen and Schnack (2010), in their review of action competence for Education for Sustainable Development (ESD) (which describes competence development in similar ways

to Wiek et al., 2011), stated “the action competence approach should include quality criteria that enable and promote learning and innovation by focusing on enhancement rather than performance and control” (p. 69). Schnack (1994, in Almers, 2013, p. 117) defined action competence as “a capability – based on critical thinking and incomplete knowledge – to involve yourself as a person with other persons in responsible actions and counter-actions for a more humane world”. Almers (2013) used a life-world approach utilising narrative as a methodology to study the phenomenon ‘sustainability’ which she claimed “consists of the experience of the process of developing aspects of action competence for sustainability” (p. 118). Action competence involves engagement with knowledge to resolve problems, but also values, innovation and action, not dissimilar to the Wiek et al. (2011) description of sustainability competence development process noted above.

However, what knowledge is included in competence and workplace learning pathways development may also need further clarification. Wheelahan (2009) was adamant that workplace learning should not be limited to the knowledge that is contextually relevant to a practice. In the case of the Working for Ecosystems programme, this may mean that workers engaged in invasive alien plants would need contextual knowledge of the invasive alien plants, but they may also need broader knowledge of ecosystems, entrepreneurial principles, general economics and ecology and so on if the learning is not to be too narrow (i.e. broader systems knowledge if linked to the Wiek et al.’s 2011 perspective). Wheelahan added “that learning for the workplace must include learning *in* the workplace but that learning cannot be limited *to* the workplace” (2009, p. 240). Price equated contextualisation with conventionalism and consequently conservatism which is “*covertly anti-epistemological*” in her experience of teaching environmental education to industry in Zimbabwe (2004, p. 400).

Emphasising epistemological access as well as fields of knowledge production, Bernstein (2000) added the “process of decontextualizing entail[s] principles of *de-location*, that is, selective appropriation of a discourse... and a principle of *re-location* of that discourse as a discourse within the recontextualising field” where the ‘original discourse’ is subject to ‘ideological transformation’. Bernstein asked “whose ruler, what consciousness?” (2000, pp. 113-114). He was in effect questioning the implications of the knowledge choices that are made for various learning contexts. In the Working for Ecosystems programme, this could relate to the way knowledge is re-located from the field of knowledge production. Here, concepts such as biodiversity and ecosystem services, adaptive ecosystem management, and social-ecological systems, are prominent in the wider arena of invasive alien plant control.

From an SMME development perspective, one would find concepts such as value creation, marketing systems, economic models and so on that would potentially be relevant, further broadening and providing knowledge 'contours' for Wiek et al.'s (2011) notion of systems thinking competence.

Providing further insight into some of the dynamics of normative competence, Hattingh (2001) advised becoming more reflexive and self-conscious about the conceptual distinctions we use in the policy debates on invasive alien plant control. These can tend towards reductive ethical practices, through what he refers to as “a measure of violence in so far as they are imposed on ‘reality’ and insofar as they exclude or marginalise rival conceptual schemes” (p. 188). This has been noted to be the case when invasive alien plants are removed under the name of biodiversity conservation and ecosystem management, but neglected in terms of their existent and potential value for community livelihoods and sustainable use, for example. Thus the issues of knowledge hierarchies and policy imposition are complex when one takes into account that several of the invasive plant species that are eradicated via the Working for Ecosystems programme are used in everyday application by the communities where removal takes place. The linking of SMME development to the invasive alien plant programme can potentially broaden the valuing of invasive alien plants in other ways, potentially changing or shaping the normative decisions that are made. However, the valuing of invasive alien plants in different or expanded ways requires wider systems knowledge and knowledge related to invasive alien plant use/sustainable use within SMME development frameworks. How such knowledge and valuing is taking place by SMMEs within the Working for Ecosystems programme, or how it is being learnt and how it ‘situates’ within a learning pathways framework towards SMME development, has become more clear in this study in individual SMME contractors and certainly in field managers. I discuss these cases in Chapters 4, 5 and 6.

The above discussion points to some of the ways in which the Wiek et al. (2011) key competences framework provides a way of researching learning pathways that have been and are experienced in and through the Working for Ecosystems programme.

## **2.8 Relational ontology**

As indicated above, the emergence of SMME competence from initial invasive alien plant practices, training and work experience requires *interrelated and multidimensional skills development processes within a learning pathways framework*, which in turn is related to the emergence of green economy activities for climate and biodiversity resilience and

conservation (Sections 2.3 and 2.5). The competence framework of Wiek et al. (2011) emphasises *functional relationality amongst a range of competences that they have identified as being significant for sustainability emergence*. Action competence development emphasises *relations between knowledge, values, actions, contexts and sustainability emergence*, while the practice theory of Kemmis outlined above emphasises the *social connection or relating dynamics of practices*.

Reflecting a commitment to a relational ontology, Stetsenko asked the grand theory question of ‘what it is to be human’ (2008, p. 474). In raising issues of empowerment and social justice, she advocated three stages where contribution acts as a transformative process towards a “collaborative historical becoming” as a “knowing being and doing” through:

- 1) An integrated perspective on sociocultural approaches (the practices perspective above additionally includes socio-material perspectives);
- 2) Relational ontology of human development (as the process through which both learning and development take place, overcoming the subject – object dualism); and
- 3) Collaboratively transforming the world in view of goals and purposes (and understanding what it means to be human).

Cook and Wagenaar suggested that explicit engagement with a relational ontology in research can help to circumvent a “Received View” (as opposed to local contextual knowledge) of “offering a theoretical account that explains the relationships among practice, knowledge, and context” (2012, p. 3). Edwards (2011; 2012) referred to sites of intersection of practices and motives. While Edwards described professional expertise, it is my understanding that in the learning that happens in the Working for Ecosystems context, a similar ‘building of common knowledge across boundaries’ takes place albeit at a different level. In Section 3.2.3 on narrative enquiry as method, I refer to Squire’s (2012) ‘similarisation’ and ‘familiarisation’ narratives which I interpret as metaphors for naming a collaborative response. To fully appreciate the emergent and multidimensional nature of the *emergence of SMME practice learning in the Working for Ecosystems programme*, I draw on a relational ontological perspective in this research where narrative enquiry is used as the operational method to unravel the story.

## 2.9 Conclusion

This chapter provided an overview of how Working for Ecosystems is situated, socially and historically, as a poverty alleviation programme within a complex policy structure within which the emerging enterprises aim to create economic independence. Working for Ecosystems is regarded as an organisation influenced by those who function within it and the practice architectures which surround it. These in turn contribute to its multidimensional character. The theoretical framework aligned to practice is that of Kemmis et al.'s bundles of actions, be they communication, production or socially related (Kemmis & Grootenboer, 2008; Kemmis, 2009; Kemmis, Wilkinson, Hardy, & Edward-Groves, 2009; Kemmis et al., 2012; Kemmis & Mutton, 2012; Kemmis et al., 2013). Wiek et al.'s (2011) competences connect to the conceptualisation of sustainability competences and environmental stewardship. A relational ontology is utilised to facilitate an understanding of how the interrelationships between practice and participants exist and how knowledge shifts and flows in the context of an ever changing present (Cook & Wagenaar, 2011).

## **CHAPTER 3: METHODOLOGY: RESEARCH DESIGN**

### **3.1 Introduction**

This chapter describes the research design that was used to understand and examine learning pathways in the workplace of invasive alien plant control as well as how SMME development emerged over time within the Working for Ecosystems programme. The study addresses the research problem of skills development learning pathways, policy and practice as a multifaceted intervention as these become evident in practice, over time (outlined in Section 1.7). It provides an overview of the research process of narrative enquiry and how data was gathered and analysed to answer the research questions of the study. A qualitative, interpretive orientation was selected to describe and understand data grounded in the narratives of participants and the multi-faceted practice of which they are a part.

### **3.2 Research methodology**

#### **3.2.1 Qualitative enquiry**

Qualitative enquiry has been used as the methodological approach in this study. Kaplan and Maxwell, quoting Hammersley and Atkinson, stated that “in a qualitative study research design should be a reflexive process operating through every stage of a project” where all stages influence one another “more or less simultaneously” (2005, p. 214). These stages are relational and interconnected. The reciprocal elements interact with one another and affect the research design requiring constant reorganising and evaluation to enhance coherence and to understand how best the research problem and questions can be addressed so that the relationships between the components are evident.

#### **3.2.2 Interpretivist orientation**

Interpretivist research falls within the category of ‘symbolic sciences’ and pertains to assumptions of how humans make meaning of their experience ‘as it appears to them’ in the context of their life world; how through a process of co-construction, humans (the researcher and co-participants) unravel “the complexities of social life as they and the research subjects experience it” (Janse van Rensburg, 2001, p. 17). With reference to Carr and Kemmis (1986), Connole (1998, p.13) claimed that “interpretive perspectives [have] come to be regarded as an alternative epistemological basis for the human sciences,” involving *how we come to know*

what is. This is especially important since the three components examined are practice, knowledge and competences. As discussed in Section 2.8, relational ontology requires a socio-cultural view and a collaborative approach.

### **3.2.3 Narrative enquiry as method**

Narrative enquiry as a research method falls within the qualitative, interpretivist domain of research. “Narration is a human communication paradigm” (Fisher, 1999). Narrative enquiry as method in research is a means of describing experience from within the personal realm reflecting how the narrator interprets happenings and phenomena, and then engages in sense making of his or her being in the world. Narrative is a distinct form of discourse (Chase, 2011). Narration helps to order experiences in thought and then language. Language permits access of thought to others. Narrative is, however, embedded within interaction (Sarangi, 2008).

Squire (2012, p. 64) referred to narrative’s ability to catalyse social change in that it binds the personal to the social realm. She described ‘similarisation’ narratives as connecting across boundaries and ‘familiarisation’ narratives as having strong commonality and supporting change, which “builds equivalence rather than identity within social connection”. These values are vital to spreading an ethos of change and to creating a climate in which new knowledge is valued (or evaluated), critically and reflexively.

Narrative enquiry requires in-depth research or a ‘thick description’ and is thus more suited to smaller groups. The maximum number in a SMME group where narrative enquiry was used never exceeded nine participants (this figure included myself and two research assistants).

Striano referred to a new framework for narrative enquiry and suggested four guidelines which I quote to support research collection and data analysis phases used in this study (2012, p. 153):

- i. an acknowledgment of the relevance of the cultural and social dimension of narrative;
- ii. a recognition of the contextual and situated condition of narrative practice;
- iii. an identification of narrative as one of the possible epistemic positions that individuals and communities use with regard to reality, which needs to be confronted dialogically with other positions, in order to be faithful to the nature and structure of human experience;
- iv. a focus on the emancipative and transformative outcomes of narrative practice and of the consequent ethical, moral and political implications for narrative researchers and practitioners.

Craig equated narrative enquiry and reflective practice, and pointed out that the two methods “resemble one another”, noting how narrative enquiry is entirely dependent on participants’ and researchers’ capacities to reflect (2009, p. 114). These *capacities to reflect* are evident in the narratives of the participants whom I discuss in Section 3.3.

### **3.2.4 Narrative enquiry as a method to research actions as adaptation to climate change**

Linking concepts, through emphasis on relational engagement in time, space and social context in actions of ‘happeningness,’ assisted my understanding that a method, such as narrative enquiry, may be well suited to find the threads that connect and show how emergent learning pathways, situated in the life stories of SMME practitioners, have emerged in the Working for Ecosystems programme, ‘over time and in context’ (Sections 2.5 and 3.3). These narratives are interwoven as “considerations of relational knowing and being” (Caine, Estefan, & Clandinin, 2013, p. 6), or relational knowings, doings and ‘relatings’ as per Kemmis’ description of practices (see Section 2.6).

Researching ‘narrative enquiry’ as a suitable method led me to Anticipatory Learning (Tschakert & Dietrich, 2010), and the Action Research Resilience Alliance (Berkes, 2009) as well as Adaptive Co-management (Ostrom & Cox, 2010; Armitage, Marschke, & Plummer, 2008; Plummer & Armitage, 2007). In Chapter 1 (section 1.5), I refer to the eThekweni Municipality’s Climate Change, Biodiversity & Resilience Department that has adopted Community Ecosystems Based Adaptation (CEBA) as a core strategy in its work of biodiversity enhancement and climate change mitigation (ICLEI-Africa, 2013). These theories are strongly linked to action work in the ecological field and anticipatory learning for climate change. This action work and learning connects to learning through practice (Kemmis & Grootenboer, 2008), developing sustainability competences (Wiek et al., 2011) and relational knowledge of the context of the work (Stetsenko, 2008; Cook & Wagenaar, 2011). Work in action requires participants as implementers, whether it is through co-management of green spaces, co-actors with civic responsibilities or a city engaging in a programme of work for greater adaptation to climate change and increasing urbanisation (Krasny & Tidball, 2009a; 2009b; Shava, Krasny, Tidball, & Zazu, 2010; Tidball & Krasny, 2011). Tidball and Krasny harnessed civic ecology as practice in concepts of GRZ (Greening in the Red Zone). According to Almers, “the focus of the research is the possible paths... leading towards action competence for sustainability” as well as “various framings of education for sustainability”

(2013, p. 117). Rogers et al. (2013), in a local South African context, emphasised that complexity, as habits of mind, or *practised* in the way we live, needs to become embedded in how we make decisions, a “lived complexity”, as opposed to an “intellectual complexity” (unpaged).

The aim of this research is to document and track Working for Ecosystems as a local current and past ‘practice architecture’ to ascertain how the people in the programme have accessed learning and new knowledge and acquired agency as involvement in the programme progressed over time. The local practice is embedded in global networks and influenced by these broader practices of working towards community engagement in forming ‘habits of mind’ that consider planetary boundaries and limited resources for future generations (Rogers et al., 2013).

### **3.3 Original site and selection of key facilitators**

Working for Ecosystems was initiated in 2006 with the Ntshongweni community. The Ntshongweni community has assisted in scaffolding environmental learning to the broader community (see Section 4.3). I identified two participants who started with Working for Ecosystems at its inception as part of the Ntshongweni community, and who are now regarded as custodians of the environment (Ki-1, Ki-2). I labelled these participants as key informants or key facilitators. These participants reflect intrinsic qualities of custodianship of the environment (see Sections 4.3.1 and 4.3.2).

I was able to increase the key informant group by an additional two participants (Ki-3, Ki-4) due to changes in staff at the Wildlife and Environment Society of South Africa (WESSA). These additional participants acted as field managers, added depth and enabled insight with regard to their own journeys and that of Working for Ecosystems, especially with a view to understanding the transition from worker to SMMEs within the management structure of practice. These key informants are, however, not from the Ntshongweni community.

The four selected environmental custodians were interviewed to provide a timeline and to narrate their learning pathways of Working for Ecosystems as well as that of the SMME contractors, as experienced through their involvement. Several additional data connections were made to the Ntshongweni community theme as a result of these four interviews (see Sections 4.3 and 7.4.1).

Looking back, reflecting on the research questions of the study as part of the conversation,

has promoted greater insight as to what processes were at work to enable stewardship and SMME development to evolve. It has been valuable to include the inception phase (Chapter 4) since it points to the *critical factor of time in the project* and also provides insight into enabling and constraining factors in the Working for Ecosystems programme.

A better understanding of the Ntshongweni community through the narratives of several participants has added valuable data to gain insight into local scenarios and to understand from those who personally experienced the programme at inception (Maxwell, 1998, p. 17; Maxwell, 2008). The dynamics and community relationships cannot be understood from outside of Working for Ecosystems; this is local embedded knowledge and needs local actors or otherwise we “ignore the fact that ontological, historical, and ethical referents exist” (Lotz-Sisitka, 2009a, p. 172).

### 3.4 Data generation methods

To develop the narratives of changing practice in the Working for Ecosystems context, I used a three-phased research process. I used NVivo 10 Qualitative Data Analysis Software (2014) for organising the data (as well as extracting and coding data). These phases are descriptive in nature and entailed entering all data sources into NVivo 10. Each research phase had a specific goal:

Phase 1 = Timeline of Working for Ecosystems, the programme

Phase 2 = Knowledge and practice of SMME contractors established *outside* Working for Ecosystems

Phase 3 = Knowledge and competences of SMME contractors established *within* Working for Ecosystems

However, since the NVivo software tool facilitated coding across sources and themes with less time constraints than a manual application would have allowed, data was generated and tested at all levels of phases and criteria. This enhanced flexibility and facilitated understanding of, for example, the competence of environmental stewardship in participants from Phase 1, but categorised as sustainability competence aligned to Phase 3.

**Phase 1:** In the practice architecture of Working for Ecosystems I locate “*meaning and comprehensibility*, in the terms of ‘sayings’ and ‘thinkings’ that occur in practice in its cultural-discursive dimension, as it is constituted in *semantic space*, and in the medium of

language” (Kemmis et al., 2012, p. 35) (italics in the original).

Phase 1 is labelled ‘Timeline’ and ‘The Ecosystem of Working for Ecosystems’ (as shown in Figure 3.10). It is focused on tracing the Working for Ecosystems chronology and key practices in the voices of four narrators’ experiences as background context to the story of how the programme grew to what it is today. These four narrators are grouped as ‘key informants’. Their stories helped to provide a contextual profile of how Working for Ecosystems evolved, through a historical analysis as a people-ecosystem-centric account. The in-depth interviews traced personal growth, learning and socio-ecological thought. Observation of being at work and documents pertaining to these participants have been accessed for a broader context of their journey.

This phase seeks to tell the Working for Ecosystems story and its changing practices (regarding practices being learned by workers and the emergence of SMMEs) as experienced by four key environmental custodians who have been involved in the programme for an extended period of time. My interest is in their meaning making of the process of Working for Ecosystems, as stated by Chase (2011), to shed light on the “ordering or shaping of experience, as a way of understanding one’s own or others’ actions, of organising events and objects into a meaningful whole, of connecting and seeing the consequences of actions and events over time” (p. 421).

**Phase 2:** In the practice architecture of Working for Ecosystems I locate “*productiveness*, in terms of the ‘doings’ that occur in a practice in its material economic dimension, as it is constituted in *physical space-time*, and in the medium of work or activity” (Kemmis et al., 2012, p. 35) (italics in the original).

Phase 2 is labelled ‘Practice and knowledge, narratives of changing practice’. Phase 2 entailed semi-structured interviews with each of the contracted nine SMMEs active in the Working for Ecosystems programme as a functioning unit up to the contract period June 2014. SMME application numbers doubled from nine to eighteen for the next municipal financial period July 2014-2015 (the list of SMMEs appears in Appendix I). This was in part due to realignment of directors within existing SMMEs. In addition, ‘entirely new outsider SMMEs’ submitted proposals for the ‘new’ contract period July 2014-June 2015. All proposal documents submitted by SMMEs (to WESSA as implementer for the ‘new’ Working for Ecosystems tender) were added to the document analyses irrespective of whether or not the SMME was already part of the programme. These proposals provided

valuable insight as to knowledge of practice as well as general SMME entrepreneurial skills (in applying for tenders).

The eThekweni Municipality regards employment of small business contractors and cooperatives on its city procurement database as a critical contribution to job creation. The proposal or applications received for the next contract period, provided insight as to how outsider small businesses seek contracts as well as the calibre of the applications. In addition, it enabled insight into the level of learning of insider SMMEs already part of the Working for Ecosystems programme. Submitting a proposal meant the business representative had to be present for a site briefing. This simulated the city procurement process.

The process of interviewing nine SMMEs assisted in validating the choice of SMMEs that became part of Phase 3 for a more in-depth focus. Source documents relevant to the selected SMMEs were also accessed and included in the coding of data. Observations were in the form of photographs and videos as well as site visits of teams at work but only pertaining to the SMMEs that had become Phase 3 participants.

**Phase 3:** In the practice architecture of Working for Ecosystems I locate “*connectedness* and *solidarity* among the people and objects involved in a practice, in terms of the ‘relatings’ that occur in a practice in its social-political dimension, as it is constituted in *social space*, and in the medium of power” (Kemmis et al., 2012, p. 35) (italics in the original).

Phase 3 is labelled ‘Knowledge and competences, sustainability narratives’. In this phase, four SMMEs were selected from Phase 2 interviews for more in-depth analysis. The selection was influenced by the goal of examining *pathways accessed from the level of worker to SMME*. Greater relevance was added to the study, in the current Working for Ecosystems context, if the *transition from worker to SMME* occurred within the Working for Ecosystems programme. I have termed these ‘insider’ SMMEs.

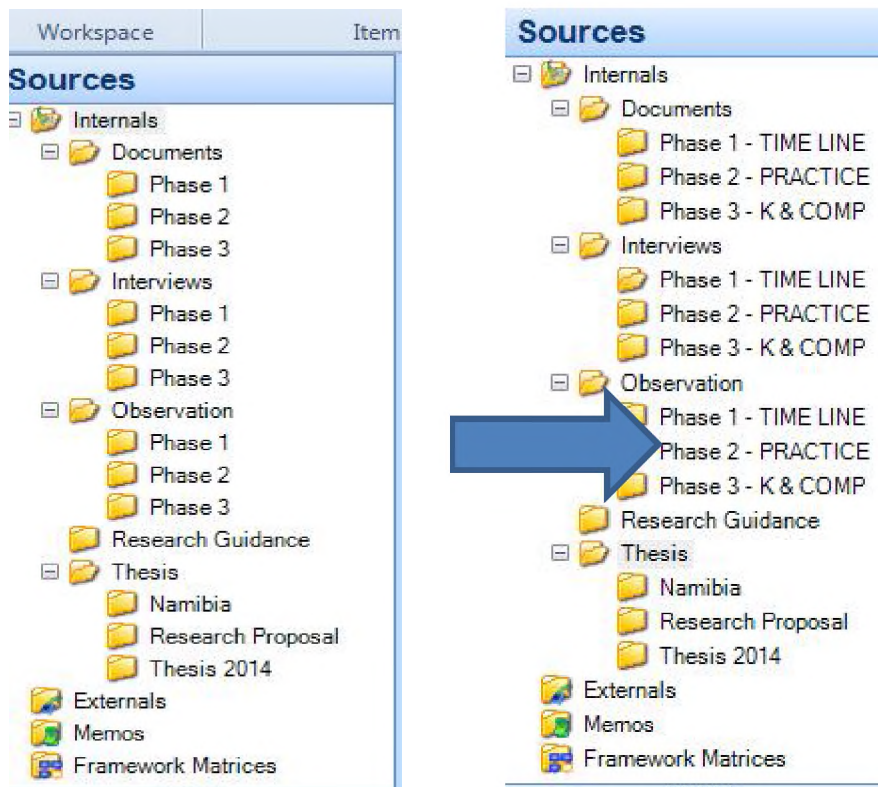
**Merging phases:** “In South Africa we see an emerging history that represents the interplay of policy, law and educational processes around responses to socio-ecological risk” (Lotz-Sisitka & O’Donoghue, 2008, p. 112). Unterhalter (2009) referred to social justice creation *in the middle* as this potentially occurs in and through learning processes and pathways. The concept of *knowledge flows* across dimensions resulted in a theme in this study entitled, ‘Equity from the middle’ with the node property description, borrowed from Unterhalter, who referred to “Flows of ideas, skills, material resources and time which substantively expand the capability set are associated with equity from the middle” (p. 421).

Merging and making sense of all data meant combining Phase 1, 2 and 3 of the research process. Data from Phase 1 pertaining to the Working for Ecosystems programme as well as data and continuous input from the key informants remained the 'go to' avenue for verification and additional background on issues which needed clarification and greater detail. Since this number of 'knowledgeable others' had increased from the proposed two to four in Phase 1, cross referencing was made possible as well as validation of data. This background of secure knowledge was invaluable. In addition, I could bounce theory and data off my two assistants, a social work student and an outsider SMME director studying marketing and public relations<sup>5</sup>. These two students assisted me in the interviews and in transcribing interviews. Both assistants have been involved in the Working for Ecosystems programme during the period of this study: one as a student social worker who acted as my intern, and the other as a liaison in respect of official compliance and business mentoring to the SMMEs.

I kept an informal record of the process of 'how' I commenced with loading source data into NVivo using a folder arrangement based on the Research Proposal outline. Whilst the sources were arranged in Phases 1-3 and per the three themes of timeline, practice, knowledge and competences, this rather strict delineation was not applied when it came to coding data in nodes. It was not possible to apply coding to certain participants according to a particular classification and to ignore others who belonged to another group. The many delineations of the data categories were changed from non-descriptive terms (such as phase) to more specific wording of categories to easily recognise the purpose of the folder as a storage facility for data (see depiction of the process below as in Figure 3.1).

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<sup>5</sup> The two assistants for the research are recognised in the Acknowledgements.



**Figure 3.1: Using NVivo to delineate data categories for sources in a descriptive manner**

### 3.4.1 Document analysis

Documents specific to the history and context of Working for Ecosystems were examined, coded and researched at multi-levels. As Cohen, Manion and Morrison stated, “documentary study is useful in longitudinal analysis, as it may show how situations have evolved over time” (2007, p. 201). These authors list comprehensive sets of questions that need to be addressed in assessing validity and reliability of documents used. Most Working for Ecosystems’ documents are of a reporting and informative nature and contain useful information on changing practices over time. It became necessary to position Working for Ecosystems as an intervention aligned to many policies, from a local municipal level to a national level (see Model 2.1 in Section 2.4 in ‘locating Working for Ecosystems’; Section 6.4 investigates ‘practice jurisdictions and SMME practice context intertwined’). A lengthy analysis in Section 4.2.1 asks ‘why Working for Ecosystems’ linking the purpose of Working for Ecosystems and the questions asked in this research study. It was also of vital importance to locate the niche practice of invasive alien plant control as a compliance strategy in assessing the State of the Environment as well as reporting thereon (Section 4.4 describes ‘State of the environment, interdependence of people and place recognised in policy and implementation’). The context of and reasons for Working for Ecosystems were enmeshed

within “policy, law and educational processes around responses to socio-ecological risk” which had to be understood to locate this study (Lotz-Sisitka & O’Donoghue, 2008, p. 112).

Further documentation in respect of contractual details and obligations were selected with permission from the project manager. SMME official reports were checked for compliance and reported on to the enterprise owners. A student (as mentioned above), engaged in Marketing and Public Relations, became my assistant and has subsequently formed a strong relationship with the SMMEs (coded as a perimeter SMME, PR Conveniences (Pty) Ltd).

As mentioned above, proposals submitted by SMMEs for the next Working for Ecosystems contract were coded for themes according to practice knowledge and competences. This helped to profile each of the contractors involved in the Working for Ecosystems work, but more importantly to research different possibilities for learning pathways into SMME development in the Working for Ecosystems context. All source documents were numbered, classified and property descriptions applied to each document (Appendices A, B and C).

I have been a consultant to Working for Ecosystems in respect of SMME development and as a result have been associated with Working for Ecosystems since 2012. As a researcher assisted by a social sciences student doing her practical research (some of which was ‘conflict resolution’ and ‘peace building’ in Working for Ecosystems), I remained a participant but also to some extent, an outsider. In this respect, I refer to the conceptual framework in Table 2.3 which illustrates clusters of relationships of practice (Kemmis 2009). We changed the terminology from ‘conflict resolution’ to ‘peace building’ since this has a more positive connotation.

Once the SMME contractors became managers of the workers, the relationships in respect of ‘peace building’ or conflict were no longer reported to programme management as was the case when field managers had the task of worker management. Interviews with contractors, KBT Creations (6-Int Ph2 TM KBT), Lihlithemba (7-Int Ph2 ZN Lihlithemba) and Songa Umnotho (9-Int Ph2 Songa Umnotho) reflect a collaborative approach in respect of worker and/or director relationships. Tension increased, however, between some of the directors of the SMMEs, which was brought to the attention of management for resolution since work was neglected (6-Int Ph3 Qhakaza). I discuss the interview procedures in the next section.

### 3.4.2 Semi-structured and in-depth interviews

In-depth interviews were first held with four key informants in respect of the Working for Ecosystems history, its origin, as well as knowledge of the SMME teams (Figure 3.2). With this background knowledge, I could proceed using semi-structured interviews with nine SMME contractors (Figures 3.3 and 3.4). This was to ascertain insights into, learning pathways (including insights into qualifications and formal training programmes completed, as well as work-based learning experiences); current and changing practices; knowledge and competences. The interviews varied depending on the number of directors in each SMME. In some instances, the group consisted of five directors, myself and the two research assistants.

The presence of the research assistants was for mentoring purposes and to assist where conversation was only in isiZulu. This made the interview as much a social experience as an informative session. The standard approach was an explanation of the research context and enquiry in respect of individual knowledge prior to Working for Ecosystems, as well as an enquiry into how knowledge and experience was acquired in work and training (Section 6.2.5 provides an example from the interview with Umoyomuhle directors, 3-Int Ph3

Umoyomuhle). All interviews were recorded and later transcribed either by myself or my research assistant. This provided a ‘wider narrative’ of Working for Ecosystems’ SMME learning pathways, current and changing practices, knowledge and competences. Kohler Riessman (2013, unpagged) referred to DeVault (1999) and suggested “less dominating and more relational modes of interviewing, which reflect (and respect) participants’ ways of organizing meaning in their lives ... to follow participants down their associative trails”. The interview sessions became aligned to Participatory Narrative Enquiry (Kurtz, 2013).

A conversational approach is used in semi-structured or in-depth interviews. The boundaries of the research questions assist in keeping focus on why the interview is taking place, “combining structure with flexibility” (Legard, Keegan, & Ward, 2003, p.141). The in-depth interview followed organisational steps as well as what Legard et al. termed “ground and dimension mapping and perspective widening” questions. It was of vital importance to communicate to the respondents why the interview was taking place. The purpose of the study was explained in each interview procedure. These interviews were recorded and transcribed with both versions listed as sources as either transcripts or interviews. Figures 3.2, 3.3 and 3.4 catalogue interviews and transcripts as saved in NVivo after the transcription was completed, checked and verified. In some instances, new nodes were coded as a result of interview content that provided new insight.

In addition, I created a 'memo' for each SMME aligned interview. These memos contain extracts from the interviews and ideas relating to coding themes relevant to learning pathways (Figure 3.13).

### **3.4.3 Observation**

Henning (2004) stated that the roots of observation as a participatory process originate from ethnographic studies. Observation took place through short video clips, photographs, site meetings, audits and reporting (Figures 3.5, 3.6 and 3.7). Negotiating entry as a researcher was not problematic. I have been involved with Working for Ecosystems for some time and my role is relatively well-known. However, since anonymity in this instance was not possible, I adhered to any off-the-record content requests. I was able to conduct observations on site for each of the three selected SMME contractors whom I selected for further in-depth research in Phase 3 (Figure 3.7). More time was needed, however. The Working for Ecosystems contracts were delayed for several months and no fieldwork took place again until October 2014.<sup>6</sup> Plant regrowth slows down in KwaZulu-Natal in winter months since rain falls mainly in summer. This factor affects all local invasive alien plant removal work.

## **3.5 Data generation and management**

QSR International, NVivo Data Analysis Software (2014) was used as the main method for qualitative data generation management and processing.

**Sources:** The initial full three phases of data coding entailed identification and selection of valid source documents. In Phase 2 and 3 source documents were also transcribed interviews. Phase 3 video recordings were in some cases also transcribed in part where the conversation was relevant to the research study and questions. Photographs were also used as source documents.

Each source was classified in NVivo, where a process of uploading, categorising and classifying of all sources of data and origin of such data took place (see Appendix D; Figures 3.2-3.7). All source documents were stored in folders in the NVivo programme and

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<sup>6</sup> SMME contractors started in October 2015 after the 2015 winter break.

descriptive properties applied. Folder names were created to identify source documents and the function of such documents for each phase of the research (see Figure 3.1). A reference was applied to each source document (see Table 3.1, Figures 3.2 - 3.7). Interviews as audio files were saved but not analysed as audio files within NVivo. These I transcribed manually, assisted by my intern and research assistant, where isiZulu was used. Whilst I could participate in oral isiZulu interviews, transcription and deeper meaning was left to Busisiwe Majazi. I checked all interview transcripts, discussed content where necessary with relevant participants as well as followed up with content in the final observation sessions. A total of 133 pages of interview transcriptions resulted from nine interviews with SMMEs. A NVivo Memo was created for each SMME group to assist with a flow of data which could be relevant for the study (see Figure 3.13 as an example).

**Themes:** Secondly, document analysis, interviews and observations were managed in such a way that themes emerged during the coding processes. Some themes were aligned with the theories that I drew on. Other themes emerged from the data itself (Appendix E is an extract from the process document or journal which shows the steps of the data management, generation of data and analysis). In the NVivo software programme these themes are termed nodes. Nodes can be parent nodes (themes) and child nodes (sub-themes). All sources of data were uploaded as sources and categorised into folders representing themes (see Figures 3.8 - 3.10). Extractions of data from sources were labelled and described as references in NVivo. These coded sections, created through a systematic coding process, depend on the user and the research requirements. Numerical figures show the number of links or connections across data sources contained in the nodes (nodes are also regarded as ‘containers’).

Research guidance from QSR International, NVivo Data Analysis Software (2014), as well as the NVivo Toolkit prepared by O’Neill (2013), was used to facilitate testing the options available within the programme and saved in a folder entitled ‘Research Guidance’. These options entailed word frequency searches (examples are shown in Figures 3.12 and 5.1); group queries between nodes and sources; coding summary reports of sources and summary reports of nodes, classification of groups with similar traits and more. Colours assisted with visual identification and grouping of patterns as well as labels, tables and graphs. Coding stripes highlighted content connected to nodes using colour and theme identification as a form of graphic representation.

**Analysis:** Once coding for themes and sub-themes was completed, I used Kemmis’ theoretical applications of themes of ‘sayings, doings and relatings’ in a focused manner with

only the Phase 3 SMMEs in order to understand the relationships between the domains of work place practice, functioning as an SMME and learning pathways. I then followed the same procedure to locate evidence of key sustainability competences pertaining to Wiek et al.'s (2011) findings regarding functionally linked competences, however I included all participants whom I felt displayed evidence of sustainability competences in one or more of the given framework aptitudes. These competences connected to environmental knowledge and practice accumulated over time, either as an SMME contractor or key informant group.

**NVivo application:** Each document was classified in NVivo per its source and properties of listed documents were described and numbered. Full lists of documents for each phase were exported from NVivo to an Excel sheet. A summary is provided in Table 3.1 below, details of which can be viewed in Appendices A, B and C.

**Table 3.1: Summary of full lists of documents for each phase of data collection**

Appendix A	1Doc Ph1-35Doc Ph1	Working for Ecosystems Timeline documents
Appendix B	1Rep Ph2-33Rep Ph2	SMME Reports (MDC) 2013-2014 on official status and compliance and actions taken
Appendix B continued	1Doc Ph2-25Doc Ph2	SMME CIPC Certificates Working for Ecosystems Proposals
Appendix C	1Doc Ph3-13Doc Ph3	Documents pertaining to SMME for observation and deeper knowledge of functioning

Figures 3.2, 3.3 and 3.4 that follow, show the extracts as several screenshots from NVivo in respect of interview data for Phase 1, 2 and 3 respectively. These lists were exported from NVivo to Excel documents.

INTERVIEWS PHASE 1 - WFE TIME LINE						
Name	Description	Classification	Created On	Nodes	Referenc	
Linda Mlotshwa	1-INT PH1 LM	Interview transcript	11/08/2014 07:04 PM	25	1639	
Linda Mlotshwa_2014.05.20_14	2- Interview Field Manager	Interview	11/11/2014 03:02 PM	0	0	
Lindelani Zuke	3-INT PH1 LZ	Interview transcript	11/08/2014 07:11 PM	20	1711	
Lindelani Zuke_2014.06.05_11.3	4- Interview ex Field Manag	Interview	11/11/2014 05:55 PM	0	0	
Mlungisi Mathenjwa	5-INT PH1 MM	Interview transcript	11/08/2014 07:34 PM	22	2572	
Mlungisi Mathenjwa_2014.05.22	6- Interview Field Manager	Interview	11/11/2014 05:59 PM	0	0	
Sithembile Shozi_2014.04.30_Tr	7- Interview Environmental	Interview	11/11/2014 06:03 PM	0	0	
Sithembile Shozi	8-INT PH1 SS	Interview transcript	12/08/2014 05:42 PM	21	1205	

Figure 3.2: Interviews Phase 1 Timeline

INTERVIEWS PHASE 2 - KNOWLEDGE AND PRACTICE						
Name	Description	Classification	Created On	Nodes	Referen	
Indabangapheli_Trading_M	1-INT PH2 MM INDAI	Interview transcript	14/08/2014 07:03 PM	3	15	
Indabangapheli_2014.06.2	2-INT PH2 MM INDAI	Interview	11/11/2014 06:31 PM	0	0	
Intobeka Yesizwe_2014.0	3-INT PH2 SG INTOE	Interview	11/11/2014 06:28 PM	0	0	
Intobeka Yesizwe_Sakhi G	4-INT PH2 SG INTOE	Interview transcript	14/08/2014 07:04 PM	2	40	
KBT Creations_Thuli Math	5-INT PH2 TM KBT	Interview transcript	20/08/2014 10:02 PM	4	64	
KBT_2014.07.04_11.18_0	6-INT PH2 TM KBT	Interview	11/11/2014 06:29 PM	0	0	
Lihlithema_2014.07.02_12	7-INT PH2 ZN LIHLIT	Interview	11/11/2014 06:30 PM	0	0	
Lihlithema_Zelele Ndlovi	8-INT PH2 ZN LIHLIT	Interview transcript	20/08/2014 09:47 PM	3	34	
Songa Umnotho_2014.06	9-INT PH2 NN SONG	Interview	11/11/2014 06:35 PM	0	0	
Songa Umnotho_Nomsa N	10-INT PH2 NN SON	Interview transcript	14/08/2014 07:15 PM	2	44	
Thinking Imvelo_Directors	11-INT PH2 ALL THII	Interview transcript	18/08/2014 06:21 PM	5	51	
Thinking Mvelo_2014.06	12-INT PH2 ALL THII	Interview	11/11/2014 06:40 PM	0	0	

Figure 3.3: Interviews Phase 2 Knowledge and Practice

INTERVIEWS PHASE 3 - KNOWLEDGE AND COMPETENCES						
Name	Description	Classification	Created On	Nodes	Referen	
Qhakaza Mvelo_2014.05	7-INT PH3 A	Interview	11/11/2014 06:59 PM	0	0	
Qhakaza Mvelo_Directors	6-INT PH3 A	Interview tran	11/11/2014 07:11 PM	2	52	
Umoyomuhle_2014.06.18	5-INT PH2 A	Interview	03/01/2015 10:40 PM	0	0	
Umoyomuhle_2014.06.18	4-INT PH3 A	Interview	03/01/2015 10:40 PM	0	0	
Umoyomuhle_Directors	3-INT PH2 A	Interview tran	03/01/2015 10:40 PM	2	66	
Vikelimvelo_2014.06.27_1	2-INT PH3 V	Interview	03/01/2015 10:40 PM	0	0	
Vikelimvelo_Nombifikile M	1-INT PH3 V	Interview tran	03/01/2015 10:40 PM	8	37	

Figure 3.4: Phase 3 Knowledge and Competences Figure

Figures 3.5, 3.6 and 3.7 that follow, show the extracts from NVivo to Excel sheets, in respect of observation phases of data collection for Phases 1, 2 and 3 respectively.

OBSERVATIONS PHASE 1 - WFE TIME LINE							
Name	Description	Classification	Created On	Nodes	Refer		
	1_PIC LZ MZINYATHI	1_PIC LZ MZINYATHI	Photograph	15/01/2015 12:06 PM	7	7	
	10_PIC LM NTSH EDRR	10_PIC LM NTSH EDRR	Photograph	15/01/2015 01:02 PM	1	1	
	2_PIC WATER MZINYATHI	2_PIC WATER MZINYATHI	Photograph	15/01/2015 12:06 PM	2	2	
	3_PIC MM ROOS	3_PIC MM ROOS	Photograph	15/01/2015 11:45 AM	2	2	
	4_PIC LM ROOS	4_PIC LM ROOS	Photograph	15/01/2015 11:45 AM	2	2	
	5_LZ MM ROOS	5_LZ MM ROOS	Photograph	15/01/2015 11:45 AM	2	2	
	6_LZ ROOS	6_LZ ROOS	Photograph	15/01/2015 11:45 AM	2	2	
	7_LZ CONGO	7_LZ CONGO	Photograph	15/01/2015 12:01 PM	2	2	
	8_LZ POMPOM	8_LZ POMPOM	Photograph	15/01/2015 12:08 PM	2	2	
	9_PIC LM WS MB NTSH	9_PIC LM WS MB NTSH	Photograph	15/01/2015 01:00 PM	1	1	

Figure 3.5: Observations Phase 1 Working for Ecosystems Timeline

OBSERVATIONS PHASE 2 - WFE KNOWLEDGE AND PRACTICE							
Name	Description	Classification	Created On	Nodes	References		
	WFE_WESSA_Training_2_1_Poster_I	Photograph	11/01/2015 03:28 PM	0	0		
	WFE_WESSA_Training_2_2_Poster_I	Photograph	11/01/2015 03:28 PM	0	0		
	WFE_WESSA_Training_2_5_Trainer_I	Photograph	11/01/2015 03:28 PM	0	0		
	WFE_WESSA_Training_2_3_Poster_I	Photograph	11/01/2015 03:28 PM	0	0		
	WFE_WESSA_Training_2_4_Poster_I	Photograph	11/01/2015 03:28 PM	0	0		
	Umoyomuhle_2014_1_1_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umoyomuhle_2014_2_2_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umoyomuhle_2014_3_3_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umoyomuhle_2014_4_4_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umoyomuhle_2014_5_DN_5_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umoyomuhle_2014_6_6_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umoyomuhle_2014_7_SN_7_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umoyomuhle_2014_8_8_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umoyomuhle_2014_9_9_Roosefont	Photograph	11/01/2015 11:08 AM	0	0		
	Umhlakuva_2012_1_1_Team pict	Photograph	11/01/2015 11:13 AM	0	0		
	Umoyomuhle_2013_All_1_Team pict	Photograph	11/01/2015 11:13 AM	0	0		
	Umhlakuva_2012_2_2_Team pict	Photograph	11/01/2015 11:13 AM	0	0		
	Qhakaza_2014_Roos_3_3_Qhakaza	Photograph	11/01/2015 11:16 AM	0	0		
	Qhakaza_2014_Roos_2_2_Roosefont	Photograph	11/01/2015 11:16 AM	0	0		
	Qhakaza_2014_Roos_1_1_Roosefont	Photograph	11/01/2015 11:16 AM	0	0		
	WFE_WESSA_Prize Givin_2_Prize Givin	Photograph	11/01/2015 12:09 PM	0	0		
	WFE_WESSA_Prize Givin_2_Prize Givin	Photograph	11/01/2015 12:09 PM	0	0		
	Umoyomuhle_2013_All_2_2_Team pict	Photograph	11/01/2015 03:24 PM	0	0		
	Mthini_2013_1_1_Mthini dire	Photograph	11/01/2015 03:24 PM	0	0		
	WFE_WESSA_Training_2_6_Trainees_	Photograph	11/01/2015 03:24 PM	0	0		
	WFE_WESSA_Training_2_7_Trainees_	Photograph	11/01/2015 03:28 PM	0	0		
	SAQA New Venture Creati	SAQA New V	SAQA Unit S	11/01/2015 10:18 AM	2	8	

Figure 3.6: Observations Phase 2 Working for Ecosystems Knowledge and Practice

**OBSERVATIONS PHASE 3 - WFE KNOWLEDGE AND COMPETENCE**

Name	Description	Classification	Created On	Nodes	Refere
Qhakaza Mve... Directors	7_OBS_Roosefontein	Video transcription	11/11/2014 07:02 PM	1	15
Qhakaza_Directors_site vi	6_OBS_Roosefontein	Video transcription	11/11/2014 07:02 PM	1	4
Vikelimvelo_VIRB0012_Nt	2_OBS_Roosefontein	Video observation	11/11/2014 07:02 PM	0	0
Vikelimvelo_VIRB0013_wd	1_OBS_Roosefontein	Video observation	11/11/2014 07:02 PM	0	0
Vikelimvelo_Video interview	3_OBS_Roosefontein	Video transcription	11/11/2014 07:04 PM	9	22
Umoyomuhle_23 Decembe	4_OBS_Umoyomuhle	Notes on Meeting	07/01/2015 11:23 AM	4	4
Qhakaza_Video 14_transcr	5_OBS_Roosefontein	Interview transcript	09/01/2015 12:20 PM	2	5
WFE_Hulets Bush_Site m	2_Report site meeting	Site meetings	11/01/2015 04:28 PM	4	11
WFE_Roosefontein_Site m	1_Report site meeting	Site meetings	11/01/2015 04:28 PM	3	9

**Figure 3.7: Observations Phase 3 Working for Ecosystems Knowledge and Competence**

### 3.6 Data analysis overview

Kohler Riessman (2008, p. 12) is used as the source for Chase (2011) who stated that narrative researchers will allow voices to emerge from the narrative so that themes are recognised in collaborative verification. The Proposal Review Sheet for this research contained similar advice where Olvitt (2014) recommended that “in line with Narrative Enquiry it would be better to let these narratives emerge naturally”. The value of small stories and in-depth conversation is acknowledged and these have been included when interpreting data for constructing the narratives.

Transcripts were checked, verified and meaning confirmed with the research assistants who were present during the interviews. While the focus of analysis has been within the broad categories – 1) timeline, 2) changing practices, and 3) knowledge and competences to help structure the narratives – this interpretation has not been ‘technically atomistic’ but rather represented in relational terms (refer to Section 2.8 on relational ontology) and represented in detailed narrative accounts characterised by triangulation and ‘thick descriptions’. As can be seen from this chapter, these analyses are complementary, and extend each other, and together contribute to deeper insight relevant to the research questions and answers of locating learning pathways in workplace practice and small business operational skills.

The research design further attempts to show how practice and knowledge for a sustainable world needs to be more than a formalised, delineated competence (Lotz-Sisitka & Raven, 2009). Examining practice and examining competence in the research process is displayed in the outcomes of reflexive environmental stewardship and advocacy, integrated knowledge, an understanding of work context and (more beyond) how participants (*all* participants) negotiate, manage and access the ‘business’ of Working for Ecosystems.

### **3.6.1 Data analysis Phase 1**

Data from the in-depth interviews, document analysis and observations was transcribed, processed and triangulated to provide a 'platform' for more in-depth engagement in subsequent phases. The analysis used:

- 1) A timeline (Chapter 4)
- 2) Changing practices in invasive alien plants and SMME development drawing on Kemmis & Mutton's (2012) work (see Chapters 2, 5 and 6)
- 3) Insight into knowledge and competences using Wiek et al.'s (2011) framework to develop the narratives of Working for Ecosystems experiences and emergent learning pathways towards SMME development within the green economy as reflected by four key informants, more experienced contractors, project documentation and practice observations. In this phase, I drew more on Wiek's competences since this group represented those who have been involved with Working for Ecosystems for a long period (as well as other programmes such as WfW and Military Veterans); or understood the dynamics of how Working for Ecosystems evolved and what it entailed as far back as 2006 (Chapter 6)

### **3.6.2 Data analysis Phase 2**

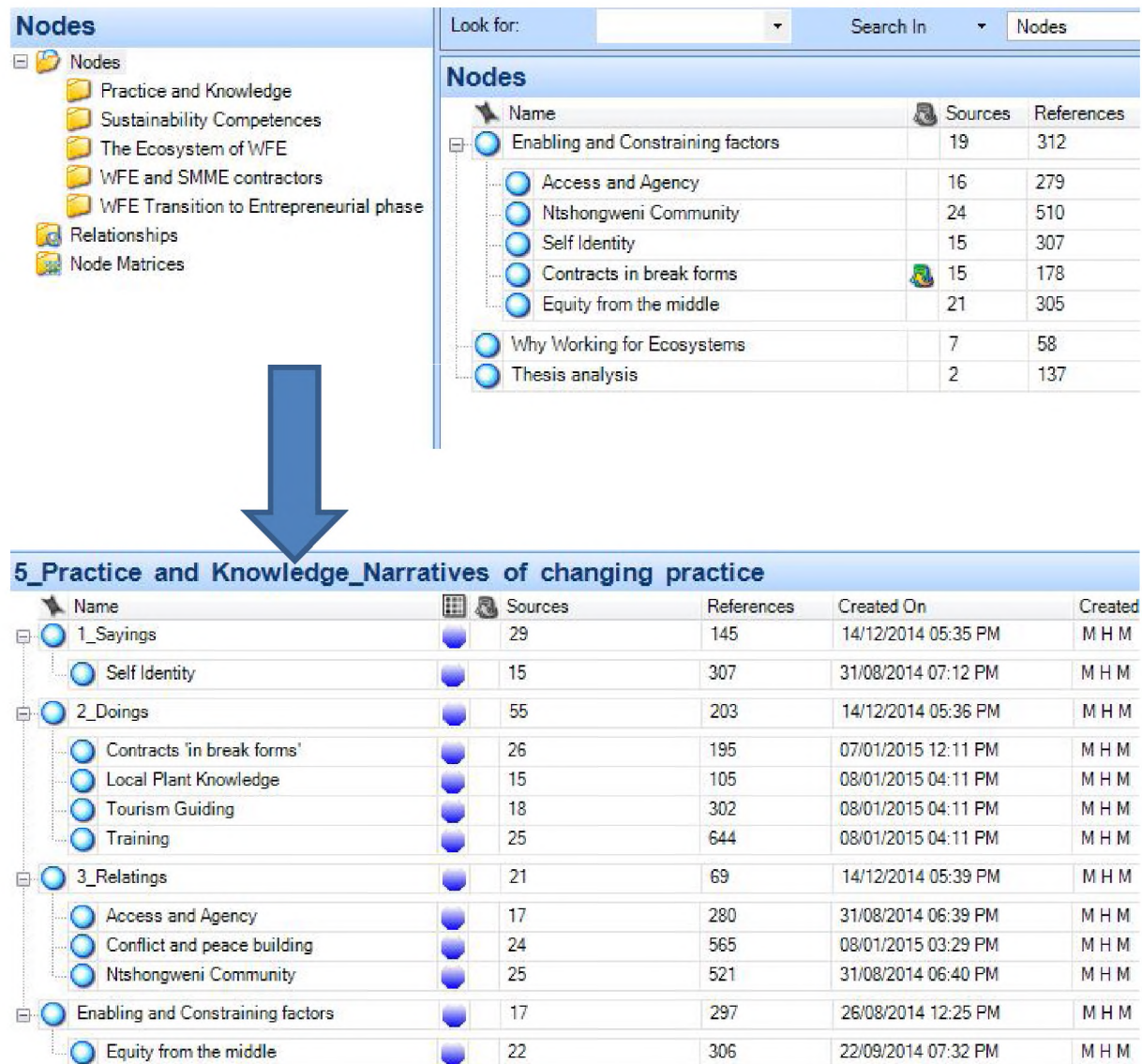
Data from the semi-structured interviews and document analysis and observation were transcribed, processed and analysed using the same approach as Phase 1 data analysis. This time was spent focussing on the SMME practitioners' narratives, rather than the organisational narrative. Nine SMME interviews with directors (single or multiple) were conducted in total. Of these nine interviews, three companies were selected for observation in the field, allowing for deeper understanding of fieldwork and workplace learning. The deeper understanding enabled a transition to Phase 3 of the research.

### **3.6.3 Data analysis Phase 3**

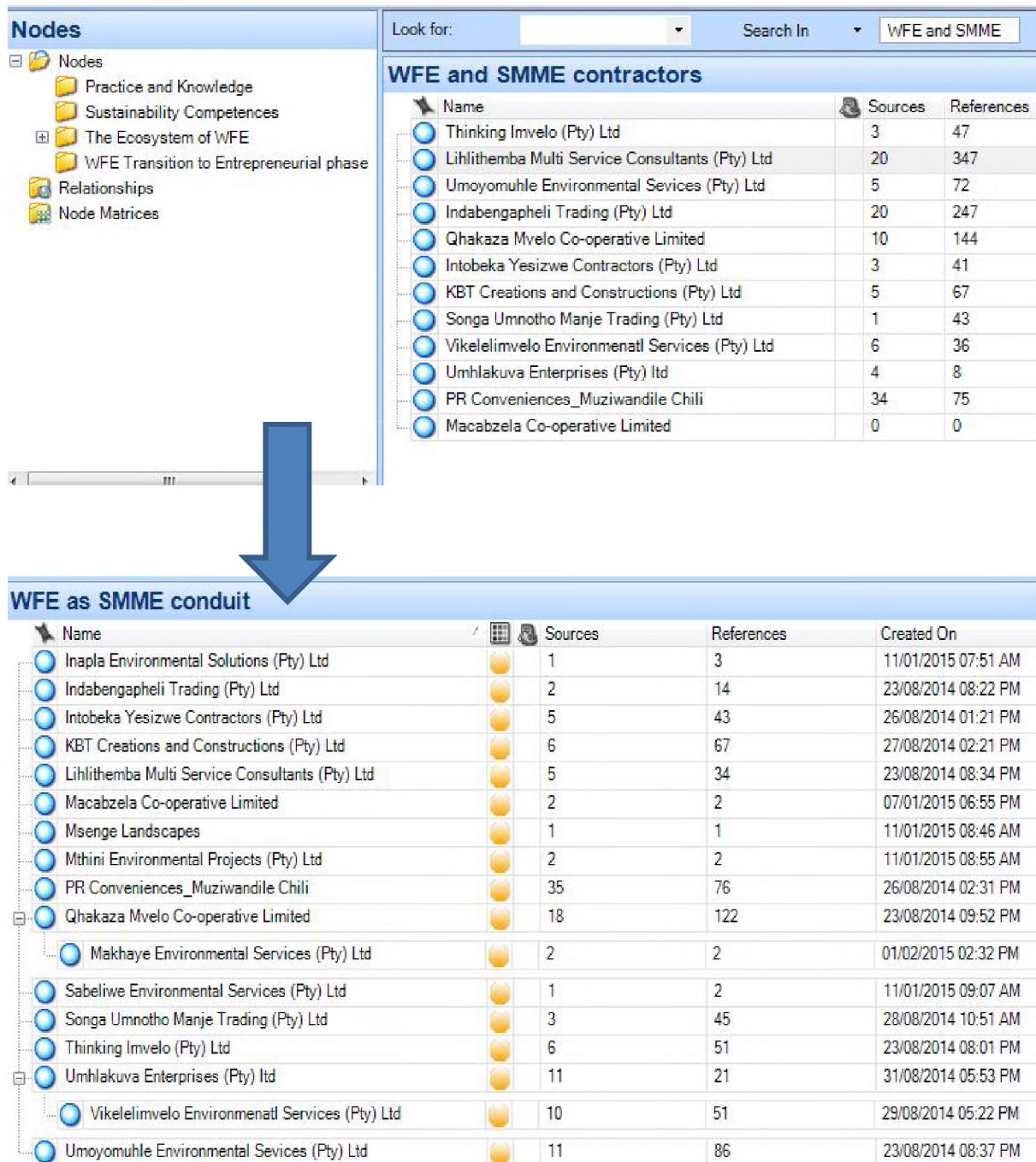
Data from the focus group discussions (at times five directors, two research assistants and I, as the researcher, were present; I felt these interviews were similar to focus group discussions where all participants could contribute and discuss content), in-depth interviews, document analysis and observations were used to construct learning pathway narratives. Data analysis for Phase 3 followed the same framework as for Phase 1 and 2 (i.e. timeline, changing practices and knowledge and competences analysis). Narratives of changing practice,

learning for deliberation and reflexive review amongst the participants provided evidence of learning pathways in environmental stewardship, work place practice and SMME practice.

In each phase, sub-themes emerged from the data and were represented as a node or as a memo in NVivo. Examples shown in Figures 3.8 and 3.9 below have been copied from the process document which was maintained informally as a ‘journal’ of steps in NVivo to keep track of changes.



**Figure 3.8: Themes which emerged from the data shown as nodes**



**Figure 3.9: Themes or SMME cases shown as nodes**

After some rearranging, I settled for the node arrangement in Figure 3.10. I was initially satisfied with the terminology ‘WFE and Environmental Stewardship’ and ‘WFE and SMME contractors’ since these contained clear groupings of participants. All other nodes were settled in ‘The Ecosystem of WFE’. However, to include the theoretical perspectives of work practice (Kemmis) and sustainability narratives (Wiek et al.) and at the same time create a

relevant chapter structure that could clearly show the pathways to learning over time in Working for Ecosystems participants, I used the delineation of themes and sub-themes or nodes, for Chapters 4, 5 and 6, as shown below in Figure 3.10, as six combined screenshots, extracted from the software programme (see also Appendix E).

**Nodes**

- Nodes
  - 1\_Introduction and Context
  - 2\_Literature Review
  - 3\_Methodology
  - 4\_Time Line\_The Ecosystem of WFE
    - WFE Key informants
  - 5\_Practice and Knowledge\_Narratives of changing practice
    - WFE as SMME conduit
  - 6\_Knowledge and Competence\_sustainability narratives
    - 7\_Learning Pathways in to SMME Development
    - 8\_Conclusions and Recommendations
  - Relationships
  - Node Matrices

Look for: Search In 4\_Time Line\_The Find Now

### 4\_Time Line\_The Ecosystem of WFE

Name	Sources	Reference	Created On
WFE Timeline	15	104	08/01/2015 03:29 PM
2006	31	388	08/01/2015 03:29 PM
2012	24	453	08/01/2015 03:29 PM
Transition to Entrepreneurial phase	18	553	08/01/2015 03:29 PM
Workers and supervisors	3	5	08/01/2015 03:29 PM
Why Working for Ecosystems	20	110	12/01/2015 11:53 AM

**Nodes**

- Nodes
  - 1\_Introduction and Context
  - 2\_Literature Review
  - 3\_Methodology
  - 4\_Time Line\_The Ecosystem of WFE
    - WFE Key informants
  - 5\_Practice and Knowledge\_Narratives of changing practice
    - WFE as SMME conduit
  - 6\_Knowledge and Competence\_sustainability narratives
    - WFE SMMEs deeper narratives
  - 7\_Learning Pathways in to SMME Development
  - 8\_Conclusions and Recommendations
  - Relationships
  - Node Matrices

Look for: Search In WFE Key informa

### WFE Key informants

Name	Sources	Reference	Created On
Linda Mlotshwa	12	128	23/08/2014 08:29 PM
Lindelani Zuke	19	500	23/08/2014 10:28 PM
Mlungisi Mathenjwa	20	518	23/08/2014 11:04 PM
Sithembile Shozi	18	426	24/08/2014 02:12 PM

**Nodes**

- Nodes
  - 1\_Introduction and Context
  - 2\_Literature Review
  - 3\_Methodology
  - 4\_Time Line\_The Ecosystem of WFE
  - 5\_Practice and Knowledge\_Narratives of changing practice
    - WFE as SMME conduit
  - 6\_Knowledge and Competence\_sustainability narratives
    - 7\_Learning Pathways in to SMME Development
    - 8\_Conclusions and Recommendations
  - Relationships
  - Node Matrices

Look for: Search In 5\_Practice and K Find Now

### 5\_Practice and Knowledge\_Narratives of changing practice

Name	Sources	Reference	Created On
1_Enabling and Constraining factors	17	298	26/08/2014 12:25 PM
Equity from the middle	22	306	22/09/2014 07:32 PM
2_Sayings	36	157	14/12/2014 05:35 PM
Self Identity	15	307	31/08/2014 07:12 PM
3_Doings	63	220	14/12/2014 05:36 PM
Contracts 'in break forms'	26	195	07/01/2015 12:11 PM
Local Plant Knowledge	15	105	08/01/2015 04:11 PM
Tourism Guiding	18	302	08/01/2015 04:11 PM
Training	25	644	08/01/2015 04:11 PM
Work and working	16	79	04/02/2015 03:55 PM
4_Relatings	25	75	14/12/2014 05:39 PM
Access and Agency	17	280	31/08/2014 06:39 PM
Conflict and peace building	24	565	08/01/2015 03:29 PM
Ntshongweni Community	25	521	31/08/2014 06:40 PM

**Nodes**

- Nodes
  - 1\_Introduction and Context
  - 2\_Literature Review
  - 3\_Methodology
  - 4\_Time Line\_The Ecosystem of WFE
    - WFE Key informants
  - 5\_Practice and Knowledge\_Narratives of changing practice
    - WFE as SMME conduit
  - 6\_Knowledge and Competence\_sustainability narratives
    - WFE SMMEs deeper narratives
  - 7\_Learning Pathways in to SMME Development
  - 8\_Conclusions and Recommendations
- Relationships
- Node Matrices

Look for: Search In WFE as SMME c Find Now Cle

**WFE as SMME conduit**

Name	Sources	Reference	Created On
Inapla Environmental Solutions (Pty) Ltd	1	3	11/01/2015 07:51 AM
Indabengapheli Trading (Pty) Ltd	2	14	23/08/2014 08:22 PM
Intobeka Yesizwe Contractors (Pty) Ltd	5	43	26/08/2014 01:21 PM
KBT Creations and Constructions (Pty) Ltd	6	67	27/08/2014 02:21 PM
Lihlithemba Multi Service Consultants (Pty) Ltd	5	34	23/08/2014 08:34 PM
Macabzela Co-operative Limited	2	2	07/01/2015 06:55 PM
Msenge Landscapes	1	1	11/01/2015 08:46 AM
Mthini Environmental Projects (Pty) Ltd	2	2	11/01/2015 08:55 AM
PR Conveniences_Muziwandile Chili	35	76	26/08/2014 02:31 PM
Qhakaza Mvelo Co-operative Limited	18	122	23/08/2014 09:52 PM
Makhaye Environmental Services (Pty) Ltd	2	2	01/02/2015 02:32 PM
Sabeliwe Environmental Services (Pty) Ltd	1	2	11/01/2015 09:07 AM
Songa Umnotho Manje Trading (Pty) Ltd	3	45	28/08/2014 10:51 AM
Thinking Imvelo (Pty) Ltd	6	51	23/08/2014 08:01 PM
Umhlakuva Enterprises (Pty) Ltd	11	21	31/08/2014 05:53 PM
Vikelelimvelo Environmental Services (Pty) Ltd	10	51	29/08/2014 05:22 PM
Umyomuhle Environmental Services (Pty) Ltd	11	86	23/08/2014 08:37 PM

**Nodes**

- Nodes
  - 1\_Introduction and Context
  - 2\_Literature Review
  - 3\_Methodology
  - 4\_Time Line\_The Ecosystem of WFE
    - WFE Key informants
  - 5\_Practice and Knowledge\_Narratives of changing practice
    - WFE as SMME conduit
  - 6\_Knowledge and Competence\_sustainability narratives
    - WFE SMMEs deeper narratives
  - 7\_Learning Pathways in to SMME Development
  - 8\_Conclusions and Recommendations
- Relationships
- Node Matrices

Look for: Search In 6\_Knowledge an Find Now

**6\_Knowledge and Competence\_sustainability narratives**

Name	Sources	Referenc	Created On
Environmental Stewardship	16	53	23/08/2014 08:44 PM
Goundwork for Sustainability Competences	26	212	24/08/2014 12:48 PM
Anticipatory Competence	6	9	14/12/2014 05:22 PM
Interpersonal Competence	8	13	14/12/2014 05:20 PM
Normative Competence	5	7	14/12/2014 05:26 PM
Strategic Competence	5	8	14/12/2014 05:25 PM
Systems Thinking Competence	7	9	14/12/2014 05:18 PM

**Nodes**

- Nodes
  - 1\_Introduction and Context
  - 2\_Literature Review
  - 3\_Methodology
  - 4\_Time Line\_The Ecosystem of WFE
    - WFE Key informants
  - 5\_Practice and Knowledge\_Narratives of changing practice
    - WFE as SMME conduit
  - 6\_Knowledge and Competence\_sustainability narratives
    - WFE SMMEs deeper narratives
  - 7\_Learning Pathways in to SMME Development
  - 8\_Conclusions and Recommendations
- Relationships
- Node Matrices

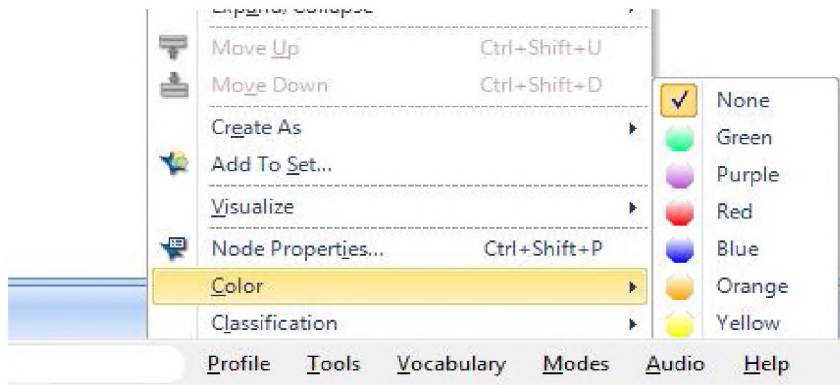
Look for: Search In WFE SMMEs dee Find Now

**WFE SMMEs deeper narratives**

Name	Sources	References	Created On
Umyomuhle Environmental Services (Pty) Lt	11	86	01/02/2015 02:20 PM
Qhakaza Mvelo (Pty) Ltd	18	122	01/02/2015 02:21 PM
Vikelelimvelo Environmental Services (Pty) Ltd	9	49	01/02/2015 02:50 PM

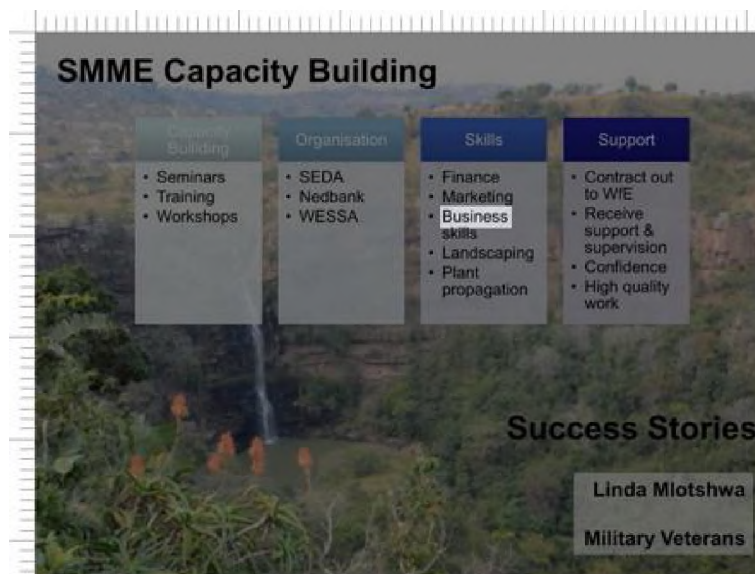
**Figure 3.10: Themes for codes grouped in the folder with parent and child nodes under the ‘The Ecosystem of WFE, WFE Timeline and Why Working for Ecosystems’ updated version**

Several further rearrangements took place as iterations to find the ‘best fit’ for relevant data. Colour coding forced me to focus on the themes more narrowly, which at this point of data analysis was important to enable pattern recognition as opposed to being swamped by data. I now had to remain within the limit of available colours as shown in Figure 3.11.



**Figure 3.11: Colour coding available in NVivo**

I followed NVivo instructions to force various ways of displaying data so that I could immerse my thinking around the critical themes that would enable an understanding of the pathways to learning in the research. I followed instructions on ‘moving forward with queries and visualisations’ on ‘text search queries’, ‘cluster analysis’, ‘word frequency queries’, charts, models and graphs. Figure 3.12 is an example of the result of a word search for ‘business’ (12Doc Ph1 KT Powerpoint presentation as pdf for KZN Wildlife Ezemvelo Symposium and Localising Economic Development MILE Symposium Ethekewini).



**Figure 3.12: Word frequency search on ‘business’**

### 3.6.4 Data analysis for analytical statements

Managing the volume of data generated from the various sources became an enormous task. To make sense of the data and add value to the study, it became critical to extract the dominant themes as the data collection was finalised. These higher order themes would assist in formulating analytical statements which would become the findings of the study and recommendations for possible further research. I deferred to memos which I had created in NVivo and used relevant notes as triggers together with various verification mechanisms provided within the NVivo programme to produce higher order themes (O'Neill, 2013). Figure 3.13 is an example of a Memo created within NVivo. Appendix F contains four visual charts for the data coded and extracted using NVivo software in respect of the four key informants I discuss next in Chapter 4 in the Timeline of Working for Ecosystems.

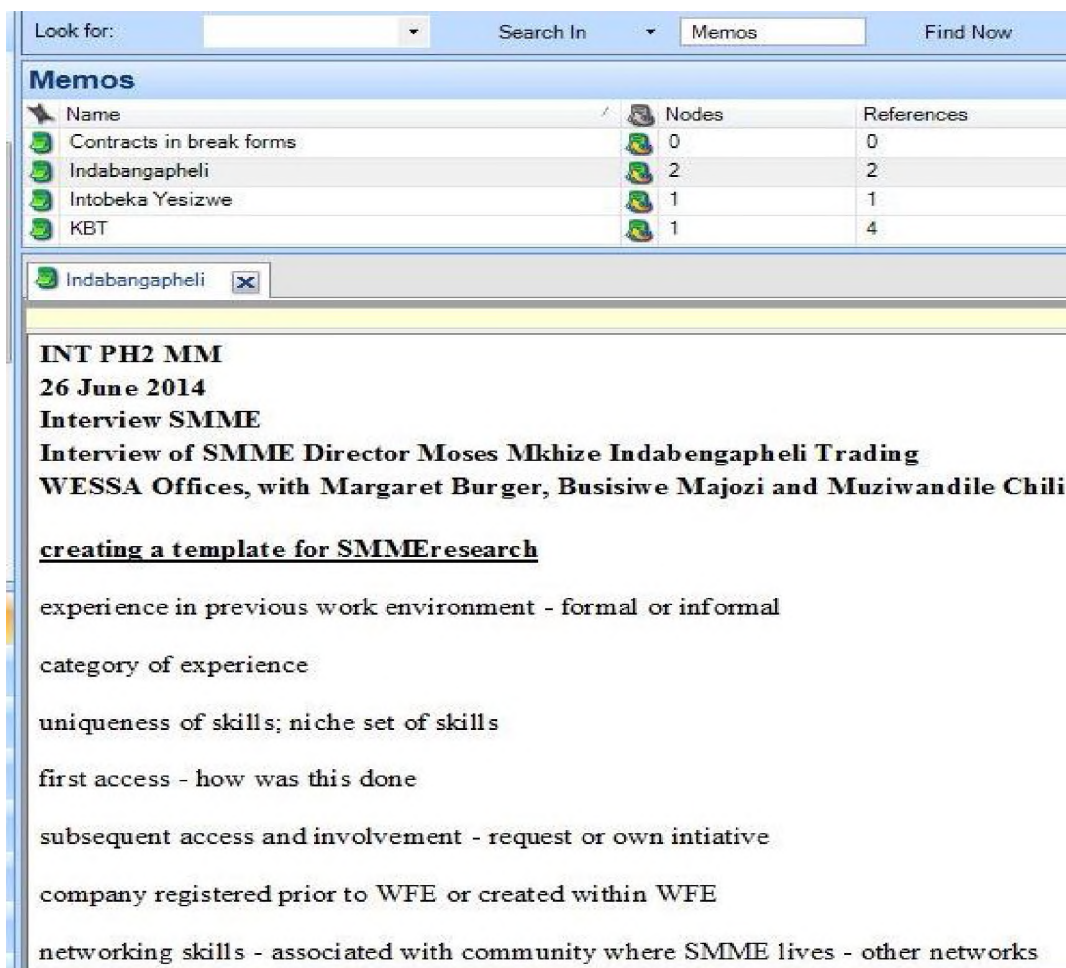


Figure 3.13: Example of a Memo in NVivo

### 3.7 Ethics and validity

Antjie Krog's contribution to the Sage *Handbook on Qualitative Research* (2011) is a paper entitled "In the Name of Human Rights" with the sub-title "I Say (How) You (Should) Speak (Before I Listen)". Krog refers to narrative methodology and accreditation and asks "who may enter the discourse?" (2011, p. 381). The paper recounts how Krog and academic associates track a woman who told the Truth and Reconciliation Commission about the murder of her son by the Apartheid hit-squad. Krog then questions how it was possible for the real author of the narrative, the grieving mother, to remain voiceless. The research of this study was approached similarly and included and acknowledged voices of participants as they contributed to the knowledge of how Working for Ecosystems learning pathways were experienced. In order to understand, I needed to listen, learn and respectfully observe work and practices on site. I did this with curiosity and respect for persons as explained by Bassey (1992).

Lather (1993), in a critical discussion on validity, uses the term 'Derridean rigour / rhizomatic validity'. She explained that:

*Derridean rigour is a nominalist counter-logic: it is what it does (McGowan, p. 122) as it situates itself in the interstices of the no longer and the not yet. The rhizome is a metaphor for such a reinscription of rigour ... Rhizomatics are about the move from hierarchies to networks and the complexity of problematics where any concept, when pulled, is recognised as "connected to a mass of tangled ideas, uprooted, as it were, from the epistemological field" (Pefanis, 1991, p. 22) ... rather than a linear progress, rhizomatics is a journey among intersections, nodes, and regionalisations through a multi-centred complexity.*" (p. 681, my emphasis)

Lather then went on to discuss power relations and how power shapes an enquiry. In a narrative of her own research at a retreat on HIV/AIDS she asked, what hierarchies are at play, "How can I use Irigaray's concept of the "We-you/I" to disrupt ... oppositions ... boundaries ... and constantly move speaking positions?" She provided a validity check list, noting "the limits of self-reflexivity" (*ibid.*, p. 685). To continue with this metaphor, I selected the **Rhizomatic validity** checklist which follows:

- unsettles from within, taps underground
- generates new locally determined norms of understanding; proliferates open-ended and context-sensitive criteria; works against reinscription of some new regime, some new systematicity
- supplements and exceeds the stable and the permanent, Derridean play
- works against constraints of authority via relay, multiple openings, networks,

complexities of problematics

- puts conventional discursive procedures under erasure, breaches congealed discourses, critical as well as dominant. (p. 686)

I felt that Lather's emphasis (*ibid.*) on the 'limits of reflexivity' as well as the use of the metaphor of a rhizome was compatible with how I wished to conduct this research study, as was the case with Krog's message of the value of the many voices that contribute to a narrative enquiry. In Section 2.5, I refer to unravelling threads that weave their way in and out. Reflecting on this study in Section 7.5, I return to Cook and Wagenaar (2012), who referred to a different way of seeing, interpreting practice as the "eternally unfolding present" (where all is process). The narrative of this study was to become not a single story, but many stories connected to one another relationally through bundles of 'saying, doings and relatings' (Hemmings et al., 2013), in a manner that relationships could be emancipatory and "examined from many different perspectives" as to how "knowledge, learning and action inform each other" (Blackmore et al., 2011, p. 27; Mukute, 2010).

Formal ethical clearance was also obtained from the WESSA Working for Ecosystems project manager. The research study is the culmination of my own contractual obligation to WESSA who acted as the implementing agent for the Working for Ecosystems programme (Appendix G). In addition, I negotiated access for interviewing and observations with all participants at an individual and group level. It was always made clear that participation in the research process was voluntary and that withdrawal from the research interviews or observation was permissible at any stage. I communicated to participants that each voice mattered and would contribute to enhanced insight. We (I and the research assistants) felt that the SMME contractors valued the opportunity to contribute and enjoyed the discourse, indicating that more of these sessions would be of value to them. Co-checking of data to ensure accuracy of accounts was important, as well as reflective discussions on the narrative accounts that were compiled from the data. Van der Mescht (undated) stated, "Interest is really in what people think, or believe or have experienced", their lived experience. The research methods chosen enabled this exploration of interest.

### **3.8 Conclusion**

In this chapter, I discussed research design decisions made to accommodate a qualitative interpretative study with narrative enquiry as method for data generation. I described the research stages in respect of the categories of 'Timeline' to historically situate the context of

Working for Ecosystems and the emergence of SMME contractors as a transition from worker in WFE to contractor to WFE; secondly that of ‘knowledge and practice’ to prepare data on practice in the workplace and practice as an SMME; and finally ‘knowledge and competences’ to allow more in-depth understanding of the pathway to become sustainable as an SMME and to examine which pathways were followed by participants who became environmental custodians. To manage the volume of data, it became evident that using a support structure such as NVivo 10 Qualitative Data Analysis Software would assist rigour and validity of the study (O’Neill, 2013).

The social-ecological-economic domains of the research problem required describing the complex constellation of the Working for Ecosystems practice in Chapter 4 which follows next. Descriptions of the meaning-making by participants who joined Working for Ecosystems as contractors with experience outside of WFE is examined in Chapter 5. The experience of participants who formed SMMEs within the WFE programme is examined in Chapter 6. Triangulation of data sources at various hierarchical levels and intensity of interviews all served to connect and validate this study. Ethics and validity were an important consideration throughout the research process.

## **CHAPTER 4: TRACKING WORKING FOR ECOSYSTEMS – NARRATING THE JOURNEY**

### **4.1 Introduction**

The goal of this research is not to evaluate the Working for Ecosystems programme but to trace participants' learning pathways during their association with the programme. To assist in this endeavour, Chapter 4 sets out to map the Working for Ecosystems timeline, its historicity so to speak. This entailed a focus on narratives of those who have been part of the historical actuality of Working for Ecosystems. These narratives serve to recover the value and meaning of Working for Ecosystems from the start of the intervention as early as 2006 to the current year (Roberts et al., 2012). This chapter explores how Working for Ecosystems as a programme was influenced by site selection and setting; how the Ntshongweni community (Section 4.2.2) have influenced and been influenced by the project, a reciprocal moulding as it were. As Kemmis and Heikkinen (2011) stated, “practice develops and is held in place both in terms of the *agency and actions of individuals*, and in terms of the *cultural-discursive, material-economic and social-political enabling preconditions* that make practices of induction possible” (p. 5).

Dual linked pathways, one of invasive alien plant removal work and the other of becoming an SMME, are traced from their inception in the Ntshongweni Community to the broader municipal area (Section 4.2.2). To understand the complex layers that need to be systematically and carefully worked through, it became necessary to provide some background to the selection of areas in which Working for Ecosystems takes place. To this end, a section on ‘why Working for Ecosystems’ was coded in the data analysis phase with a focus on examining the policies, structures and motives that surround Working for Ecosystems which I discuss in the next section. The intention was to provide additional context to the dynamics of the sites and settings of the study.

### **4.2 An evolving system of practice and learning**

#### **4.2.1 Why Working for Ecosystems: Connecting policies and structures for biodiversity and poverty alleviation**

Connecting policies and structures which form part of the shaping of Working for

Ecosystems enables an understanding of the implementation process as it evolved over time (see Table 4.2 for the timeline of transition periods from worker to SMME contractor). Mainstream evaluation focuses on how deliverables (usually in the form of statistics) have been achieved. Deliverables for implementation of the Working for Ecosystems programme are contained in formal tender documents and bind the implementing agent contractually in terms of key project expectations (see Appendix H which contains a selection of pages from the tender documents of the eThekweni municipality for the 2015 - 2018 invasive alien species control programme) (eThekweni Municipality, 2014, pp.15-18, 20, 22). It is of interest to note that training in invasive alien species control is listed in detail, indicating clearly that the core focus of Working for Ecosystems is the practice of invasive alien species control.

The tender proposal, however, additionally requires the implementer to propose a model for mentoring of a small business. 'Business support and development' is worded in the tender document as follows:

*[The implementer should] be committed to ensuring both development and support of employees and assist them with the establishment of SMMEs. This will include all necessary training, administrative support and mentoring. Such SMME should, by the end of the three-year period, be able to operate independently. This will thus involve mentoring each of the SMMEs from inception to independency, during the contract period. Therefore a separate model for achieving this, will need to be made available. (eThekweni Municipality, 2015, p. 16)*

The financial year-end for the eThekweni Municipality each year is 30 June. Contracts from the municipality awarded through tenders to prospective contractors, or implementing agents, follow a similar timeline.

#### **4.2.2 Induction in Ntshongweni, Drummond and Giba (early collaborative DEAT period commencing in 2006)**

The initial trial run of the programme was based within the Ntshongweni, Drummond and Giba Gorge areas and consisted of several intermittent periods of activity. In its early stages in 2006, the Working for Ecosystems programme was a joint initiative between the eThekweni Municipality and the then Department of Environmental Affairs and Tourism (DEAT). The selected implementing agent was the Wildlife and Environment Society of South Africa (WESSA). Since funding was allocated to Working for Ecosystems by DEAT,

the selection of environmental activities agreed upon was a process of negotiation.<sup>7</sup> The projects to be undertaken included invasive alien plant control, but also tree planting, with an attached tree nursery initiative, tourism ventures, including trail building and training of tour guides, as well as environmental education for learners from local schools.

The year 2006 was a significant period in respect of policies and restructuring in South Africa. Table 2.1 (Chapter 2.3) sets out Government's use of policies and planning to alleviate poverty and create sustainability in the environmental sector. The table reviews the period 1994 to 2006. Death (2014) pointed out that both ASGISA and GEAR are macro-economic strategies yet do not include environmental content. In his review of the discourse around the green economy in South Africa, Death asked "is it for real?" and quoted Bond (2006) in referring to the governing party, the ANC, as tending to "talk left, walk right". Death went on to say that "the language of environmental sustainability is far more prominent within the South African government's strategy and policy making than it was even a decade ago". He also mentioned an 'implementation deficit' (pp. 12-13). However, this seems not to have been the case in Ntshongweni, a semi-rural area where Working for Ecosystems was taking form as a substantial intervention focusing on sustainability learning within a community in KwaZulu-Natal.

Ntshongweni is located within the eThekweni Municipality district. The area also falls within the Ingonyama Tribal Trust district (which covers several isolated pockets of KwaZulu-Natal as part of the former Apartheid 'homeland'). The local traditional structures hold authority (as landowners), as well as Councillors (as elected political party representatives of the municipal wards). These social-political structures are considered in this study as contextual factors and form part of the extra-individual dimension of peoples' life-worlds and systems within which the Working for Ecosystems participants negotiate and network. Table 2.2 refers to Kemmis and Grootenboer's (2008) representation of the structural frameworks of a practice architecture where 'constraints and opportunities shape practice across levels and dimensions' as 'sayings, doings and relatings'.

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<sup>7</sup> DEAT was restructured subsequently as the Department of Environmental Affairs, the DEA, indicating that tourism is no longer in the environmental sector. Tourism is currently situated within the Department of Economic Development and Tourism.

#### **4.2.3 State of the Environment, interdependence of people and place recognised in policy and implementation (workers entering entrepreneurial phase)**

D'MOSS is an acronym for the Durban Metropolitan Open Space System, a master plan for the green areas of eThekweni Municipality. In 2006 the value of environmental goods and services included in D'MOSS was estimated in the Biodiversity Report to be R4 billion per annum (eThekweni Municipality, 2007). D'MOSS is currently a component of the eThekweni Town Planning Scheme but does not take the Ingonyama Trust areas into account in its Systematic Conservation Plan. The consequence is that municipal bylaws are applied with difficulty at times (and influence decisions as to where Working for Ecosystems work is conducted). The work of Working for Ecosystems is an investment the City makes in creating a functioning green lung for its citizens. Areas selected for Invasive Alien Plant control work are labelled Critical Biodiversity Areas (CBAs). These CBAs are selected through provincially aligned methods such as the Systematic Conservation Plan (SCP) together with Ezemvelo KZN Wildlife (as the conservation body representing government through a MoU) and will permit the eThekweni Municipal plan to be incorporated into the provincial SCP. Multiple considerations are considered prior to an area being selected for Working for Ecosystems work.

Further regulations connected government policy in the form of the Integrated Development Plan (Model 2.1, Multidimensionality of Working for Ecosystems within policy structure) and influenced municipal departments to comply in the form of official State of the Environment reports. The initiation of Working for Ecosystems coincides with the dates for the IDP reports (2006-2011) and resulted in annual reports being produced by the Development Planning, Climate Change, Biodiversity and Resilience Unit. The three fundamental characteristics of the State of the Environment Reports are:

- The interpretation, assessment and integration of high quality data to generate meaningful information;
- The development of spatial and temporal trend information; and
- The identification of linkages between biophysical and socio-economic considerations for sound sustainability reporting.

It is the third characteristic listed above in respect of 'linkages between the biophysical and socio-economic environments' that contributed to the ethos and conceptualisation of the Working for Ecosystems programme. The socio-economic consideration translated into creating SMMEs from within the programme where a worker could transition to

entrepreneur. This factor has been part of the long-term planning of Working for Ecosystems at a management level with a view to economic inclusion and realising long term sustainable livelihoods for the citizens of Durban.

The biophysical consideration resulted in the State of the Environment Reports. These reports require indicators which act as a way of representing complex data in a readable format (20Doc 2009 – 27Doc Ph1 2013; 30Doc ETM 2007; 31Doc Ph1 ETM 2008). Data on the Working for Ecosystems programme is measured in the context of a biodiversity-terrestrial theme. Invasive alien plants are regarded as a serious threat to water availability and biodiversity functioning through habitat loss.

The information below is taken from the 2012/2013 State of the Environment report (eThekweni Municipality, 2013, p. 20). These reports are annual and it is of interest that a story that provides evidence of the social contribution has been included over the last few years, indicating a more recent focus on the socio-economic upliftment factor. The report 2011/2012 included a story on LM, senior trainer and site manager for Working for Ecosystems (eThekweni Municipality, 2012a, p. 22); report 2012/2013 included a story on Umhlakuva (Pty) Ltd (Figure 4.1 below) which originates from within Working for Ecosystems (eThekweni Municipality, 2013, p. 21); report 2013/2014 included a story on creating environmental champions, in this instance, E. Khumalo, the nursery caretaker at the Buffelsdraai Landfill site (eThekweni Municipality, 2014, p. 22). Each year the education and training component is measured in the Working for Ecosystems programme which also provides an indication of figures pertaining to hectares covered in invasive alien plant control. Included in the statistical analysis is the number of training courses, training days, jobs created in respect of total person days worked, as well as the budget spend. Table 4.1 below displays the deliverables for the period 2011, 2012, 2013 and 2014.

**Table 4.1: Increase in budget spend for the period 2011 – 2014**

SoE Report	WFE	WFE	WFE	WFE	WFE	WFE + WOF	
Year	Area	Training courses	Training pd	Jobs created	Person days	Budget	Social
Jul-11	218	6	480	124	7068	R 6 330 000.00	COP 17 CEBA
Jul-12	1088	11	335	304	17900	R 9 233 033.35	L Mlotshwa
Jul-13	1952	34	525	171	14623	R 10 845 974.00	Umhlakuva
Jul-14	1868	39	1230	298	25053	R 15 078 237.00	E. Khumalo



## UMHLAKUVA ENTERPRISES The Happy Story

Umhlakuva Enterprises is a small company established by two women, Lindiwe Chonco and Ntombifikile Nxumalo, who live in the rural Ntshongweni region of eThekweni Municipality. Their story to success starts in 2006.

Lindiwe started off as a supervisor within the Working for Ecosystems (WIE) programme in 2007 while Ntombifikile was a general worker who later progressed to the level of supervisor. Ntombifikile replaced another supervisor, Linda Mlotshwa, when he was employed by WESSA as a site manager. In 2011 both women displayed an interest in establishing an SMME and decided to work as partners. In early 2012, their company was registered, and they received mentorship and advice on business management through the WIE programme, and the company was brought in as a sub-contractor to the programme.

Over the period between July 2012 and June 2013 the business began to shine. With their new level of management skills, the duo was soon producing work of such high quality, that site inspectors were unable to find fault. This encouraged the two women to continue to hone their skills to the point that their business results are now exceeding those of older, more established companies.

This company is now the first choice when invasive alien plant clearing is needed, and it is envisaged that they will make a resounding success of themselves. Lindiwe and Ntombifikile are an excellent example of what can be achieved with unwavering commitment and hard work.

**TABLE 4**  
Breakdown of EPCPD invasive alien plant control for the 2012/2013 municipal financial year

Programme	Working for Ecosystems	Working on Fire
Total area of IAP control	1 952 ha	16 ha (initial); 320 ha (follow-up); 197 ha (maintenance); 233 ha (burning)
Training courses	34	19
Training person days	525	1 005
Total jobs created	171	58 (100% youth, 36% women)
Total person days	14 622	14 291

**Figure 4.1: Umhlakuva story (Biodiversity Report 2012/2013, eThekweni Municipality)**

Photo: Umhlakuva (Pty) Ltd directors, NM and LC with Muziwandile Chili at the Durban Priority Zone  
[Source: M Burger, May 2013]

#### **4.2.4 Gearing up, focused implementation, gaining green recognition (transitioning towards fully fledged SMMEs as contractors to manage workers and work)**

The year 2010 brought the soccer World Cup to South Africa. To offset the carbon footprint, Durban embarked on several specific greening projects. The following year (2011), Durban hosted the 17th Conference of the Parties (COP17) to the United Nations Framework Convention on Climate Change (UNFCCC) and the 7th Session of the Conference of the Parties serving as the Meeting of the Parties (CMP7) to the Kyoto Protocol. The Municipal

Climate Protection Programme (MCP) of the city refers to project based approaches which *preceded* policy and a ‘trying by doing approach’. The presentation, which was put together for COP 17, also refers to developing projects in respect of mainstreaming climate protection since 2007 (18Doc Ph1 GT). The two international events provided motivation and opportunity, and valuable recognition for Durban allowing the city to showcase its environmental work. The ‘trying by doing’ approach is a link to doing in practice. Working for Ecosystems was one such example of a participatory approach in linking community agency to climate change mitigation (Sections 1.5; 4.3).

The period July 2012 to June 2015 was a three-year tender period between WESSA and the eThekweni Municipality. The contract marks a period of involvement by WESSA since 2006, with cycles of changing relationships between those who work and those who manage. The changes are deliberate, but dynamic. The alignment of policy and practice refers to learning in the workplace as an equity strategy, social justice from above, for emancipation and delivery, through participation from below; “Flows of ideas, skills, material resources and time which substantively expand the capability set are associated with equity from the middle” (Unterhalter, 2009, p. 421). However, achieving this ‘equity from the middle’ needs some qualification, especially from a knowledge in workplace learning perspective, and how this relates to knowledge in practice and competence development.

In order to align policy with action on the ground in ‘localising economic development and job creation’, “Working for Ecosystems empowers economically-disadvantaged individuals from local communities through employment experience and the acquisition of new skills, which in turn encourages and fosters self-development” (11Doc Ph1 KT; eThekweni Municipality, EPCPD (2012b)). This self-development criterion is an important cornerstone of sustainability. The Ntshongweni community became the initial focus of Working for Ecosystems with several different environmental project applications and a large injection of capital. This chapter attempted to show evidence of environmental stewardship triggered through the intense action period of the induction phase of Working for Ecosystems. This initial phase targeted a large sector of the community, including learners and teachers (8-Int Ph1 SS Ki-2). Expansion of Working for Ecosystems to additional areas revealed different dynamics. It is fortunate that a period of building experience in respect of workers took place (this enabled an understanding of conflict resolution and led to peace building interventions).

The practice of invasive alien plant control was at times affected by social-political influences which WESSA site managers could report. These dynamics may no longer be as

visible as before, since the contractors to the programme are now responsible for workers. An attempt at finding the dominant pattern of activity in the transition from worker to SMMEs has resulted in the delineation of a core focus in each cycle. The focus is on the particular groups who chose to become SMMEs. Table 4.5 is a categorisation of critical periods for examining the transition from workers to small business owners in Working for Ecosystems. Period 2 to 3, shown in Table 4.5, is a period of five years. This period was spent focusing on training and workplace practice and laid the foundation for further empowerment.

**Table 4.2: Working for Ecosystems Timeline of transition periods from worker to SMME**

<b>Working for Ecosystems Timeline of transition periods from worker to contractor</b>		
<b>Period</b>	<b>Description</b>	<b>Structures</b>
<u>Period 1</u> - 2006	the early DEAT period commencing in 2006	Workers – supervisors Various interventions
<b>Only invasive alien plant control – follow up and initial</b>		
<u>Period 2</u> - 2007- 2011	a period of workers and WESSA	Workers – supervisors – WESSA field managers
<u>Period 3</u> - 2012	workers entering the entrepreneurial phase	Workers – supervisors – WESSA field managers; emerging SMMEs from within; established outside SMME contractors enter
<u>Period 4</u> - 2013 - 2015	fully fledged SMMEs as contractors	All SMMEs – workers – WESSA field managers
<u>Period 5</u> - 2016	SMMEs as contractors Nine SMMEs from within – some rearranged company directors and formed new companies	SMMEs act as site managers; WESSA appoints 2 project officers; field manager becomes project manager

It has not been possible to locate a sharp delineated timeline of transition from worker to small business owner. The process of change from worker to proprietor is a complex path. It requires a change of mind-set from labourer to manager, a switch in self-identity. It requires an opportunity and a disposition. In discussion on the Roosefontein site (a site with high conflict and large worker turnover) in an interview with a previous site manager who assisted workers wanting to become SMMEs, I asked how the members of the Qhakaza Cooperative were selected. He stated that when he first mentioned the proposal to the workers it was treated as a joke and they recommended a troublemaker. Participants interested in becoming contractors and establishing a small business were asked to come forward. Initially a requirement was a matriculation certificate. However, ultimately the highest qualification in the group was grade 11 (Int Ph1 LZ). The contract between WESSA and Working for

Ecosystems stated that a deliverable is mentoring potential participants to become SMMEs. Becoming an owner of a small business encompasses many different skill sets.

### **4.3 Unfolding practice, linking pattern(s) and structure(s) in narratives**

To understand the system conducive to facilitating pathways to learning, Sections 4.3.1- 4.3.4 contain data (as narratives) relevant to the ‘orchestrations’ which enable insight in to the practice process. Kemmis et al. (2012, p. 35) referred to Schatzki (2005) and stated, “Practices are always situated in time and space, and unfold in site ontologies”. The first sites identified for the start of Working for Ecosystems, to invoke the notion of ‘hanging together’, were Drummond, Giba Gorge and Ntshongweni. As a programme with a new beginning Ntshongweni, as the selected community, became recipients of in-depth training and great effort. The new programme offered the community members access to a better life.

In the following section, a brief overview is provided of the learning pathway choices amongst the four key informants (Ki-1-Ki-4) and how these pathways lead to participation in (and beyond) Working for Ecosystems.

In addition, practice and knowledge leading to skills and competences for environmental custodianship is touched upon. In Chapter 6, I elaborate on sustainability competences (Wiek et al., 2011) and how working within Working for Ecosystems has facilitated articulation and mobility amongst different fields of practice aligned to invasive alien plant control work and small business entrepreneurship. However, since the key informants interviewed in Phase 1 show evidence of internalised sustainability competences I include a brief description of the individual learning pathways in the sections that follow.

Coding in data analysis in respect of Ki-1-4 resulted in a Framework Matrix with sub-themes:

- Access and agency;
- Enabling and constraining factors;
- Equity from the middle;
- Ntshongweni community; and
- Self-identity.

These sub-themes were moved to the NVivo Node representing Chapter 5 entitled ‘Practice and Knowledge Narratives of changing practices’ forming relocated sub-themes, dominated by dimensions of ‘sayings’ ‘doings’ and ‘relatings’. This allowed collected data from the key

informants (custodians of embedded timeline knowledge) to merge with that of the SMME practitioners in the following chapter.

### 4.3.1 Key informant 1

Ki-1 (LM) was from the Ntshongweni community. This allowed him access to the first phase of Working for Ecosystems. Ki-1 started as a fieldworker, soon becoming a supervisor of invasive alien plant control fieldwork. In addition, he had knowledge of being an SMME through a small business. As a driver, with access to a vehicle, he was also able to transport workers. Through continuous training and learning on the job, he also became a trainer and facilitator within WESSA's Stop the Spread programme.<sup>8</sup> During periods of no activity Ki-1 was able to work as a contractor outside of the programme. However, he enjoyed training and teaching more than working as an isolated SMME. As the Working for Ecosystems programme stabilised, Ki-1 was called in on a more permanent basis as trainer and field manager of the working teams. His strengths were: experience since 2006, knowledge of invasive alien plant control work, practice knowledge of being an SMME (due to conflict of interest he has since resigned as a director of the SMME), intimate knowledge of the workers as well as the contracting SMMEs, and finally strong leadership and management. I regard Ki-1 as a custodian of the environment which is supported in the extract from our interview in the context of environmental understanding increasing over the years (the audio version of the interview alerts one to the passion in his voice). Evidence of this claim can be found in the source documents, the interview in 2014 (1-Int Ph1 LM/Ki-1; 9Doc Ph1 LM GS; 13Doc Ph1 LM EPCPD 2012; 14Doc Ph1 LM MB 2013; 25Doc Ph1 ETM 2012). He recalled the process of change in environmental understanding in the interview:

*... Like say before the invasive programme started I was like anyone else back then ... slowly you started to learn slowly, about the importance of protecting the environment... you might find yourself talking to the person next to you ... and you start to explain to him then he would say, would start to pay attention, and say okay, what is that, and you keep on giving information, you are learning in the process, and you become like more alert in terms of the environment.*

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<sup>8</sup> Stop the Spread is a WESSA educational programme concerned with invasive alien plant knowledge. The programme has over time changed its focus from purely educational to a business unit managing projects within WESSA.

*I was so surprised with myself yesterday ... I was at KwaMkhizwana with Bafana Gwacela, you know Bafana from Rural ABM, so I've never been or done inspection, in that site, it started way after others have started, he wanted us to go there so he took me for an orientation, you can look at the land there it's so beautiful, and nature there it so, so, so beautiful, and I was like so surprised finding myself like oh WOW, you know like ...*

*It is so quiet number one, SO QUIET and so peaceful, and um yes there are invasives, not that much but in other areas, and he took me like on one very small road, on top of this one hill, and there is a very, it is so like very big rock, huge rock it is a rock from the mountain all the way down to the valley, I mean that area has like mountains that you cannot climb on top, it is like solid rock ...*

*But it is running some sort of like, the fall, there is a water that is running, it is not sort of like, it is not like cliffy but also you can't like just, I mean it is so beautiful! I said like why didn't you tell me to bring my camera? Because I just picked, the reason why he took me there is because it is so beautiful, Margaret I am telling you ... so beautiful ja, like one has like seriously learnt and grown ... (p. 12: 350-375)*

#### **4.3.2 Key informant 2**

Ki-2 (SS) was from Dassenhoek. Her location allowed access to the local Councillor of the Ntshongweni community to whom she was known as a local person looking for a job. Her initial job was waving flags on the roadside and calming traffic. It also allowed access to the next round of jobs, but this time as a worker in invasive alien plant control. After a short period as a worker in the field, Ki-2 gained access to training as a tour guide. An interview and selection process was conducted (selection is often negotiated as the poorest of the poor are put forward by Councillors as new appointees; Phase 1 of the early Working for Ecosystems programme utilised a method of interviewing). Training as a tour guide provided access to extensive accredited training and exposure to several education centres within WESSA. As a result, when tour guiding failed in Ntshongweni as a community project, and DEAT funding expired, Ki-2 was able to transition to a temporary position at the WESSA Treasure Beach Education Centre, which led ultimately to a full-time position as educational officer. Details of the coding and interview can be found in the source documents related to Ki-2 (8-Int Ph1 SS Ki-2; Vid Ph1 SS). Section 6.7 includes extracts from the interview with Ki-3 in detail, in the ten steps to empowerment. Section 4.4 also has an extract from the interview under 'opportunities'.

### 4.3.3 Key informant 3

Ki-3 (MM) was a site manager in the Working for Ecosystems programme. He was also a trainer and has assisted in translating the WESSA KZN field guide on invasive alien plants into isiZulu. Ki-3 regarded himself as an environmentalist and in his interview questioned the link between poverty and environmental work, indicating a precedent has been set, in that an association is made between environmental work and poverty and thus excluding the responsibility of the wealthier. We grappled with this reasoning in the excerpt below as follows:

*Margaret: So, you think that the government's Public Works Programmes is creating jobs?*

*Ki-3: Yes, but yes this is what is in my mind you know. I think it has been established looking at the environmental sector, you know there is this poverty alleviation, thing..., sometimes I think... it's not in the right place, when we talking about the environment because when you think about poverty... you think about someone who can't afford [things], someone who is jobless. To me it's like, environment does not support poor people [yet] it's for everyone because environment it's where we live it's where we learn, play, and everywhere. I felt that if we keep on pushing poverty it looks like the environment is looked after by poor people only. So the people who are in that status does not really, I mean, I do not know how to put it... (p. 12: 387-394, my emphasis)*

As a site manager Ki-3 interacted daily with the SMME contractors and provided valuable insight into the contractors' practice and knowledge. Since he was also a facilitator and trainer, many of the workers knew him. In addition, he had experience of being an SMME looking for work and through alleged inefficiency of appointed administrators knew first-hand how lack of compliance can have devastating effects on a business. He has nurtured, of his own accord, a co-operative. His grandmother is a well-known herbalist who has passed her plant knowledge on to him (5-Int Ph1 MM Ki-3).

### 4.3.4 Key informant 4

Ki-4 (LZ) was a director of an SMME. Ki-4 regarded himself as a strong environmentalist and is a vegetarian. He has been included as a key informant since he was a field manager with WESSA during the period when SMMEs were being formed with in Working for Ecosystems. In an interview, we could examine the process of selection as to who should become an SMME within Working for Ecosystems. His intimate knowledge of personalities amongst the workers, practice knowledge and botanical enthusiasm were evident in document

analysis and interviews. The following is an extract of the interview as an example of how the re-integration of prisoners released from Westville Prison takes place in the community settled closest to the prison itself:

*Ki-4: I am not sure, but okay, but the councillor's idea here was, when they got back from the correctional services. She wanted to make sure that they have some sort of income. Because she did not want some people within the community who have records, who have history of doing wrong things to wander around and start doing wrong things again. You see so she thought that they showed, if there is a project that would perhaps, that they could qualify to work in, rather...*

*Margaret: I was just saying to Busisiwe that that is actually part of the EPWP. It is listed there as taking people coming out of prison and reintegrating them into society.*

*Ki-4: Absolutely, yup, so that is how I knew everything about him, and that is how he joined the team. (3-Int Ph1 Ki-4, p. 5: 174-185)*

In the following extract from the interview the workers' socio-cultural-economic arrangements were discussed:

*Ki-4: I was just going to say, we should also, it is very important to understand their background. Even though they are now an SMME at work, they work together that if you dig down and you understand the background, they are from the same area, they know one is back from Chesterville so that is why sometimes they can easily, if Khulekani according to my understanding can be, can be their chairman and do well, but knowing and fearing one another they would choose to...*

*Busisiwe: Stand down to the dominant one...*

*Ki-4: It is one of the issues that made the whole situation difficult to control, or to manage at Roosefontein, simply because we have people who know each other's background back in the location, in the township. Now they are at work whatever happens at work if there are any issues there are any challenges that you could deal easily with the issues at work, but that was not the end of it they would go back to the township and take it up with one another in the township.*

*Margaret: So that has not really changed, I mean we still have the cooperative, but for WESSA a lot of the day-to-day problems are now being handled by the cooperative rather than WESSA staff, so it looks like there are less problems but the problems are still there.*

*Ki-4: They will not know, I mean WESSA (now because there is now that break in communication between the Co-op and WESSA) ... yes, the problem I can tell you now the problems are still there, but they just keep, whoever the SMME is in charge of that staff, would keep their problem to themselves which in the long term might become a problem, ... there is a gap that needs to be bridged. (3-Int Ph1 Ki-4, p.8: 291-313)*

Ki-4's training after matriculating was as a volunteer guide in the Durban Botanical Gardens. Since this provided a very limited income, he explored other environmental avenues open to him. These included: becoming a member of a co-operative for a period where maintenance and invasive alien plant control work on the riparian zone of the uMngeni estuary was a daily

task; he resigned from the co-operative and was selected for entrepreneurship training as a bird guide with Birdlife South Africa. After a period as assistant field ranger in Mapungubwe National Park, he joined WESSA as a field manager. As mentioned above Ki-4 is now a director of his own small environmentally focused business (3-Int Ph1 LZ Ki-4; 15-17Doc Ph1 LZ MB 2013; WfE YouTube transcribed ED\_LZ 2012).

#### **4.4 Signs of emergence and learning in the narratives of the key informants and significant others**

Narratives (as ‘sayings’) cross boundaries and intersect with ‘doings’ and ‘relatings’. Narratives in Working for Ecosystems entail a shared space where practice takes place and knowledge is shared. This is a collaborative social space. Kemmis and Grootenboer (2008) refer to ‘sayings’ as a realm of understanding and self-understanding which connect individuals through communication to ‘extra individual’ socio-cultural structures. Edwards examined the spaces between boundaries in established practices and referred to “knowledge talk at the boundaries” that need to be managed since “narrative accounts of past, present and future practices reveal the conceptual resources, motives and values embedded in intersecting practices” (Edwards, 2011, p. 38). The practice in the Working for Ecosystems context intersects with the way things have always been done in the community context. Ways of doing things (how things have always been done) refer to invasive alien plant use (as hedges or other value added products); to non-sustainable ways of living (such as urban sprawl inherited from Apartheid practices); to a job being any job. The following narratives have been selected with a ‘transition’ to a more sustainable way of living, a change enabled through Working for Ecosystems as intervention and change agent.



**Figure 4.2: Summary of signs of emergence and learning in the narratives of the key informants**

The sample narratives below follow the journey from *conception* to a process of *social change* where *opportunities* are presented and taken up by community members. A concurrent process of change and *adaptation* takes place within the municipal structures as it engages the people who participate in the programme. I then include *Education for Sustainable Development* as a long-term investment in people and in Model 4.1 show how

Working for Ecosystems supported the Ntshongweni community members. The purpose of the section *stepping up* is to provide evidence of combined actions leading to a civic ecology. Amidst all the aforementioned is the *expectation* emanating from the intervention. The expectation also refers to the broader actions associated with national and local interventions in respect of poverty alleviation programmes. In the settings of the working for ecosystems context, I refer to *meaning in use* and elaborate on the complexity of evidence using a qualitative approach to data. Finally, I discuss the influence of working for ecosystems using historical data which provides statistical data to support the *impact* of the programme.

**Conception:** “It was 2006 when the whole programme started. The whole programme from piloting, it was called Working for Ecosystems. Working for Ecosystems right from the word go, right from day one.”

When I mentioned Busisiwe Majozi’s eminent graduation as a social worker, LM proudly stated: “You will be at mine very soon. I have registered for project management with Varsity College”.

When we talk about the start of Working for Ecosystems and I ask about Lithu Investments, LM said:

*Yes, we had a CC. It was there but recent, when it started to work in a way. But back then it was like a matter of let’s say after 2007, Errol knew that I have our supervisor, Mike knew that I have the company and Andrew knew who I was. So whoever in this side of eThekweni wanted a place to be cleared they would call and ask ‘can you go and do quote?’ And I would, because I was at home. (Int Ph1 LM, p. 9:252-256)*

LM was a site manager for Working for Ecosystems employed by WESSA. He was from Ntshongweni and an environmental custodian with influence in the community, an agent for social change. The selected quotes above during the interview with LM clearly validated the start of Working for Ecosystems as an intervention. The early dates vary in documents from 2006 to 2008 as the start of the programme but it is clear from the interview that the period was not one of continuous employment. referred to his own graduation and taking up a course on project management; this is evidence of self-development. LM indicated that he was a director of a close corporation (which links him in a relationship structure as a “perimeter SMME” in the NVivo data on Working for Ecosystems). He then went on to describe, in sequence, the links of people in his network and how these connections enabled a process of finding work, ranging from quoting for work to doing the work. LM’s quote was evidence of a process of social change towards environmental stewardship (through

observing the patterns and structures).

In Sver's documents (2011), Phase 1 is dated March 2007-June 2008; Phase 2, 2008-2009 for a period of nine weeks and Phase 3 for the period 2009-2010 (7Doc Ph1 GS 2011). The initial phase was funded by DEAT and contained a broad list of deliverables (Table 5.1). Phase 2 focused on a follow up of invasive alien plant control, with a brief to form enterprises that would be able to liaise directly with the municipal structures. Phase 3 was an expansion from Ntshongweni invasive plant control to include areas of Paradise Valley and then Roosefontein Nature Reserve.

**Social change:** Squire (2012, p. 64) referred to narrative's ability to catalyse social change in that *it binds the personal to the social realm* (see Section 3.2.3 and 6.4). These values of 'equivalence' are vital to spreading an ethos of change and to create a climate in which new knowledge is valued (or evaluated), critically and reflexively.

Evidence of familiarisation and similarisation narratives can be witnessed in the youth enterprise 'Thinking Imvelo' (see Model 4.1). In an interview Wandile, a director, stated "I am saying more youth need to be involved in this kind of work and thinking so that we know that the knowledge has been passed from generations to generations for people who still have a long way to go" (11-Int Ph2 ALL Thinking Imvelo). As part of the Ntshongweni community and being informally mentored by his uncle (site manager for Working for Ecosystems), Wandile and other youth have become 'familiarised' through narratives of work and social change. This group voluntarily removed invasive alien plants in their area and remarked that others thought them 'crazy' and then coined their identity as 'eco-loonies' (24Doc Ph2 Name choices).



**Figure 4.3: Thinking Imvelo (Pty) Ltd directors' youth SMME**

Photo: Thinking Imvelo (Pty) Ltd directors at Botanical Gardens during training [Source: M Burger, May 2013]

**Opportunities:** SS was an Education Officer at WESSA's Treasure Beach Education Centre. It was raining on the day of the interview and an outdoor excursion was changed to a fashion show with garments made from newspapers. (Vid Ph1 SS). During her interview, SS recalled:

*I started in 2007 and I was unemployed, and looking for work. At first I was a domestic worker. After that I worked at the road. We were putting the tar where it was missing. I went for training called traffic calming. It was part time but some sort of the contract. After that I was taking everything that was coming. WESSA came along, but that time I didn't know it was WESSA. I just told the ward councillor's wife (in Ntshongweni) that I'm looking for anything that's coming, because there are companies that come to your councillor if they need community members. She told me the next day to go to the community hall where this person is coming addressing us about work... he told us that we are going to be cutting out, alien invasive plants, so that was a new word for us. All we were worried about us getting a job... (Int Ph1 SS, p.1: 11-21)*

At the culmination of the interview, SS referred to “the learning [as eye opener], like if I worked only in the field and *did not come to training* I do not think I would have, we were just cutting down the alien plants not understanding why we were cutting them” (Int Ph1 SS). SS has subsequently completed her matric, completed the Environmental Educator's course, has a permanent position, and compiled a publication on Treasure Beach Trees (which will be printed when funding is found). She was initially trained as a worker to remove invasive alien plants, after which she was selected for training as a tour guide. This excerpt was selected as

evidence of how the intervention of meaningful work changed Sithembile's identity and future, where previously job hopping irrespective of what was on offer, was the norm.

**Adapting:** This section draws on a presentation at Ezemvelo KZN Wildlife Symposium of Contemporary Conservation Practice (eThekweni Municipality, EPCPD (2012b).

*As a municipality, we realise that we cannot, a programme of this nature, cannot be successful without engaging the people who will be working in the programme. We have been holding workshops with the local people to educate them on the environment and the working for ecosystem vision. Later on, we had working groups with the different communities and together decided on what the activities would be for the first phase of the programme. Basically, what this does it is a two-way information sharing, so individuals of the communities can give local knowledge and the people at the top can give some ideas on how the programme can run and everyone can learn from each other. This also gives the local people a sense of ownership of the programme which makes it more sustainable in the long term. Because people feel they have had input into this process. So far, this programme has been very successful in eradicating invasive alien plants in these three areas where it started. As well as Paradise Valley Nature Reserve, Roosefontein, and in uMzinyathi. And as we move to new areas the process that you follow is similar. You will choose your area based on conservation significance and then you will liaise with the local community and tell them about the programme; talk to the councillors of the area, and then choose the people who work in the programme” (11Doc Ph1 KT)*

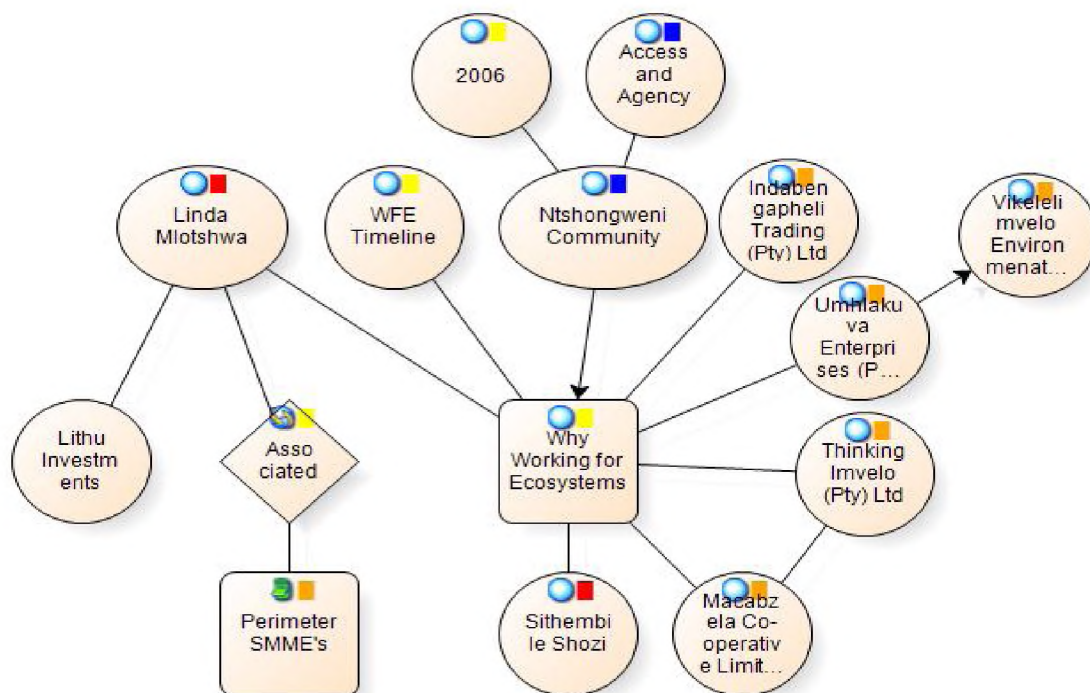
This excerpt of Terblanche's of the eThekweni Municipality provides a complete overview and a summary of Working for Ecosystems. The excerpt was chosen to reflect the relationship between the communities and the municipal structure. Wagenaar (2007) who wrote about public administration and 'citizen-government collaboration' stated:

*Giving citizens genuine influence in real decision-making situations allows for knowledge and information, which was hitherto unavailable in the system, to reach actors who are in a position to act on this information. Participatory arrangements have the effect of removing traditional barriers to the exchange of knowledge and information in the neighbourhood system. (p. 47)*

Blackmore et al. (2011) referred to climate change adaptation practices which require greater in-depth understanding and knowledge to “enable and support change oriented learning; develop agency for change; and/or engage with a more complex knowledge context” (p. 111). The contribution of local embedded knowledge and civic participation contribute to a more diverse system, with greater flexibility, tolerance and adaptability. These are requirements for Education for Sustainable Development (ESD) as contributing to long-term investment in people and planet and ultimately greater resilience to climate change.

**ESD (a long-term investment in people):** “But in Ntshongweni we have been able to use the people who worked in 2006 and now we can see the benefit because these are really good contractors – so *the programme created a successful by-product*” (2013, Wayne Stead, WESSA Project manager) (19Doc Ph1 WS, my italics). Stead referred here to specific contractors and the Ntshongweni community’s ongoing support for environmental initiatives. Stead equated time and experience as contributing factors leading to success. In addition, he referred specifically to the people of Ntshongweni. In referring to ‘by-products’ he meant the SMMEs but I have included the venture on creating value added industries through the Biochar pilot project and basing the possibility of the research around the project in Ntshongweni (32Doc Ph1 VAI Biochar). Being a member of the Ntshongweni community enabled access to Working for Ecosystems and assisted development of agency in community SMMEs as shown in Model 4.1.

**Model 4.1: Ntshongweni community access to Working for Ecosystems and agency by particular persons and / or organisations**



**Stepping up:** “Prior to its involvement with eThekweni Municipality in the Working for Ecosystems project, The Wildlife and Environment Society of South Africa, was primarily involved in creating invasive alien species *awareness* (in an educational sense), in particular the ‘Stop the Spread’ campaign (2011, Sver) (10Doc Ph1 GS). The narrative by Sver refers to Working for Ecosystems as the first project in respect of invasive alien plant control that was managed by WESSA. He also recorded the commitment to training. The initial phase of Working for Ecosystems was a combination of organisations integrating skills and resources. DEAT was the prime funder and facilitator with a focus on environment and tourism that required a business plan and an experienced implementing agent on board. Basil Karstadt, familiar with DEAT administrative and managerial procedures, was, thus appointed to oversee implementation, and assist WESSA as implementing agent. WESSA became the trainee and secondary implementing agent. This would enable WESSA to learn from an experienced company about project management for invasive alien plant control and about compliance with DEAT requirements. WESSA, an experienced public campaigner against invasive alien plants and with strong environmental education knowledge and experience, utilised these skills. The EPCPD of the eThekweni Municipality responsible for governance and compliance in respect of policies, had a desire to contribute to community upliftment and participation; interaction through municipal structures connected councillors and tribal authorities. These combined actions enabled a form of civic ecology. It was hoped that because of greater knowledge flows and participatory actions, resilience and improved sustainability would result. However, assessment of Working for Ecosystems as a socio-ecological intervention is difficult to measure in the standard manner.

**Expectations:** “The Parliamentary report on Working for Water did not show enough permanent job days. It is expected that people will be employed after the programme” (2013, Wayne Stead, WESSA Project manager) (19Doc Ph1 WS). Stead referred to criticism levelled at the EPWP programmes for providing figures of the number of days worked but not providing access to permanent jobs. The integration of poverty alleviation initiatives, training and pathways of access to work is complex. Communication or language, and in our case narratives or stories, exist settings and contexts and therefore ‘meaning in use’.

**Meaning in use:** Sver (2011) wrote a series of narratives on the Working for Ecosystems programme which assisted in providing a broad overview from 2007 to 2011. These documents were commissioned by WESSA to provide the story of Working for Ecosystems in time for COP 17. Sver (2011) focused on a qualitative approach in collecting data. The

story reads well but for those wanting a comprehensive set of figures and measured outputs, a more scientific approach was required. Working for Ecosystems was assessed in a way similar to Working for Water referred to above and found wanting in respect of value for money as a financial investment in invasive alien plant control work in particular (11Doc Ph1 KT 2012).

**Impact:** It is the intention of this chapter to provide some validity to Sver’s input on the value of Working for Ecosystems as a social upliftment programme. I include tables extracted from the documents: ‘At the coal face’ shows Table 4.1(6Doc Ph1 GS 2011). Tables 4.2 and 4.3 from the document entitled ‘But did it work?’ provide evidence of concentrated immersive learning, but of an expansive nature, focused not only participants but also on a large sector of the Ntshongweni community. In addition, 3 700 school children attended excursions with the aim of creating awareness of biodiversity and the environment (7Doc Ph1 GS 2011).

**Table 4.3: Deliverables, Working for Ecosystems 1-3 (Sver, 2011)**

<b>Recap of WfE Phase 1–3 Deliverables</b>	
<b>Phase 1</b>	
	<ul style="list-style-type: none"> <li>• Hiking/Horse trails</li> <li>• Signage</li> <li>• Training of field personnel</li> <li>• Alien plant clearance</li> <li>• Education excursions</li> <li>• Nursery Gardens</li> <li>• Tree planting</li> </ul>
<b>Phase 2 and 3</b>	
	<ul style="list-style-type: none"> <li>• Alien plant clearance</li> <li>• Further training of field personnel</li> <li>• Co-ops/ CCs</li> </ul>

**Table 4.4: Accredited training, Working for Ecosystems Phase 1  
(March 2007–June 2008) (Sver, 2011)**

Accredited Training				
Training	Provider	Duration	Number	Person days
Guide NQF II	WESSA/ THETA	30 days	12	360
First Aid	St. John's Ambulance	3 days	53	159
Herbicide	Ecoguard	5 days	5	25
Total Accredited Person Training Days				544

**Table 4.5: Non-Accredited Training, Working for Ecosystems Phase 1  
(March 2007–June 2008) (Sver, 2011)**

Non-Accredited Training				
Training	Provider	Duration	Number	Person days
General environment and concepts	WESSA	4	53	212
General administration and finance	WESSA	4	8	32
General literacy		5	53	265
Substance abuse		1	53	53
Fire fighting		2	47	94
Nursery keeping		4	4	16
Entrepreneurship/marketing		2	17	34
Alien plant eradication		3	35	102
Trail building	WESSA	3	16	48
Total Non-Accredited Person Training Days				856

In the final analysis, it was evident that the value of Working for Ecosystems to the community lay in the injection of capital which in wages amounted to R1 116 360.00, paid to staff who had previously been unemployed (6Doc Ph1 GS 2011, p.1). Invasive alien plant clearing provided the greatest prospect for continued employment. Intensive training enabled knowledge acquisition and implementation in practice in the field. Whilst the establishment of small businesses was on the agenda at the end of Phase 3 (Table 4.3, Sver, 2011), one company existed which had been formed prior to Working for Ecosystems, and a co-operative also existed which in the end was non-functional.

In total 15 855 working days were created for Phase 1 of Working for Ecosystems (7Doc Ph1 GS, p. 4). The learning and experience was reciprocal and not limited to the participants from the communities. “In a small period of time WESSA was required to go from campaigning on invasive alien species control, to actually controlling invasive alien species” (7Doc Ph1 GS 2011). A unit with new experience in the management of invasive alien plant control became established. The book ‘Invasive Alien Plants in KwaZulu-Natal: Management and Control’ was produced. The edition produced during the early phases of Working for Ecosystems has been revised and is being translated into isiZulu. In addition, WESSA provided training courses ranging from introductory, to basic and intermediate levels. Training manuals were written for the Working for Ecosystems participants. These same manuals have been utilised for training eThekweni staff in other sectors such as natural resources, municipal nurseries and parks. Training manuals to facilitate training at each level have also been produced.

## **4.8 Conclusion**

Chapter 4 set out to provide a timeline for Working for Ecosystems. The purpose was to position the periods of transition from worker to small business owner within the larger time frame of the evolving programme structure of Working for Ecosystems. Many sources served to provide a background to the process of transition, the voices (Sections 4.5.1-4.5.4) of those with in-depth knowledge through a continuous process of involvement with Working for Ecosystems. In tracking the process of change it became clear that multiple requirements in respect of various policies were addressed through the Working for Ecosystems implementation. The following chapters (5 and 6) attempt to position the changes in the context of work place practice knowledge and small business practice knowledge that occur in respect of learning pathways for the participating contractors.

# CHAPTER 5: LEARNING PATHWAYS' EMERGENCE

## NARRATIVES OF CHANGING PRACTICES

### 5.1 Introduction

This chapter's focus is on emergence of learning pathways. The term 'emergence' implies a process of happening. In systems thinking (Chapter 6, Model 6.1), a system is regarded as patterns and structures linked together through process. These patterns reveal relationships (Capra, 1996; Kemmis et al., 2012). The process(es) of Working for Ecosystems as a practice in the field of invasive alien plant control, as well as in the field of becoming a small business, arise through a multitude of interactions, or orchestrations. To locate pathways to learning which the SMME contractors have followed we deferred to the narratives of the contractors and investigated the 'sayings' 'doings' and 'relatings' in respect of the work and learning in which they are involved. In addition, I considered the structure of Working for Ecosystems as an organisation which facilitates these pathways to learning. I consider the integration of these fields and how work place practice in the case of each contracting SMME is situated in the narrow context of invasive alien plant control and the broader context of functioning and administering a business. The concept of an 'ecosystem' is applied to these interacting processes and is more fully described in the Section 5.4.1.

### 5.2 SMMEs contractors become the new field managers for WFE

*SMME management work*: In the next section SMME management work is examined, in the workplace practice of invasive alien plant control. Invasive alien plant control work, as field work, is an entry-level practice (entry occupation skills) regarded as level 4 and labelled as 'Community Based Natural Resources Management Skills' (HCDS, 2009-2014, p. 25). SMME management work in this section refers to a set of entrepreneurial skills pertaining to running an efficient contracting business. The act of setting up a business requires a small capital investment but is not conditional upon, or limited to a formal skills level. This dual skill set (invasive alien plant removal and SMME operational activities) is interlinked in the context of Working for Ecosystems. However, the one is not dependent on the other, and may exist separately (this is evident in SMMEs formed outside of Working for Ecosystems and described in the next section). Practices are "shaped by particular historically given conditions that exist in particular localities or sites of particular moments. Specifically,

practices are always constituted in and through the cultural-discursive, material-economic and social-political conditions that exist in the site space” (Kemmis et al., 2012, p. 35).

A brief contextual profile of each of the 2014-2015 SMMEs contractors in this study is provided in Appendix I, to assist in understanding each SMME’s uniqueness. The character is formed by the people and partnerships which represent the symbol or metaphor of the term ‘SMME’. In Section 3.6.2, I indicated that nine interviews were conducted with SMME contractors in 2014. Five SMMEs are examined in Chapter 5 as contractors who formed their businesses outside of Working for Ecosystems, one of which was formed in 2004. Chapter 6 lists seven SMMEs all of whom were formed inside Working for Ecosystems. I selected three of the seven for additional validation in the form of site visits and observation through video. A contextual profile of each of the five SMMEs and their pathway to becoming a contractor prior to and then in WFE is summarised next.

## **5.3 Narratives of SMMEs formed independently of WFE**

### **5.3.1 Indabengapheli Trading (Pty) Ltd – *SMME work is not hand-holding***

*Company administration and compliance:* MM formed his company in 2010 prior to joining Working for Ecosystems (2Doc Ph2 CIPC).

*Access and pathway:* SMME contractor to WFE from 2013-2014 period. Access to the programme was gained through his own initiative by approaching the facilitator and asking what the purpose of the signage and the work in which people were engaged was all about. MM was then introduced to the context of invasive alien plant control and he requested to know more. He was interested in the theory and read up on the practice of invasive alien plant control. MM was then invited to become a trainer for WESSA and in time also became a contracting SMME to the programme. MM lives in Ntshongweni and is connected to that community.

*Management and leadership:* MM seems to be well-connected politically. Before he retired he worked for the city for eight years as an HR practitioner. He has moved about and knows people in Chesterville (close to Roosefontein Nature Reserve). When required to work in the natural area at Roosefontein he could source labour locally. He attributed his people management skills to being an HR practitioner. In the interview, he mentioned a difficult worker whom he could motivate and in that way control. The interview is recovered from memory and summarised by Muziwandile Chili in the first person, since I struggled with the

recording device. He stated:

*I had one troubled member of the team as an HR practitioner. I was able to try and reason what could be his problem, as I knew the importance of building a team I had to understand the individual problems. I then sat with him and asked him more questions about his life and today it been three years working with him. (1-Int Ph2 MM Indabengapheli, p. 1)*

**Entrepreneurial identity:** MM is the only contractor who says that administration is the responsibility of the SMME and not that of WESSA.

*As I am a busy person, it was important to me to build an efficient team as I would sometimes go and attend to my other projects. My HR background helped me to build the best team. When I took other projects, I would pick a few team members and take the most problematic to go with me as it was important that they stay under my supervision as it was going to be a disaster leaving them with my team ...*

*Going forward I think there is nothing to improve on the SMME side because I believe SMMEs should be able to solve their own problems without involving WESSA. (1-Int Ph2 MM Indabengapheli, p. 1, my emphasis)*

**Practice knowledge:** Whilst there was no discussion during the interview on invasive alien plant control practice, I can assume that MM is a capable practitioner. MM became a trainer for WESSA and as such would have undergone specific training for that task. He also read up on the subject and requested educational reading material from the Stop the Spread facilitator at the time. As a company owner managing workers, and experienced trainer, I can assume that MM has practice knowledge in respect of IAP control.

**Summative perspective on learning pathway:**<sup>9</sup> In a separate note, to check on validity of coding, I used the NVivo memo and researched the specific enabling and constraining factors on this SMME. His agency is clearly shown as he started his company of his own volition, acquired access to WFE through starting a conversation with those engaged in fieldwork and ultimately became a trainer, and eventually also linked his company to the programme. The aforementioned is also evidence of the mobility of his pathway which he self-engineered. With a company already formed he was attentive to more work opportunities (although this was not stated). His self-identity is emphatically that of “I am a busy person”. His staff

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<sup>9</sup> I used the thesis by Manahoe (2014) for appropriate terminology for the heading applied here.

management skills are supported through his knowledge of human resources as a profession. When asked how he thought he could be supported further in the programme his answer was that everyone is responsible for themselves and he does not believe that WESSA needs to solve SMME problems. 'Work does not require hand-holding' and 'running the company should be everyone's own responsibility'.

MM's 'doings' show taking action; access through doing the work and agency through making the approach and sustaining the action through to becoming part of the contracting structure; he asks to know more and uses self-study for this purpose. The emphasis was on efficiency and doing business. There was no discussion on environmental work in the field in our interview.

Further support could be in respect of computer literacy as MM was awarded a laptop at the close of a previous contract. This aspect could be included in discussions on Lifelong Learning initiatives since MM is one of the older contractors and shows evidence of self-directed learning.

### **5.3.2 Intobeka Yesizwe Contractors (Pty) Ltd – *SMME work is catching up on lost opportunities***

*Company administration and compliance:* This company registered as a close corporation. The company was started outside of Working for Ecosystems in 2010. The business of the company is described as 'general contracting' (3Doc Ph2 CIPC).

SG's proposal was submitted to WFE for the next contract, however not enough detail was included as to how the actual work would be done for the proposal to function as insight on business plan skills to contribute as a document for this analysis (4Doc Ph2 PR July 2014 Proposal to WFE for next work contract).

*Access and pathway:* SG is a military veteran and established his company through government initiatives around the work of invasive plant clearing at the Bluff Military base, Durban. SG is an example of someone who gave up on his education for the struggle against Apartheid and left South Africa during his Grade 12 year to become a freedom fighter. During the interview, he compared his own current status to those who remained behind and who were able to access positions and become established citizens. SG revealed many attempts at becoming economically stable. He referred to philosophical discussions with an academic friend where they sceptically discussed farming and agriculture and departments which support these activities with a packet of seeds and tools. SG refers to various courses

completed and recalls being involved in the elections and having to, in a short period, learn and understand the organising thereof as part of the Independent Electoral Commission. A large part of the discussion was on poverty, making ends meet, and the continuous struggle to catch up on missed time while he was out of the country as an exile.

***Management and leadership:*** SG showed extensive agency in attempts to obtain work. He described the many avenues he pursued, many of which were dead ends: writing to the City Manager for work opportunities and a request to put him in touch with the right department in respect of invasive alien plant control contracts. The City Manager enabled contact with the EPCPD and WESSA, thus Intobeka Yesizwe soon became a contracting company to Working for Ecosystems.

***Entrepreneurial identity:*** SG's entrepreneurial identity is not completely clear to me. However, SG has many ideas, many varied skills, and has followed up on leads ferociously. This is an indication of perseverance and as mentioned in the title a desire to make up for lost time as a member of a functioning society. The interview was long and covered much ground due to the complex nature of SG himself in the pathway he has followed as a freedom fighter, and subsequently as someone re-engaging with a society from which he was absent for many years.

***Practice knowledge:*** When asked about the environment and his prior knowledge thereof, he responded as follows:

*Because of especially, you will bear with me, we do not really, things like nature, as black people, if I may say so, and we do not take most of these things seriously. Until other people came and they told us and taught us these things works like that. This thing works like that... (4-Int Ph2 SG Intobeka, p. 1: 31-34)*

An interesting part of the interview was the context of how the prescribed method for invasive alien plant control was interpreted:

*They brought all the scientists. So, what we did, we did only about five species. Because they said to us we cannot do the whole lot because of soil erosion. Because we had that sand. We must replant. We had to replant you see ... So, we did not do a lot of species... We only did four, then we, they would come and see which species is becoming sort of like dominant. And then we targeted that species, and then the other one. So I said maybe it is for creating jobs by then, not knowing that they have got their own agenda on these things (ibid., p. 3: 85-91).*

*SG: Ja, Bush is no stranger to me. You know Zim, Zimbabwe. You know when you go there, there are no nature reserves there. You find the lion going like that, in Zimbabwe. So, I was based actually in Zimbabwe. Our camps were in Zimbabwe. So,*

*we have done a lot of things there. But on the military side. There is this thing called a survivor course. Where they take you they put you in the Bush they leave you with that animal, you dig a hole, and they come and fetch you tomorrow. So, at night you hear the hyenas, lions and everything. But when you are a soldier, nature is part of you. Because that is where you hide, that is where you do a lot of things. You do not go on killing it so I confessed to love nature because obvious...*

*MB: You were part of nature, it is like loving yourself ...*

*SG: Yes, you do everything there, everything with nature. But I did not know about these invasive things. Indigenous and alien. It is new to me. I only learn it through working for water. (ibid., p. 4: 137-148, my emphasis).*

A five-year period of work has provided an extended period of experience in invasive alien plant work, as part of Working for Ecosystems but also with other organisations.

***Summative perspective on learning pathway:*** SG's motivation was initially poverty alleviation and reconstructing an identity in post-1991 South Africa. A consciousness of nature and why the invasive alien plant work was being done, arose because of learning through work and training. SG mentioned several different courses he attended and various attempts at locating a learning and working pathway that suited him best. He did not settle for the first opportunity that presented itself to him as a military veteran, but persisted in finding work that satisfied the many criteria that came across as important to him to build a future.

### **5.3.3 KBT Creations and Constructions CC – SMME work is gratifying**

***Company administration and compliance:*** The description of business refers to 'sewing decoration catering artwork creations and construction services' as the line of business (5Doc Ph2 CIPC).

The WFE proposals submitted for contract work were tackled with enthusiasm and a knowledge of working procedure was evident (6Doc Ph2 PR, July 2014 proposal for WFE contract for the next round).

***Access and pathway:*** A short period of work was assigned in 2015; also, assisting as trainers when possible since additional SMMEs have applied for contracts. The allocated work has not increased leaving each SMME with a smaller slice of the available resource.

TM gave an interesting narrative of how she started her company. TM established her company for sewing garments, and then through a chance opportunity became the conduit for wages for invasive alien plant control work whilst meeting friends who were signing up for

training and work organised through the IDT. She was passionate about her work, her people, and her family; a forward thinker, she displays insightful environmental awareness and solutions to issues. Plant names flow with ease and ecological understanding is clear when she says “but the problem that side, I mean is different soils, that is why they grow quicker ... there is more water or something that side [Paradise Valley] but not like the Bluff”.

We speak about her family and her upbringing to probe how her environmental consciousness has developed. Her family was uprooted during a period of political upheaval and their house was burned down. Evidence of her attitude, and disposition surfaces when she recalls:

*Oh, it was just a government school in rural areas, but they teach us. But you know that practice makes perfect, when you keep on doing things like that again and again and you become better and better. (5-Int Ph2 TM 2014, p. 11: 397-400, my emphasis)*

Later in the discussion she reflected on society, the desire to create change and stated:

*... people now are doing drugs, they are doing gossip, and they are doing alcoholism, and they are drunk because they do not have anything to do. If they can have something to keep them busy they can just wake up in the morning knowing that okay I am going to go to the garden. (ibid., p. 13: 455-459, my emphasis)*

She mentions how the dumping of plants in the bush is problematic to workers like herself.

**Management and leadership:** TM mentions her staff or supervisors as a critical part of the team. She specifically states how she must rely on workers and supervisors to get the work done. If someone is not feeling well that person would be placed in a section that requires less physical effort. The teams had a mix of gender and she took a mothering role over the workers (which is similar in the following interview with ZN of Lihlithemba, who mentions that her staff call her ‘Ma’ even though she is younger).

**Entrepreneurial identity:** TM is clear on her self-identity and starts the interview with a strong message of who she is:

*My name is... and I am going to turn 40 this year. I am a mother and I am a business lady. I have 18 workers under WESSA, let me say beneficiaries, so we are working at Paradise Valley a long time, it is going to be the third phase that we are going to do now. I started with 25 people and then they reduced to less – 18. It is enjoyable to work in the bush let me say, I choose to work in the bush than to the office, because in the bush it is a little bit let me say healthy. I like to work in the bush because even the air we breathe there is cleaner. We are working by the river, Umbilo River.*

*We are closed now, so we are at home now. But everybody is just calling when we are*

*going back to work, because at home it is boring, we need to go back to work. (ibid., p. 3: 95-103, my emphasis)*

***Practice knowledge:*** Detailed explanation of the methodological approach to invasive plant removal work was provided. TM described how they liked to work in blocks, and how they stood in a line and moved forward. She stated they worked well and fast and liked to be ahead of schedule. Secondly, they aimed to work so well that the invasive plants would not return. She showed pride in being able to work like a man.

TM was proud of how she managed to pass the Poisons Certified Officers (PCO) qualification first time under difficult conditions. This is a qualification that is increasingly required for working with herbicide.

Describing new knowledge, she stated:

*here we are learning different things with the chemicals, how to transport it, either chemicals with the vehicles that you do have a card, you see the driver must have a card to write, and that is what we have been learning at the PCO course, but they have been adding to what we already had. (ibid., p. 13:490-494, my emphasis)*

***Summative perspective on learning pathway:*** At the closing of the interview she mentions using WFE as a stepping stone to further learning and mentions preparing ‘to go to one of the varsities to do something that is about ecosystems’. We covered modern socio-ecological issues such as pollution and waste around urban living and the problem of disposable nappies and associated expense, as opposed to towelling nappies which may require more work but do not land up in the river. (5-Int Ph2 TM KBT)

#### **5.3.4 Lihlithemba Multi Service Consultants CC – *SMME work is application of acquired skills and knowledge expansion***

***Company administration and compliance:*** The field of business is classified as general consulting (7Doc Ph2 CIPC). The company’s proposal for WFE contract was well written, personalised and professional (in comparison to three outsider contractors who submitted proposals which were produced by consultants using templates and thus were all identical in every detail except the names of the company or co-operative) (8Doc Ph2 PR).

***Access and pathway:*** ZN is well spoken, educated and has a B Tech in community extension

with a specialisation in Agriculture Management. She lived in the Ngonweni area and her company worked in this region for WFE. She was well connected politically and could liaise with the Councillor on behalf of WESSA and Working for Ecosystems.

She started with Working for Water in 2007 and gained experience in aquatic alien plants [other IAP experience serving as a practice pathway and network access]. She displayed a willingness to work hard physically as aquatic plant removal entailed working in little boats on the uMngeni River with a team of seven. She remarked “*two of them are teachers and one that is a nurse now*”. These opportunities and the encouragement from ZN served to empower some of her co-workers to move to the next level of education. She showed strong leadership and social commitment as well as a community orientated worldview.

Opportunities and access: ZN’s sister studied Nature Conservation while she was studying agriculture which she completed but she liked what her sister was doing far more.

Management and leadership (managing staff) was part of what she studied – this supported staff management and building good work relationships as the quote from the interview shows:

*And the courses that we are doing strategic management, leadership and financial management. I think when you come with those, with that understanding, knowledge and then you come to work here ... Firstly in terms of leadership, it helps when you are leading a group, even if it is a group of six or 10 people, because that skill that you have has made them free and understanding and they love to work, you are able to communicate it includes a level of communication. So, I think that is where Lihlithemba is able to do best in everything we do, because we communicate on each and every level. (8-Int Ph2 ZN Lihlithemba, p. 2: 45-49, my emphasis)*

**Management and leadership:** We discussed during the interview why the research is being conducted on learning pathways and asked ZN about her learning as part of WESSA and Working for Ecosystems. She replied that being able to “communicate on each and every level” assisted in solving problems, which never arrived because of her strategy. She explained her method in Mzinyathi which had been a team where conflict existed:

*... let me go back to Mzinyathi, because she (Busisiwe) was there before. I use the same staff, almost the same except for the supervisor, but all those members they were in a conflict. I came in so they started telling me stories about this and this and that, I said okay I appreciate that you have all that knowledge, but for now let us put that aside for a moment and focus on Lihlithemba. I explained to them who is Lihlithemba, like in a way that they must leave the past, even though it is the same group. I made*

*them to forget what they were doing before. They almost killed each other... Like I saw them you know I called them my children, they are older than me, they are omkhulu, ugogo, [older, granny] but when it comes to Lihlithemba I call them izingane zami [my children]. They are my children I am the mother. So, it is like easy to communicate, so they know like they know, hey we ma. Ma ngilimele, [I am hungry] even though they just need attention, ngikhathele izolo[I am tired] because we were there at the party, and they will give you that story and you will say okay because you are tired today you cannot work as like the other days, this is what we will do, you can work on this site. So, this thing is making them laugh, they have this thing to love their job. Even if I am not on the site they do like, I do not know, good work. (ibid., p. 6: 202-216, my emphasis)*

ZN went on to explain her method as one of ‘we learn together’ admitting to the workers that she would also learn from her team. If the workers bypassed the supervisor, she “*will talk to them about everything then go back to the supervisor*”.

Toolbox talks are done on Mondays; this gives them a chance to learn about the “*little money that you are earning especially when people are young so that they can go back to school*”. She encouraged young people to further their studies and sets an example to her community.

***Entrepreneurial identity:*** Since the company was started in 2004 it is now more than ten years old. This has no doubt supported the development of a strong entrepreneurial identity within ZN, over time. She won the best award in Working for Ecosystems in 2013 and was awarded a shipping container which she uses as a tuck shop at a local school.

***Practice knowledge:*** We mentioned conflict resolution. BM who, as a social worker, assisted with peace building mentioned the supervisor at the time and we heard that the problem of conflict was largely resolved. The politically appointed supervisor was no longer there. ZN concurred: “*at that time they were looking to change from having supervisors on the field, to contractors, so that is where I came in*” (ibid., p. 3: 96-98).

Being a sole director helped with lessening conflict in the business, but administration was not her strength and she mentioned, “*I have someone helping me on that side because I am not good with maths and accounting, but I have that background, but to do it professionally...*” (ibid., p. 11: 364-365).

She recalled starting with Working for Water in 2007 where she learnt to eradicate aquatic invasive weeds and she mentioned excitement at learning about fish and everything to do with water. Section 7.4.3 also refers to ZN and the importance of diversifying work contracts. We discussed the multi services section of the company name, to which ZN replied that she

has also done catering for the municipality, community members and she also has a tuck shop at a local school.

Streamflow has increased after invasive alien plant removal. She observed:

*Yes, there is, we call it Mzinyathi River, but it ended up looking like a small stream before we started working on that site but lately you could see the river, because there are no aliens along the stream now. It is getting bigger, so it is like, even the staff they do understand now that what we are doing, they are seeing the results now. That if we continue to protect the nature that is what is going to happen. We will have everything that we had before, it will keep on coming back slowly. (ibid., p. 9: 301-306)*

***Summative perspective on learning pathway:*** Understanding of nature grew through a peripheral activity since her sister was studying a diploma in nature conservation; ZN observed the content and then eventually became more involved in what her sister was doing as opposed to her own studies in agriculture.

Tertiary learning in community extension has developed skills that assist in managing labour relations, a critical part of functioning within programmes such as poverty alleviation projects.

### **5.3.5 Songa Umnotho Manje Trading (Pty) Ltd – SMME work is empowering others**

***Company administration and compliance:*** This company is registered and classified as general trading in all aspects (20Doc Ph2 CIPC). A well-written proposal was also submitted for the next contract. At the time, I noted that the proposal served as an excellent example of understanding of IAP work and the broader context (21Doc Ph2 PR Songa Umnotho Proposal Working for Ecosystems).

***Access and pathway:*** NN was a qualified teacher. Her prior experience was in the Education Department and then with an NGO. She was involved with a project in ‘preserving nature’. She was extremely well spoken and fluent in English, which she taught.

***Management and leadership:*** NN regarded Working for Ecosystems work as a community upliftment programme and she was involved for that reason. She was an experienced contractor who became involved in Working for Ecosystems and was recommended by the eThekweni Municipality. She stated that she had learned from the workers whom she took over from the previous contractor:

*... Well fortunately the staff that I worked with was well informed about work so I learnt a lot from them, because they knew the work, and then everything became easy, the person who was sort of induna, helped me a lot to know the work ... (10-Int Ph2 NN Songa Umnotho, p. 2: 51-53)*

NN mentioned that she also worked with people from Chesterville as the work moved from a different site to Roosefontein. This factor is of interest since other contractors who employ workers from the Chesterville community mention that high staff turnover is problematic. This information provides another connection to conflict and interpersonal skills and the problems experienced by the Qhakaza Mvelo Cooperative (Section 6.6.4). NN attributed staff turnover to workers who have matriculated being more easily employable by the municipality. This in turn also connected to the difficulty experienced in assisting the creation of new SMMEs by Working for Ecosystems in this community. I asked about staff turnover and she responded:

*It does affect us, yes because they will not give you notice that I am leaving on such and such a time, they will just vanish. And then those that know they are no longer coming, they will not tell you they will keep on [pretending]. You will ask but where is so and so? They will not come out and tell you and says so and so is no longer going to work with us, he is with eThekwini or with somebody else. So you keep the space waiting for him, and then you feel after sometime now I am losing. Then you start a look for somebody else ... (10-Int Ph2 NN Songa Umnotho, p. 3: 97-102)*

In further discussion NN connected staff turnover to how this affected not only losing financially but also how staff knowledge impacted on expediency:

*Yes, it does because if you keep on changing, you will have somebody who does not know the work. With us we are used to working in the forest, because you fetch firewood, they will be people going along though, may be, in the forest doing some things, and then they will know they know the names of the trees, and then when you show them they will say, although it is also difficult for them they will know a particular tree, but it is difficult for them to have the scientific names, because they know them in their vernacular. So it becomes problematic but, but if you know the tree and you know that it is protected and you are not supposed to remove it then it becomes good for us. But if you start asking them to give these scientific names... (ibid., p. 4: 106-114)*

The above extract from the interview is of interest in that NN was referring to situated local knowledge and how this must be transferred to a new situation – a decontextualised and recontextualised knowledge process which in this case refers to a renaming process as well as to a new paradigm of ‘protected trees are not removed for firewood’; there is a distinction between protected [indigenous] and invasive plants which are being removed. From the

above extract, I assumed the familiar paradigm was to go into the forest and look for firewood, most likely an indigenous tree of a type preferred for making fires for cooking and heat.

***Entrepreneurial identity:*** Songa Umnotho was established in 2008 and had a long working history. However, NN did mention that from time to time she despaired due to the heavy administrative burden. Her entrepreneurial identity was of someone who was helping the community, which was clear during the interview.

***Practice knowledge:*** As mentioned above, NN bemoaned the administration and taxes of a small business and felt these were onerous, mentioning that they were a burden to her. She mentioned paying tax at retirement. She stressed the burden of administration especially in relation to government departments, labour and tax, requirements of UIF payments (connected to high staff turnover increases this burden for a small company). Practical problems she encountered included keeping receipts for administration purposes and for claiming expenses. Paying cash was a problem for her too, as it was dangerous.

NN also mentioned the difficulty of quoting for work in the field of invasive alien plant control. To assess the cost of invasive alien plant work, a deep understanding of the practice was required. These factors included an estimation of plant density, the days required to complete the work and the number of workers needed, as well as herbicide usage, and good plant knowledge.

Some companies will quote per day of work, but this was not always satisfactory to the paying customer who then asked how many days to completion.

***Summative perspective on learning pathway:*** As an experienced businesswoman, NN admitted that the administration of a business is complex and a burden to the business owner. As an established SMME, she took over an existing team involved in invasive alien plant control, at the request of the municipality. This unfamiliar field of work was new territory, and she mentioned learning from the workforce, especially the supervisor who helped her to get to know the work. Reciprocal learning is an interesting pathway where an established SMME enters the Working for Ecosystems programme as a contractor, but with little professional knowledge of the field of invasive alien plant control. The contractor is then reliant on the workers to get to know the work, and especially the supervisor if the contractor has more than one contract and site visits are to check on work progress only.

## **5.4 Contextual dynamics framing the narratives**

### **5.4.1 Ecosystems, bundles, networks and the practice of Working for Ecosystems**

The word ‘ecosystem’ is in use in various fields of practice, such as biology, geography, computer science, business management and more. The definition of an ‘ecosystem’ will depend on the context of use. A biological community of organisms interacting with their physical environment is an ‘ecosystem’ and clearly a living system. A business or organisation may not be regarded as living. However, if we emphasise that practice is “understood as an organised nexus of actions” and “that practices are practices because they involve characteristic relationships of orchestration between people and between people and objects” and use the term “relatings, we are referring to practices as social by nature”, as “hanging together” in patterns (Schatzki, quoted in Kemmis et al., 2012, p. 35).

In contrast, Illeris (2009, unpagged) remarked in an explanation of workplace learning, that “one cannot say that the organisation can learn ... much of what is marketed under the term ‘the learning organisation’ has more to do with management and sometimes smart formulations than with learning” (as in knowledge management). In addition, he described situated learning (Lave & Wenger, 1991, in Illeris, 2009) and the communities of practice approaches as “oriented mainly towards the workplace as the focal point of learning” (Wenger, 1998, in Illeris, 2009). In the same passage, Illeris referred to the work of Engeström (2009) who, in the work on learning in organisations did so with a focus on individual learners which is more in line with his own (that of Illeris’) understanding and theory of how humans learn. In the context of this study, the interest is in prior knowledge as scaffolding schema, individual learning (in the workplace and community), and collaborative learning as part of situated learning (as working teams and managing contractors). In Section 2.8 it is mentioned that a relational ontology is used as the lens (an integrative perspective) for this study, where learning as a pathway can assist collaborative transformation through practice.

During the interview with the Thinking Imvelo group, in speaking about the meaning of environmental concepts in English and isiZulu, LML, a qualified teacher, director of the company and member of a co-operative, responded as follows to a question on concepts used in the workplace:

*Margaret: One of the things that BN of eThekweni [EPCPD] is trying to do is to find isiZulu words imvelo (nature) for example for words like 'Working for Ecosystems'.*

*WM: In one word!*

*LML: Coexistence for different systems that we have, like me, animals trees that we have.*

*WM: I do not think there is one word... when dealing with this... (11-Int Ph2 ALL Thinking Imvelo, p. 13)*

It is clear in the above example that individual learning is taking place, but that such learning is collaborative. Changing from English to mother tongue, with language as the medium, enables a learning that takes place at the cultural-discursive level, which then influences and shapes the (our) practice on material-economic and social-political domains (Kemmis & Grootenboer, 2008; Hemming et al., 2013; Table 2.4 in Section 2.6). In this way, the practitioner changes the practice organisation (Kemmis et al., 2012).

In the context of this study in examining a practice, it is of interest that Kemmis et al. (2012) and Kemmis and Heikkinen (2011) utilised Capra's ecological principles to understand how organisations function, viewing practice as dynamic and viewing organisations in a never-ending re-shaping process. Considering these interpretations, Working for Ecosystems is seen as a practice organisation. Continuing along this line of thinking and linking to Capra's conceptual framework in the essay entitled 'The hidden connections', it becomes possible to view organisations as living systems as opposed to mechanical systems (Capra, 2004, p. 5).

The study by Kemmis and Heikkinen (2011) on "understanding the professional development of teachers within the theory of practice architectures" referred to practice as a "living thing". In addition, the use of the metaphor 'practice architectures' which make the practice possible harmonises with 'ecologies of practice' which in turn connect the practice to other practices. To understand these interrelationships within and beyond Working for Ecosystems I created Models 1.1 - 5.1.

My starting point, in support of the above claims, is that the Working for Ecosystems practice is dynamic and resembles a living entity. The practice of invasive alien plant control as well as the practice of being a contractor to the programme, are both viewed as ever-changing within the given context of work and learning (and training), always influenced by the different participants, the different sites and other characteristic arrangements. The bundles of 'sayings' 'doings' and 'relatings' hang together in the 'project of a practice'. Working for Ecosystems functions as a project with tasks to be completed over a passage of time with an

end result at the termination of the process (contract period for the implementing agent is three years per term).

The practice of Working for Ecosystems evolved as a distinct programme on invasive alien plant control within the Restoration Ecology branch of the eThekweni Municipality (the EPCPD). The work of invasive alien plant control is familiar as a large biodiversity enhancement and poverty alleviation programme administered by the Department of Labour and the Department of Environment, through Working for Water (see Sections 1.4; 2.4). In forming the ‘new practice’ of ‘Working for Ecosystems’ under the familiar blanket of invasive alien plant control, the intervention of utilising SMME contractors (over time) to complete the work was introduced. Where invasive alien plant control work within eThekweni was previously assigned only to the Natural Resources Department, the Restoration Ecology branch developed a specific strategy and framework to combat invasive alien species (eThekweni Municipality, 2014).

The transformed arrangements characteristic of the older practices (Natural Resources staff and the Working for Water model) resulted in new structures of relationships within the practice. In the transition process, the hierarchical structure also changed and a more bottom-up approach to management resulted. However, knowledge specific to the field of invasive alien plant control existed in specialist structures. In the new order, for the work of invasive alien plant control to be completed effectively, those engaged in the work on the ground were required to have process knowledge. The initial Working for Ecosystems intervention in 2006 (see Section 4.3) of combined environmental education, tourism and guiding as well as invasive plant control was simplified in 2007 to include only invasive alien plant eradication. This was a joint decision between the organising structures of Working for Ecosystems and the communities involved in the various projects. The only remaining tourism guide, Sithembile, who was trained in Phase 1 of Working for Ecosystems in 2007, became an environmental educator at the WESSA Treasure Beach Environmental Education Centre. Linda, the current Working for Ecosystems site manager and from the Ntshongweni community, summed up the transition in an extensive interview as follows:

*Margaret: Would you say that out of all those, which out of all of those projects would you say would be more sustainable?*

*Linda: The clearing of invasives, and the way I look at it maybe in addition, it was also, I don't know whether I should say the management, or the idea behind how to*

*sustain this, of which it is one of the things that, I mean make this, I wouldn't say it was the success, basically because it was put in place but to keep on rolling. Remember like in mostly black communities and around the programme itself, the intention was to create some sort job opportunities in a way, you know, some sort of income to the people. So in some challenges amongst the three [tourism, nurseries and invasive plant control] whereby people have to source their own funding, you have given them, but there is no like intense support. I would make an example the nurseries at Ntshongweni mainly, the problem or the challenge there was the accessibility of water, so you can give them everything but when key thing, water is not there, there is no access, and that was one thing to look into... when it's comes to field guides this part of the programme there was ways and means of which it was trying to address that, but you know, people think that they now have the job and they start to sit back and relax, play around and not keep in their minds, that this is the money for the taxpayers and government is responsible for like giving to the people, and we people have to take it and do something about it, and mainly people who were there played around a lot until to the point where like you know when you are at work you supposed to work but then you are sleeping. (Int Ph1 LM., p. 6: 158-175, my emphasis).*

The revised structure of Working for Ecosystems allowed a more distributed practice with different facets of the knowledge situated in different activities of the practice. Yet as stated in the interview above, 'management' [the municipality and others] was aware of sustaining and the need to 'keep rolling' out [projects] – especially for job creation in black communities – there were some practical challenges – but less with field guides [since there was only one remaining of 12 (Int Ph1 SS)] who was absorbed into WESSA] – people needed to wake up and do something since government is responsible to the taxpayers [a strong normative comment in respect of responsibilities and collaboration] as to how money is spent. Different roles with different responsibilities required a structure, as in the empirical example of the interview above, that would be “held together in discursive, material and social interactions among people who are connected to one another in and by the practice” (Kemmis & Heikkinen, 2011, p. 4).

The established practice of invasive alien plant control helped to initiate the new focus of work to be assigned to local communities. In addition, the work was to be administered by local contractors. These new relations not only influenced who worked where but also resulted in a transformed Working for Ecosystems programme. This change was in line with EPWP policy, poverty alleviation, job creation (later as entrepreneurial in the form of SMMEs), training and education (as well as Lifelong Learning realities - LLL), and importantly, compliance in respect of Invasive Alien Species Control (IASC).

The Integrated Development Plan (IDP) requires municipal authorities to act on threats to local biodiversity. Compliance is obligatory through the National Environmental Management Biodiversity Act, 2004 (NEM: BA Act No. 10 of 2004). Additional government regulations published in August 2014 include 93 newly listed plants to NEM: BA. Legislation known as CARA (Conservation of Agricultural Resources Act, 2001) was primarily focused on agriculture. CARA was utilised in urban areas as categories of invasive species as: category 1, species that may not be cultivated and need to be eradicated; category 2, species with a utility or commercial value which required a permit and were not to be planted within 30 m of water courses; and, category 3, plants in water courses to be eradicated, otherwise plants may remain but may not be propagated or traded (WESSA-KZN, 2008).

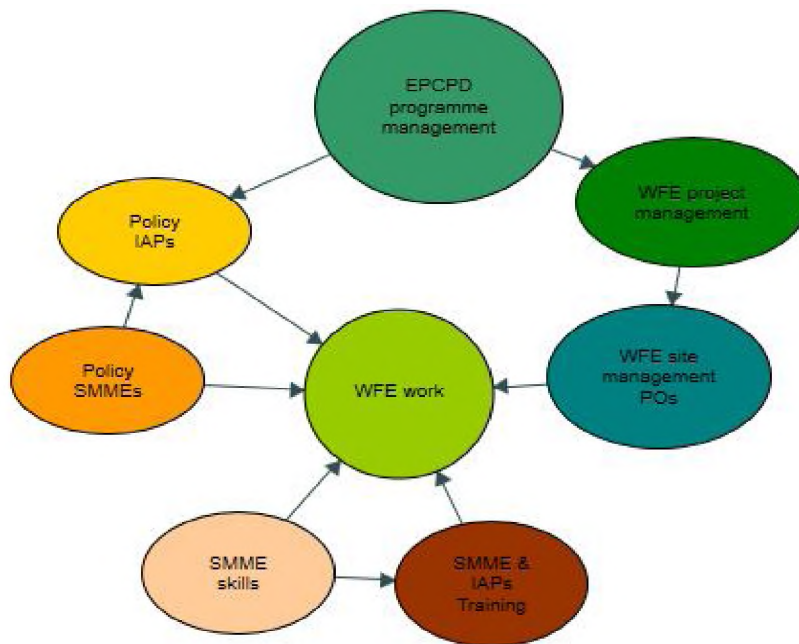
A summary of the key project deliverables for the July 2015 - June 2018 eThekweni Municipal programme, Working for Ecosystems tender, lists the following actions (eThekweni Municipality, 2015b, p.4):

- 1) monthly progress meetings and reports for the duration of the contract;
- 2) monthly submission of electronic data pertaining to areas of operation, species controlled, teams involved in operations, area management phase etc. (i.e. point and polygon data, which must align with the municipal GIS system);
- 3) clearing of invasive alien plants, litter control where appropriate, and management of natural vegetation regrowth at all project sites;
- 4) provision of relevant training (including the assessment of staff) for the effective control of invasive alien plants; and
- 5) recruitment and employment of project staff and labour from the local communities for the duration of the contract;
- 6) ensuring that the required tasks, products and services are rendered on time and within budget;
- 7) mentoring and development of small businesses; and
- 8) submission of independent financial audit results.

The above deliverables indicate the scope of work for the Working for Ecosystems programme implementer. Each deliverable is linked to action on the ground, and dependent on the practice work in the field. SMME contractors involved in invasive plant clearing are a vital and critical link in the programme. The deliverables above are reflected in the annual municipal Biodiversity Reports as measurable components which serve to indicate the State of the Environment (see also Model 1.1 and Section 4.4). The broad description of deliverables can be connected to the tasks or 'jobs' at hand. In order to examine the practice of invasive alien plant control we deferred to the participants of Working for Ecosystems to understand not only the daily tasks performed in the field, but also to understand how these

tasks are constructed in the particular settings of workplace meaning and learning. Model 5.1 shows the immediate interacting network and hierarchies which exist, from the Environmental Planning Climate Change Protection Department (EPCPD) as programme management of the Working for Ecosystems programme representing the City, to project management of invasive alien plant control as well as the SMME contractors managed by the implementing agent. Policies in respect of invasive plant control and creating entrepreneurial systems act as generative mechanisms for SMME workplace training and capacity building through skills enhancement.

**Model 5.1: Working for Ecosystems as a simplified representation of immediate interacting networks**



#### 5.4.2 Work – the foundation of Working for Ecosystems practice

In the deeper context of Working for Ecosystems, social justice and poverty alleviation as well as the reality of a residue of separate education from Apartheid policies, in marginalised communities, ‘work’ is any ‘work’. The ‘word cloud’ depiction of the frequency of words used in the text of this study is shown below in Figure 5.1 and indicates in the conglomeration of words, which values are associated with Working for Ecosystems work.



only as a means of poverty alleviation and job creation but also to train and up-skill in a work place setting (McCord, 2004, 2005, 2008; Gqwa, 2011; Mfusi & Govender, 2014).

Momentous efforts at redress in education by Government recognise an integrated education-training approach and system within the post 1994 restructuring process of education. The SETA Sector Skills Planning document (output 4.1.1.2) refers to “skills development needs... current and planned strategies to address these needs... includes existing and emergent small business skills development needs, the strategies and priorities of which must be agreed with the relevant stakeholders and must include the provision of guidance on small business training needs and approaches” (South Africa, 2013, p. 73).

The eThekweni programme manager indicated that for research to be of consequence, we should ask how the programme can be improved (1Doc Ph1 BN MB 2013). Research at inception of a programme of work and after the programme should assess if learning has taken place and whether the programme was of value to individual workers and community. The questionnaire was an initial attempt at answering, in part, how peace building could foster greater coherence and collaboration amongst team members. Social cohesion, or interpersonal skills are essential requirements for work to progress smoothly. We discussed questions as follows:

- How is ‘value’ measured and during which periods of the programme?
- Why do some programmes fail?
- How do we define, assess and evaluate successful programmes?

Majozi and Burger (2012b) conducted interviews with 28 workers in Working for Ecosystems at the Roosefontein site, a nature reserve in an urban area. Worker turnover was high and conflict existed amongst team members who were from the same community in adjacent Chesterville. Three of the 28 workers had a Grade 12 education, nine workers were educated to Grade 11, and 12 were qualified to Grade 8-10 (many had failed Grade 12 which meant that they completed the Grade 12 year but did not pass).

**Table 5.1: Figures indicating educational level and previous work experience (Source: Majozi & Burger, 2012b)**

Educational level				Previous work experience			
males	females	%	grade	males	females	%	type
1	1	7.14	nil			0	environmental
0	2	7.14	1 - 7	10	8	64.29	other
9	3	42.87	8 - 10	7	3	35.71	none
6	3	32.14	11				
1	2	10.71	12				

Majozi and Burger (2012b) stated:

*Group socialisation helps members learn social skills and socially accepted behaviour patterns so that they can function effectively in the community. The personal needs of members and the goals of the group are often met through activities. Socialisation groups are characterised by learning through ‘doing approach’ which allow members to improve interpersonal skills by participating in programme activities. (3Doc Ph1 BM Mzinyathi: Majozi & Burger, 2012a)*

The term ‘conflict resolution’ was changed to the more positive ‘peace building’ connotation (meeting with Hemson and Majozi to discuss approach to resolving worker and supervisor conflict, April, 2012, WESSA Offices). Peace building has been incorporated into the theme ‘relatings’ in this study since ‘getting on with one another’ is a critical emerging issue in social learning programmes such as Working for Ecosystems (see Section 6.5 for further elaboration on the value and relevance of interpersonal skills and sustainability competences).

### **5.4.3 Field of practice: Invasive alien plant work**

Kemmis (2010b, p.14), in referring to ecological principles, regarded ‘niches’ as the “relational position or function of an organism in an ecosystem” and explained that ‘niche’ refers to the “distribution of resources and competitors and how it in turn alters those same factors”. I regard invasive alien plant control as a niche field of practice. Invasive alien plant control may be a niche field of practice, and implicated as a local problem but the phenomenon of species invasion is a global threat to biodiversity. Globally over 430 alien tree species are regarded as invasive (van Wilgen & Richardson, 2014). Working for

Ecosystems management is centred on invasive alien plants (sometimes referred to as weeds). Close to 10% of South Africa is invaded leading to repercussions in respect of ecosystem functioning (Poona & Shezi, 2010). This in turn has a spiralling effect on other functions pertaining to the environment and sustainability for humans.

In order to prevent potential invader plants from becoming established, the South African National Biodiversity Institute (SANBI) have established an Early Detection Rapid Response division (EDRR). Eradication prior to invasion spiralling out of control has become part of the management practices for invasive alien plants. The team and contractor, Umoyomuhle working in the Hulett's Bush site, reported a serious new invader, *Parthenium hysterophorous* on their site. The isiZulu name for Parthenium is 'umbulalazwe' meaning to 'kill the country'. Since this plant is a relatively new serious invader in South Africa, a specific name with a strong message was coined in isiZulu.

In several cases, existing names of invasive and indigenous plants are practically the same in isiZulu. This leads to confusion in putting across an educational message to people who do not know the plants very well. It was of interest to note that in the reservation of a name for their company, the potential directors often selected a particular name of an invasive plant e.g. Umhlakuva (Pty) Ltd. In isiZulu 'Umhlakuva' is the name of the invasive castor oil bush, *Ricinus communis*. Company identification was associated with the invasive plants being removed. A single outsider SMME, Msenge Landscapes, has selected the name of an indigenous tree, 'msenge' being a cabbage tree or *Cussonia sphaerocephala*.

Local plant names which originate in a mother tongue are frequently descriptive. Botanical names are in many cases also descriptive but in languages related to scientific naming such as Greek or Latin and as a result, are unfamiliar to most. A sub-theme which emerged in the data and which has been included in understanding practice, is termed 'local plant knowledge' (Section 7.4.5 links local plant knowledge and the potential for citizen science in fieldwork). In the coding of this theme, knowledge of invasive species of the area as well as knowledge of indigenous plants, was captured. Since the work context is in the outdoors in open areas, an important aspect of knowledge would be the species of flora found in each location. To make a decision as to which plant needs to be removed, with which technique, and which herbicide, workers need good plant knowledge. In practice, particular invasive species are targeted and in training and in induction to work, much emphasis is placed on identification of the invasive species to be removed. However, at times the ultimate goal of

biodiversity restoration of the grasslands and forests seems to be lost in the training.<sup>11</sup> Co-learning and reporting focuses mainly on invasive plant removal. Locating rare indigenous species falls within the domain of managerial and expert reporting. Since the teams are in the field eight hours a day it would seem that much observational potential is not utilised which is a possible link to citizen science capacity.

Knowledge of indigenous plants does exist within a group of participants, especially the older members of the teams. Medicinal usage of invasive plants could also be recorded as data. It seems that utilising invasive species as a value-added industry could potentially convey an incorrect message: that of invasive species being valuable especially in economic terms.

In referring to a 'niche' field of practice, the knowledge of the practice is included. Invasive alien plant knowledge is field specific. Dialectical contributions range from complexity and ethics (Hattingh, 2001) to biological invasion science (van Wilgen & Richardson, 2014), (as an example of technical professional knowledge), to local medicinal knowledge of exotic plants in an ethnopharmacological study of plant usage by Bapedi traditional healers (Semenya, Potgieter, Tshisikhawe, Shava, & Maroyi, 2012). It is against this background that the research questions are located (Section 1.8; Chapter 7.4.5).

#### **5.4.4 Field of practice: SMME knowledge work**

In this research study, I have examined, at grassroots level, how those involved in the field of invasive alien plant work in Working for Ecosystems come to know their practice as entrepreneurs. The concept of being an SMME is not new. Trade and barter as phenomena have existed in the realm of 'extra individual' structures for millennia. Species invasion however, has resulted from man's mobility. Understanding of the impact of species invasion is emergent and as such is currently a 'niche' field of work and knowledge (Section 5.2.3 above). The value of species differs in contexts (such as use of invasive alien plants by communities). Dickie et al. (2014) referred to conflicting values in respect of ecosystems

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<sup>11</sup> The WESSA Treasure Beach education centre has a grassland area. One of the SMMEs was asked to restore the grassland and in the process remove pioneer indigenous plants from the grassland. Initially this led to some confusion as the indigenous plants being removed was a new understanding about invasive plant control. In this case plants usually being protected were being targeted. This turned existing knowledge upside down, but at the same time broadened understanding of why even indigenous plants would be removed under certain circumstances.

services and invasive tree management.

An excerpt from an interview in Phase 2 with NN director of Songa Umnotho Trading (Pty) Ltd is a discussion (quoted below) centred on technical work knowledge (in respect of the problematic invasive plant *Litsea glutinosa*). The discussion then shifted to knowledge in the community of the use and value of plants as medicinal (for example, invasive *Tithonia diversifolia* commonly known as Mexican Sunflower); irrespective of the plant being invasive or indigenous, it is used as a home remedy. Other invasive species such as Indian Mynah birds were discussed in the interview and served as an indication of extended knowledge of the field. In this discussion, traditional medicine was referred to as knowledge situated within the cultural access of traditional healers and ancestors (the ill person's ancestors) who provided the unique recipe for healing:

*NN: Yes, and then it is very difficult to uproot it [Litsea]. Even if it has just rained it is difficult. And every plant is different. Litsea you cannot actually pull out unless they are like this [gestures very small]. But if you break it, it will coppice and then you get ten Litseas instead of one.*

*Muziwandile: It usually breaks, it is rare to find that you can just pull it, that it will come out with the roots, especially once it is this much high.*

*Margaret: And then you also have the problem, one of the things I have been finding quite interesting is the people in the area do not understand why you are doing what you are doing.*

*Busisiwe: Ja, like with Mexican Sunflower, we are using it for our kids for stomach aches, and I was asking Margaret but we use this, why is this invasive? And it is older than me I have grown up with this. How do you say this is invasive because I think invasive will be something that is coming from outside our country? If our grandmothers have used it before so it means it is ours.*

*Margaret: But that concept is interesting because there are certain things that get naturalised and then we think of them as indigenous. Because they have been here so long.*

*NN: Same as the Mynahs.*

*Muziwandile: The knowledge of using a plant, or using any trees as a medicine is not shared as the modern science medication. Because you would find that you would go to a traditional healer, to get something maybe for your flu or a headache, he will not tell you the ingredients that he used to make these. In other words, you would not know what would be the substitute to use, the indigenous substitute to use, instead of Mexican Sunflower. Things like that are not shared.*

*Margaret: Because it is the recipe you know they cannot share it. I have never thought about it like that.*

*NN: Because the next time you will do it yourself (all laugh).*

*Muziwandile: They will not tell you, but some of them say they do not even know what they will use to heal you until they consult with your ancestors who will know how to treat your particular problem to cure you, they say our problems are unique, so they need to treat you the correct way. (Int Ph2 NN Songa Umnotho, p. 12: 409-436, my emphasis)*

Invasive plant removal as a field has resulted in various levels of work from grassroots at worker level to expert at the professional level. In Working for Ecosystems, the hierarchical levels seem to have merged, to a degree, through a value placed on knowledge flows (Unterhalter, 2009). This is especially so in the post 1994 South Africa.

A recognition of the value of embedded local knowledge as cultural-discursive as well as socio-political and material-economic purpose has created a shift in the characteristic arrangements of societal structures (Kemmis & Grootenboer, 2008). The Department of Science and Technology (DST) aligned with the Department of Trade and Industry (DTI) negotiates the custodianship of knowledge in the field of Indigenous Knowledge Systems (IKS). The business concept is one of 'knowledge management'. Once the economic dimension becomes the focus in an operative field, perspectives change. However, the discourse in respect of the impact of policies on IKS has included the legal concept of *sui generis* (*of its own kind, in Latin*) as an approach to knowledge protection. Such an approach would allow community ownership as opposed to individual ownership or that of a national asset. Of interest to this study is the statement that "the Department believed it [IKS] must be integrated into the education and qualifications framework, and into national research and development" and further "the establishment of an IKS Fund to support research initiatives and *skills development of IKS holders*" (South Africa, Parliamentary Monitoring Group, 2010b). The value of knowledge differs in different contexts (Lotz-Sisitka, 2009b; O'Donoghue et al, 2013).

There is certainly a degree of difficulty in performing well in all areas of practice of being an SMME; sustenance is not guaranteed merely through the action of becoming an SMME. Various levels of complexity in fields (of both work and management) exist in the ways and means of measuring success as well as debate on what constitutes value and 'best practice' in the field. Even the term 'best practice', while still used widely, has become part of the discourse in complexity theory in respect of validity. Each given situation is unique and the conventional 'best practice' method may not be the 'best'. Critical thinking and reflexivity may be required as opposed to a prescribed method, with the aim of continuously working

towards ‘better practice’. The concept ‘better practice’ suggests revisiting how we practice, what we do, with a view to more sustainable functioning (without damaging the environment, yet creating economic stability). Taylor’s research refers to “good judgement arising from practical knowledge facilitated through a mode of being and becoming as a result of a particular site ontology” (Taylor, Robinson, & Taylor, 2012, p. 9). The skill for ‘good judgement’ is important as facilitator of knowledge and as a decision maker with respect to work as practice and work as business.

Recirculated knowledge (best practice) has limitations in the context of the field of work and the difficulties in assessing and understanding of the impacts of the removal of established invasive species. However, the ability (competence) to make a judgement call requires a paradigm shift. Shifting perspectives require understanding and knowledge of that context in relation to other contexts (as stated above, not only in relation to other contexts (as part of the ‘real’) but also in relation to other ‘knowledges’. Cetina referred to the ‘construction of the machineries of knowledge construction’ and how a “performing science continually supplies and defines its own contexts and resources in the practical attempt to grasp and extend a research situation” (2007, p. 363).

## 5.5 Conclusion

Chapter 5 built on the data presented in Chapter 4. The discussion on SMME learning pathways drew on Kemmis et al.’s (2012) theory in respect of the parallel between ecosystems and organisations (such as SMMEs) as ‘living’ and in continuous flux through the relating dynamics of practices. Five participating SMMEs and the unique pathways followed by each organisation’s directors (singular or multiple participants) presented a deeper understanding of the practice as *workplace learning pathways* and as *workplace practice pathways* in the context of work as ‘doing’ in particular.

In the following chapter, SMMEs formed within the Working for Ecosystems time frame, are examined. The intention was to provide a deeper understanding of the multidimensional structures that facilitate or impede access for SMMEs to economic networks, as well as individual dispositions and skills development as “functionally linked complexes of knowledge, skills and attitudes that enable successful task performance and problem solving” (Wiek et al., 2011). These *inter-related and multidimensional skills development processes within a learning pathways framework* are considered in the next chapter as opportunities for achieving greater sustainability for urban communities.

Chapter 6 lists seven SMMEs, all of whom were formed inside Working for Ecosystems. I selected three of the seven for additional validation in the form of site visits and observation through video: Qhakaza Mvelo Co-operative (as a co-operative from an urban township struggling with managerial arrangements), Thinking Imvelo (Pty) Ltd (as a company of young directors), and Vikelimvelo Environmental Services (Pty) Ltd (as a single woman who serves as an example of worker to efficient SMME contractor). The remaining four SMMEs are described according to learning pathways relevant to this study.

# **CHAPTER 6: LEARNING PATHWAYS EMERGENCE**

## **KNOWLEDGE PRACTICE AND COMPETENCES AS LEARNING**

### **PATHWAYS INTO SMME DEVELOPMENT**

#### **6.1 Introduction**

Chapter 6 adds the data dimension of competences. The context of the competences in respect of sustainability is examined firstly as capacity development. The pathway to the development of sustainability competences falls within the boundaries of the Working for Ecosystems structure. The hierarchical structure is explained in Section 6.4 so that the ‘extra-individual’ realms mediated through practice become visible. Knowledge emanating from and through practice is contextualised within the practice jurisdiction of Working for Ecosystems. Environmental stewardship is linked to interpersonal skills, but also to ‘similarisation and familiarisation’ narratives where communication, work and socio-political domains interweave, and do so especially within communities who act as ‘constituents of agency’ (Section 6.7). Connected knowing is enhanced through training which, in the context of this study, is a critical enabler for sustainability competences and the ability to reflect on and access new knowledge (Lotz-Sisitka, 2012). SMMEs which have emerged from within the Working for Ecosystems programme are examined with the intention of describing ‘small stories’ of learning pathways which contractors have experienced.

#### **6.2 Learning pathways of SMMEs formed within WFE**

##### **6.2.1 Mthini Environmental Projects (Pty) Ltd – *SMME work is getting started***

The Mthini Environmental Projects (Pty) Ltd company registration is in order and up to date. The word ‘Mthini’ which is the name of the company means ‘otter’ in isiZulu. This name was MM’s first choice on the CIPC name reservation list (14Doc Ph2 CIPC; 15Doc Ph2 CIPC Name choices). This is relevant if we compare many first name choices of prospective directors related to an invasive alien plant name in isiZulu. The discussion around name choices opened up much broader discussions on the value of invasive plant removal and the ultimate goal of the work of the small business. This in turn led to deeper discussions on naming and identification of the contractor to the purpose of the work and the goal, as well as

how one would then market a company. In addition, Working for Ecosystems influenced the naming of companies created within its timeline structures (M. Chili, personal communication, December 3, 2015). This influence is in relation to the environmental context, which is not evident in SMMEs created outside of Working for Ecosystems where company names refer to ‘peaceful communities’, ‘good hope’, ‘saving the economy’, ‘the never-ending story’, family initials and so on (Chapter 5).

No interview was conducted with MM, but this SMME is included here since it was established within Working for Ecosystems as a newly formed company in 2013. MM initially chose to work, acting as a supervisor for Lihlithemba Multi Service Consultants (Pty) Ltd (Section 5.5.4). This was apparently done to gain confidence in managing his own company as well as doing the work. This in turn linked ZN to mentoring MM in more than fieldwork, and in business skills acquisition. Both business owners are from the same area. MM was requested by WESSA in the new financial year in 2015 to start with his own team which he has done successfully.

### **6.2.2 Thinking Imvelo (Pty) Ltd – SMME work is youths’ contribution**

**Company administration and compliance:** Thinking Imvelo (Pty) Ltd is a registered company (22Doc Ph2 CIPC). A handwritten proposal was submitted for the WFE contract and contained all relevant information for the work to be completed (23Doc Ph2 PR). There are several extracts from an in-depth interview that follow providing a thick description of the workings of this young group of directors. These extracts, to my mind, clearly show their commitment, direction and energy. I have used their own words to convey how they operate and function since their own narratives are the best example of their ‘sayings doings and relatings’ and environmental understandings.

**Access and pathway:** Thinking Imvelo is a company owned by very young directors (25 years of age and younger). They started off volunteering to remove invasive plants in the Ntshongweni Community and mentioned that the community thought them ‘crazy’ (one of the name reservations for the company was ‘eco-loonies’ as shown in Figure 4.1). They are a disciplined ambitious group who regard community upliftment as a big part of what they wish to achieve. They are mentored by their uncle who is a site manager within WESSA for Working for Ecosystems. This relationship was also mentioned by LM in his interview who let me know “*minute every minute in every meeting they take decisions and they stick with their decisions because the buying off, of this guy it’s the part of their own agreement*”. A

sixth member of the company, as agreed by all directors at the time of starting up the company, was asked to resign since he did not attend meetings regularly (1-Int Ph1 LM; Thinking Imvelo NVivo memo).

Section 4.6 refers to various ‘bundles of sayings doings and relatings’ as part of a stream of narratives (Kemmis & Grootenboer, 2008). A heading within the section entitled ‘social change’ is a description of how this young group of contractors became the Thinking Imvelo SMME. I quote each of the directors present at the interview to provide a description in their own words of how they gained access and the pathway they individually followed to become part of Working for Ecosystems. WM, the chairman, explained in the extract below how the company started and the motivation behind this. He referred to the progression of his experience and learning:

*WM: ... before we started Thinking Imvelo I was part of Working for Ecosystems programme but I was a worker, working for a team for Lithu Investments, the name of the company, and from there I gain a little bit of knowledge and keep on going until I was appointed as supervisor for the team; from there on I did trainings within WESSA programme Working for Ecosystems, it was first aid and basics of invasive alien plants control. I worked for 2 years... and felt like I had the necessary experience to do something on my own because I gained all the knowledge that I needed at that time, so together with the guys I bring them in and we are from the same community; so we got together, I then explain to them that this is what I do and my ambition and my aim was to see more youth on invasive clearance that why you see all the group members are youth, we are between ages of 21 and 25 so my motive was for more and more youth. My vision for the future is to see more youngsters knowing about invasive alien plants, actually doing it, so that is how we came together and brainstorm some different ideas, and that how we form Thinking Imvelo ... so from there on, WESSA brought us in within Working for Ecosystems programme and we had our company registered. We were six members actually, and we have gained more experience, and you find that managing a team is not like when you are working; it comes with difficulties, challenges and all those different things so as a person or individuals we have to grow as the company we have to grow as well, so there are many different challenges and all that... (11-Int Ph2 ALL Thinking Imvelo, p.2: 46-62, my emphasis)*

LML, a qualified teacher, provided her explanation in the next extract, and referred to how her professional training assisted her workplace functioning:

*LML: ...For me it was more of curiosity more than anything else because they started the group, I only joined them after 2 months. I think because I was busy with my teaching studies. I am a qualified educator so it was just simple curiosity and I had so much time on my hands because I did it part time, so I was always at home after*

*studying for few hours, then they will be out working somewhere on weekend, so I spend one weekend there and they invited me to join and I did; so that how I got the (bug). I enjoyed it and it gave me something to do at first but I get to learn as he [WM] said he was teaching us, because he was more clued up about invasive alien clearing controlling the plants; so I got the knowledge, skills it was very interesting, and I got very interested and here I am today with so much information; as he said WESSA got us through training, the trainings that I went for were occupational health and safety, level 1 for IAPs clearing and then intermediate course...*

*Margaret: if you say you are a qualified educator, do you think, I mean, would you think you could possibly be starting to teach your own teams better?*

*LML: I could because one of the modules I did was natural science which I think goes hand in hand with what we are doing. (11-Int Ph2 ALL Thinking Imvelo, p. 4: 94-104; 114-117, my emphasis)*

A third director, whom the others jokingly called ‘the preacher’, explained how he personally became part of the company:

*ZMA: I don't have any work experience; after finishing the school I met these guys and we became a group... our brothers and sisters, good, good, long time we were growing up, and some of you were small, we were playing with soccer balls, every day. People were looking down on us and saying we were not capable of any good except playing soccer; and also, when LML went to school people were saying she finished school and went to Elangeni and were curious, thinking that she went to a fancy school and thought she would not get far. People were not aware that by looking down on them they were actually challenging them to grow stronger. Now as a group we have solidarity. (11-Int Ph2 ALL Thinking Imvelo, p. 6: 19-192; 206-212, my emphasis)*

LML added that the community thought them all ‘eco-loonies’ and labelled them the ‘crazy ones’. However, throughout the interview the team reiterated that when the community tried to put them down, it helped to motivate them and make them stronger (Section 4.7). A fourth director present was asked how she became part of the group and responded as follows:

*ZS: Before I join the group, I was a student at Elangeni College doing office admin. My aim was to start my own business. When I get out of high school and pass my matric I told myself that I would start a business, then I go to college study office admin for three years. I've got three certificate and now I am doing management assistance. The reason why I join the group is because I always wanted to work with the youth doing something where we live, because no one is involved in business everyone is doing something for themselves, so we wanted to do something, and to grow in the business ... and stay away from the drugs, drinking, partying, clubbing all of that. The reason they don't like us it because we are doing something for us. (11-Int Ph2 All Thinking Imvelo, p. 8: 251-259, my emphasis)*

A fourth director, SN, was not able to attend the interview. When asked about SN's access and pathway into Thinking Mvelo, LML answered that "*she is currently enrolled at UNISA doing Nature Conservation course and she is doing her first year*" clearly indicating that the choice of direction of study is related to the work in which she is involved (11-Int Ph2 ALL Thinking Imvelo, p. 12: 374-375).

The above extracts support Section 5.4.1 which refers to the Ntshongweni community as a catalyst for supporting environmental work, providing access and pathways to learning to become entrepreneurs in the green economy.

**Management and leadership:** It is clear that confidence has grown over time in managing Thinking Imvelo as a business. The work of invasive alien plant control was learnt through work experience and training. In forming a company, work changed from only fieldwork to administration of running a company and managing labour to do the work stipulated in the contract with WESSA as implementer for the Working for Ecosystems programme.

Management meetings were held regularly and recorded. There was evidence of group cohesion; a set of rules was created and the group felt it was important to adhere to those rules. Where conflict occurred, action was taken to resolve the conflict (buying off, of director who was not committed to the business principles set up by the group).

Thinking Imvelo referred to the difficulty of finding more contracts, more work since the municipal financial year end meant it would be a while before the new contracts would be in place. In addition, it was not certain that WESSA, the current implementer, would be awarded the next three-year contract from 2015 - 2017. WM stated:

*In terms of the money we have been saving, sometimes there is profits, it depends on the types of job we are doing at that time because our work is like task based, you get the area and the number of days sometimes you find it 6 days sometimes it 20 so it differs from contract to contract on how much we make in terms of profits; ZS is handling our money and we have been saving and now it is clear where we are going in terms of giving back to the business and in terms of growing. Because it is no use having a business when we do not have tools or transport for the business. But now slowly but surely with more work and more contracts it will make a difference. (11-Int Ph2 ALL Thinking Imvelo, p. 12: 347-356, my emphasis)*

Thinking Imvelo showed insight into creating a work ethic. The main supervisor (and a director) provided a lengthy explanation on power relations and not showing weakness of which people would take advantage. There were many references in the interview to the community and people who were sceptical of this young group being able to succeed in the

business world.

Solidarity with in the management team amongst one another, from the same community, and the same age group, was clear. They showed clear motivation and desire to get the business to grow in the future:

*There were times where we almost separated because of what other people are saying and who have negative influence, but because we knew what we wanted and where we are going we had to keep reminding ourselves, what do we want? Why did we start this thing? So that's why we are here and now I believe no one can come and say this and that and we would say that thing can break us up, it can't because we have grown now in our minds, business wise and we still want to grow in terms of business, management skills and all those technical stuff, but as persons, as a team, I believe we are more strong then before, so that why we find it easy to work with each other because we have been friends for long time; ... even when we are working because she is my sister I can't say sit around and don't work, no I have to enforce it to her, before I go to another staff, I have to start at ZMA before I go to other staff, saying this is what is going to happen so that why were are saying we must always fasten the bolt [sometimes in management you have to be serious stand your ground and 'bopha ibhawodi', to make sure that you don't relax, so you are now very strict]. (11-Int Ph2 ALL Thinking Imvelo, p. 8: 231-243, my emphasis)*

The interview was mostly in English but when ZMA spoke he reverted to mother tongue. The idiomatic words he used in the context of strength and weakness, indicated that they were not cowards and that quitters never win “*I am glad that we are the members who are 'abekezelayo' ... most people think that when you start a business you will have money and make profit every day, to start a business is not easy because you will find that your family members are asking you when are you getting paid, where is the money, the car?*”

I asked about the ages and composition of the workforce, to which WM and LML responded as follows:

*WM: It a mixture that is why we say our vision is to see more youth ... we are doing this for the future generation so to make sure ... this thing is sustained ... we know that the knowledge has been passed from generations to generations for people who still have a long way to go.*

*Margaret: That is what I was thinking ... I was thinking two things, you are making the youth passionate, but you are also, keeping the knowledge local.*

*WM: Because you will find that the older people do more work and they know that we are at work and you have to work, with youth first you must instil what we are doing until they are passionate enough.*

*LML: The older ones [workers] are more disciplined than the younger ones but for*

*our vision to be alive we have to be able to instil that discipline to the younger ones because our earth, because we are doing this for the Earth, our earth needs the youth to carry this through to the next generations but we are not shutting or excluding the matured employees because they are there to help us with discipline and experience just to balance things at the field. (11-Int Ph2 ALL Thinking Imvelo, p. 6: 173-189)*

**Entrepreneurial identity:** Each director clearly functioned as a unique individual, however the group identity was strong. This identity was reinforced by the group who clearly connected with one another. There appeared to be an ‘us-them’ relationship when they discussed their community. Throughout the interview reference was made to having to provide proof of their entrepreneurial identity. This was continuously questioned by the community. Questions were asked as to why they were not able to show a display of wealth since they were ostensibly business people. There was a progression from “*we were just young people playing football (‘ukugxekwa’)* to becoming employers of the very people who scorn us”. There was no resentment though and a sense of pragmatism and pride was evident. Clear leadership and the importance of setting an example as well as all contributing equally was understood and accepted (Section 7.3.4 refers to the analytical statement in respect of interpersonal relationships and the importance of conflict resolution as a form of peace building).

Community and the sphere of the social was a theme that emerged in the interview. The community’s expectations of them as young people with a business and being watched by others in the community and judged in respect of a display of wealth was evident in the following extract:

*To add on that, someone gets in the business thinking that since I am a business owner I must have a stash of cash in my pocket throw it around so that everyone could see that I have the money, it not about that...*

*WM: For me the way I see it I always tell Zipho that it’s respect if people say something about you but behind your back not in your face because what they said before, they say we won’t survive, we are crazy what we are doing won’t last, and when it lasted they were like they will break they won’t continue with this thing and now its continuing it almost a year ...*

*LML: And after that it was like they are business owners but they’ve got no material thing to show...*

*ZMA: And I was amazed when they came to us and ask for the job because they were judging us ... (11-Int Ph2 ALL Thinking Imvelo, p. 5: 155-157; p. 7: 213-214; p. 9: 269-270)*

In a philosophical manner, WM then went on to say that they could not be resentful because

they have chosen to give back to the community; that is what they set out to do. He stated, “[Y]ou must be the bigger person and... give it back to those people who were not liking you in the way you are teaching them to be better people”. In the following section, in response to my question asking if these same people are now coming to Thinking Imvelo or asking for work, WM replied:

*Yes I would say now in WFE programme in last month 60 to 70 people were employed from our company around our community because that opportunity came because of the team we have and the work we have been doing, for all these years so now, that giving back in the way, is now materialising, so whole lot people are gaining from just six children who started ... also gaining from other teams, there are also other teams, and all those teams were doing great work , so many opportunities are coming and more people are coming and say please we want to work and I think this is something good that WFE programme is doing to our community. (11-Int Ph2 ALL Thinking Imvelo, p. 9: 278-285)*

We discussed practice, but then WM returned to the issue of staff and wages where workers who have been doing invasive alien plant control work for many years are still earning R100.00 a day, minus unemployment insurance fund deductions. He discussed the context of wages in the domain of business and making a profit and said “as business you have to make profit but you must think about people next to you working, the teams that we have are like the best so you get to the point we saying what they are earning is not enough” (*ibid.*, p. 12). In the next section the practical application of running a business and the work itself is discussed.

***Practice knowledge:*** In terms of knowledge value, sustainability concepts and passing knowledge on from generation to generation was mentioned in the interview. They also admitted to needing elders for knowledge and focused on having used older people in the team. They showed a social concern for wages earned being static since inception and having worked all these years at hard physical work – and asked how can we pay more? The interview showed a realisation that accompanies a social enterprise, in the undertaking that Thinking Imvelo provided employment opportunities to the community. There was evidence of questions and answers leading to reflection during the course of the interview. This happened when learning was connected to doing.

During the interview, it became clear that there was an awareness of the need for more knowledge of indigenous plants. In response to my leading question, LML replied:

*We have so much information and knowledge on invasive alien plants but less on*

*indigenous. So we realise there is an opportunity to inform me and I think to inform us also on indigenous. We struggle with the indigenous names you know... (ibid., p. 10)*

It was possible to deepen the discussion to probe contextual knowledge of what an ecosystem means (Section 5.2 quotes the relevant extract from this interview in the context of finding isiZulu terms for Working for Ecosystems and the work we do).

Training facilitated by WESSA as part of the contractual obligations to the Working for Ecosystems programme, also aligns itself to EPWP criteria, deliverables such as first aid, health and safety, alien control plant control, basic level and intermediate were all completed by the Thinking Imvelo group (Section 4.6; 5.4 and 5.6). However, when the discussion reverted to what had been learnt as an SMME, a request for “*management skills, it is one thing I could point out and because you learn to do more than just working, its comes with technicality of running SMME doing more technical stuff beside being on the field to work*” was put forward by WM. Earlier at the beginning of the interview we spoke about learning and training in trying to probe which knowledge was learnt in training and which through practice. To this enquiry, WM replied on behalf of the group:

*I wouldn't say it was structured, but some were structured, and some were like asking a question, and get a response, like what do you do when the situation is like this, and you get response, and assist on that, and there on you gain that knowledge, to add on that. The other members before we started around where we live in our community, we did work there, because I had the knowledge I had to train them, and they also work in the community, did like volunteering up until they get the experience, so all of us I can say prior to coming to the company, we had our experience, because we all did alien control clearance where we live, up until we all chued up about invasive and what about we have to do. (ibid., p. 1)*

The above excerpt is a perfect example of a premeditated pathway to learning the practice in order to become a contracting business in the work of invasive alien plant control.

***Summative perspective on learning pathway:*** This perspective can be summed up as identity and lifelong learning personal growth and business knowledge expansion in the change from worker to running a business.

Directors expressed a need for more contracts so that there was no break in the contract and the income stream would be continuous. Profit varied according to how many days worked since EPWP rules are that only work or training days are paid. The policy is ‘no work, no pay’, with the implication that when rain stops work, remuneration is absent.

Learning pathway selected is practice of control of IAPs and then in training as worker on the job; some training took place through volunteer community work and some training was

more formalised with WESSA. Volunteering was an exceptional attribute which assisted in forming a company and a co-operative (Macabzela Co-operative). It was also evident that tertiary education was regarded as beneficial; LML was a teacher, ZS was studying administration and Sibongile was studying nature conservation through UNISA.

The discussion on the Thinking Imvelo SMME has included several extracts from the interview. However, whilst these may be lengthy, I feel that this particular group has contributed in these extracts to many of the analytical statements in respect of learning pathways (section 7.4). In this way, Section 6.6.2 on Thinking Imvelo has served to ground the study. In the section, which follows next, I discuss a co-operative which was formed prior to the Thinking Imvelo (Pty) Ltd, possibly to create work opportunities for a larger group of members or because the metaphor was better known within communities. One member was connected to both the company and the co-operative. While both exist, it was not possible, due to a conflict of interest, for both groups to participate in the work of Working for Ecosystems concomitantly.

### **6.2.3 Macabzela Co-operative – *work is located in the community***

The ethos of a co-operative is revealed in the naming as a cooperation, a collaboration between members. Co-operatives are located with the Companies Office, but belong to an economic structure that places greater value on business as a social shared venture.

Macabzela Co-operative was established in Ntshongweni as a community upliftment group, mostly youth and two older family members. Some of the directors of Thinking Imvelo were also members of the Macabzela Co-operative. There was shared ownership of the company and the co-operative since some of the directors are also members of the co-operative.

However, either the company, Thinking Imvelo or the co-operative, Macabzela was able to participate, but not both entities.

Macabzela Co-operative is registered under number 2012/021986/24 and is up to date with CIPC (12Doc Ph2 CIPC Macabzela Co-op CIPC certificate stating names of members). The proposal for contract work submitted to Working for Ecosystems was handwritten, long and like an essay. The proposal was submitted for the current Working for Ecosystems contract (11Doc Ph2 PR).

LML was listed as the main member. When I asked her if she as a qualified teacher wished she could be in the classroom, she answered:

*No, it is funny that you have mentioned that, because my mom has been on my case saying 'I paid lots of money for the university for you to work in the bush,' so I have to now and again remind her that for now I am happy where I am, sometimes down the line maybe I would [go and teach] because I get to be a teacher in the jungle, when I have to explain to induct I get to use the teacher in me in those instances but for now I am happy. I am content yes. (ibid., p. 11: 358-362, my emphasis)*

Some procurement departments of the eThekweni municipality prefer contracts with co-operatives and not companies.

#### **6.2.4 Qhakaza Mvelo Co-operative – SMME work is a process of learning to get on / relationship building**

**Company administration and compliance:** The co-operative is registered (1Doc Ph3 CIPC). The proposal submitted for the new 2015 Working for Ecosystems contract was skilfully put together. The co-operative was able to find assistance for the proposal writing (3Doc Ph3 Pr; Co-op with WFE since inception).

**Access and pathway:** Chesterville, an urban township, is situated close to the Roosefontein Nature Reserve. This is the community closest to the Working for Ecosystems site and is included in the same political ward as Chesterville with the implication that the workforce will be drawn from that community.

A skills assessment was conducted with the directors of the co-operative in 2012 (4Doc Ph3 Qhakaza Skills Assess 2012). Each member had skill sets which enabled them to obtain a source of income. These skills ranged from hairdressing, to carpentry, to serving traditional food, installing aluminium windows, cleaning and more. The highest educational qualification was Grade 11 (2Doc Ph3 Int BM 2012 Qhakaza Mvelo interviews were conducted with 32 workers in March 2012). These interviews with the current directors who formed Qhakaza are the interviews which have been recorded as the source document, since they became directors of the co-operative. One director was not educated but extremely skilled with his hands as a carpenter. He was also politically well-connected and worked as a Working for Ecosystems supervisor prior to becoming a director.

**Management and leadership:** The functioning of this SMME as a cohesive managing entity has been extremely variable. At one meeting Qhakaza Mvelo would be regarded as one of the best working SMMEs, but at the next reporting meeting this would not be the case. Managing roles between the members of the group changed frequently due to problems within the management structure of the co-operative. This led to division amongst the group and

eventually to two additional companies being formed through a split in the group.

***Entrepreneurial identity:*** The Qhakaza Mvelo Co-operative Limited was the only co-operative directly associated with WFE/WESSA. In 2012 the co-operative started with five directors associated with the working teams in Roosefontein Nature Reserve and important grassland habitat in eThekweni. All directors were from the same community within an urban township. (27Rep Ph2 MDC MB 2014; 31Rep Ph2 MDC MB 2014).

However, the co-operative management structure has divided into two other companies leaving the two remaining directors as current sole directors of the Qhakaza Co-operative (see below, ‘finding the best fit’).

***Practice knowledge:*** Observation of the Qhakaza Mvelo Co-operative at work provided evidence of being fully engaged in fieldwork. Herbicide mixing, proper procedure and safety measures were in place. Knowledge of which herbicide to use for a particular species and best method of control and application was evident. Not all directors were on site at the time of the visit; the working team continued nevertheless, with three directors present.

In terms of the mapping and location skills, we discussed the issue of knowing exactly where one was and the location of the perimeter of one’s operating block. This was an important skill since working in the wrong area would clearly waste resources. Elementary mapping skills formed part of the training curriculum for supervisors as a special in-house session with WESSA’s programme manager. Work was often conducted in remote areas and supervision was difficult when the bush was dense and not easily accessible by road. This also makes site auditing a time-consuming process. At times when contractors require assistance, advice may be delayed before changes can be implemented, which is intimated in the extracts from a site visit shown next.

*Qhakaza: One of the things which makes it difficult for us to understand mapping is because whenever we are not clear about a certain area the management doesn’t respond to our request for some clarity. We call them and they will promise to come tomorrow and then they do not come.... That leads to the misjudgement or the perception that we don’t do the work properly. (6\_OBS\_Roosefontein\_Qhakaza)*

*Former site manager: It is also from their side [as site managers], it is time consuming to get here and actually walk and to get to site, you can see how difficult it is for us to get here, for a field manager to get here to do a preliminary site visit, and it is actually a challenge. You have got to plan, and you have got to sit some time, just for that task, otherwise there is no time allocated for that then it is difficult. (6\_OBS\_Roosefontein\_Qhakaza)*

WESSA training included a workshop on mapping skills, theory work and practice in the field. Work happening in an incorrect 'block' was problematic for all parties involved. Appendix N is a map showing the allocated 'blocks' on the Roosefontein Nature Reserve site, where the Working for Ecosystems work is taking place. The map shows the Westville Prison, the Chesterville Community to the east (four minutes in a vehicle from the prison to Chesterville), and surrounding communities of different levels of affluence to the west, the south and the north where a large shopping mall, The Pavilion, is located.

**Observation:** The site visit helped with triangulation of data. It was clear that work knowledge and practice existed within the SMME structure. DN was spot spraying and workers were cutting. Working in Roosefontein was hard physical work in the section I observed. There were a considerable number of *Litsea glutinosa* evident on a steep slope in a dry river bed/gulley.

Knowledge of problem plant *Litsea*, as a resilient invasive, was also evident. When asked about the quantity of *Litsea glutinosa* in the area I got the response "*Litsea you can't count them it is like a sugar*" (6\_OBS\_Roosefontein\_Qhakaza).

**Site context:** To understand the influence of place (Schudel, 2012, p. 39), the Ntshongweni community was examined as part of how combinations of focused intense education and resources within a receptive community (semi-rural as opposed to very urban) seems to have assisted in forms of environmental stewardship, environmental learning, work security and SMME development (Section 4.3). If one then applied similar criteria, such as history of an area, history of the community in Chesterville, influential factors such as the proximity of the Westville prison, would generalisation be possible? The Ntshongweni community benefited from funding and the application of that funding towards environmental education resources; if one were to try and duplicate the same with the Chesterville community, would it be possible to find similar value? Sufficient historical data for the period of Working for Ecosystems existed which has been added to the data for this study in part. Details of the skills interviews conducted in 2012 were used to enable an understanding skill sets of the prospective directors of the Qhakaza Mvelo Co-operative.

In Section 6.5, it is clear that environmental stewardship and sustainability needs a reflexive community who are able to get on well with one another. Figure 6.2 below shows that source documents were accessed for Qhakaza Mvelo from all three phases to assist in a deeper understanding of the functioning of this SMME.

***Learning pathway associated with interpersonal skills and clear management roles:***

Interview May 2014 WESSA Offices: Procedure to expel a member of the cooperative who is not present on site. EPWP regulations are that funds cannot be claimed if workers are absent for longer than three days without a doctor's certificate (6-Int Ph3 All Qhakaza).

Internal problems may mean that you cannot be hired again since the 'work is suffering'. [There is a long history of conflict at the Roosefontein site – other documents are able to verify the problems at various point in time during the contracts. Figure 6.1 contains a list of the data sources for Qhakaza Mvelo Co-operative.]

Steps in the discussion and argument during a formal meeting to discuss the resignation of a director are of interest in observing the process of resolving a problem by the different members [who enters the conversation when] – is this evidence of the power structure within the group? We already know that KC stood down as supervisor even though he was more knowledgeable about plants. The day we arrived on site, MMA (current chairperson) was not there. MMA and KC accused MMA of working elsewhere and at the same time obtaining payment through the Co-operative. Much later DN entered the discussion with a factual interjection, asking how long MMA had been paid without working? The project manager stated:

*Three days in a row ... that means you have been absent with no leave I can cancel your employment as individual... if you resign it is not the end of the world nothing is stopping you from starting your own company and within WFE we will help you start your company if you want it and as for the other four if they want to set another company we will help set it up, so don't burn your bridges you have been with us for a long time. (6-Int Ph3 All Qhakaza, p. 11: 328; p. 18: 581-584)*

While management is entitled to run its own company, there are still restrictions in respect of labour regulations. In the case of Working for Ecosystems, the management structures are obliged to remain within the rules of the EPWP programme. These rules apply to being present at work each day. A daily register exists which must be signed, kept as evidence that the worker was present. If a worker does not report for more than three days, he may be replaced.

In addition, wages were set in respect of a driver, a supervisor and a labourer by Expanded Public Works Programmes. But in the case of Working for Ecosystems, Ethekwini Municipality supplemented the daily income by a small amount. It is also for this reason that local workers were preferred as transport cost was then excluded. However, the rule in respect of local workers made it difficult for a contractor to build a highly skilled workforce.

In most cases, it was the supervisor who had good knowledge of invasive alien plant control who would then lead a new team. This also meant that wages remained at the poverty alleviation level and did not increase on an annual basis.

Name	In Folder	References	Coverage
20140512_Qhakaza Mvelo and Vikelimvelo report on recent activities	Internals\Documents\Phase 2 - K & PRACTICE	3	47.49%
20141126_REPPORT ON THE RECENT ACTIVITY WITH SMME'S (1)	Internals\Documents\Phase 2 - K & PRACTICE	2	44.40%
20141209_APPOINTMENT WITH THABISISLE AND DELISILE ABOUT REG	Internals\Documents\Phase 2 - K & PRACTICE	1	79.53%
Lindelani Zuke	Internals\Interviews\Phase 1 - TIME LINE	18	8.19%
Qhakaza Mvelo	Memos	5	48.91%
Qhakaza Mvelo CIPC	Internals\Documents\Phase 3 - K & COMPETENCE	2	57.34%
Qhakaza Mvelo interviews_Busisiwe Majazi_March 2012	Internals\Documents\Phase 3 - K & COMPETENCE	5	9.45%
Qhakaza Mvelo Proposal WFE	Internals\Documents\Phase 3 - K & COMPETENCE	1	3.42%
Qhakaza Mvelo_Directors_site visit_video trans	Internals\Observation\Phase 3 - K & COMPETENCE	15	63.85%
Qhakaza Mvelo_Directors_WESSA	Internals\Interviews\Phase 3 - K & COMPETENCE	50	29.40%
Qhakaza_Directors_2012 04 18_SMME_skills assessment	Internals\Documents\Phase 3 - K & COMPETENCE	5	16.51%
Qhakaza_Directors_site visit	Internals\Observation\Phase 3 - K & COMPETENCE	4	45.38%
Qhakaza_Name choices for Co-op_formal	Internals\Documents\Phase 3 - K & COMPETENCE	1	12.47%
Qhakaza_Video14_transcript_11 June 2014	Internals\Observation\Phase 3 - K & COMPETENCE	2	9.52%
Wayne Stead_Notes on meeting_MB	Internals\Documents\Phase 1 - TIME LINE	2	19.26%
WFE_assessment criteria_Ntshongweni_2009	Internals\Documents\Phase 1 - TIME LINE	1	0.89%
WFE_Possible paper on WFE_MB and BM	Internals\Documents\Phase 1 - TIME LINE	4	36.32%

**Figure 6.1: List of sources Qhakaza Mvelo Co-operative**

***Finding the best fit:*** Qhakaza functioned as a co-operative for a period of time in the Working for Ecosystems programme. However, illness in the form of diabetes and absence from work over a prolonged period resulted in the resignation of one of the directors who formed a new company, Makhaye Environmental Services (Pty) Ltd. SMME work was regarded as a possible lifeline for a better future. In addition, two other members of the Qhakaza Co-operative felt that they could manage a company and the invasive alien plant work, which they knew well, on their own. These two women formed Taumbe & Nzimande (Pty) Ltd and became part of the Working for Ecosystems service providers. SMME work was to them a recognition of “*we can do this on our own*”.

### **6.2.5 Umoyomuhle Environmental Services (Pty) Ltd – *work is clear management roles – strong leadership – ambition***

***Company administration and compliance:*** Umoyomuhle Environmental Services (Pty) Ltd was registered and in business (8Doc Ph3 CIPC). A proposal for the new 2014-2015 Working for Ecosystems contract submitted was labelled ‘the best’. The extract copied in the text below (Figure 6.2) is the introduction to the proposal and provides a description of the company. I was aware of the initial proposal since we had spent some time discussing the content (Muziwandile, Busisiwe and later myself), and so I was quite surprised to see a revised proposal, personalised and a picture on the cover of *Pistia stratiodes*, an aquatic invasive, water lettuce (9Doc Ph3 Pr Final version of proposal for WFE). It was regarded as

the best example of a proposal by the WESSA projects manager (pers. comm., August 2014). At a later meeting, we (Muziwandile and I) could piece together the changes in the proposal when we were introduced to the family member who had assisted by going to the library and searching for additional information. This “growing phenomenon of alternative points of access such as libraries, museums and civic organisations” was evident in the Umoyomuhle proposal (Lawrence & Tate, 2009, p. 173). A brother of one of the directors had assisted with the changes and helped make the proposal ‘the best’, a collaborative effort. Figure 6.2 is a description of the company (9Doc Ph3 Pr).

**OUR COMPANY**

We are a private company called Umoyomuhle Environmental Services (PTY) LTD which was implemented by the body known as Wild Environmental Society of South Africa (WESSA) which operates as a contractor in the eThekweni Metro Urban Environmental Services. The company's registration number is 2013/128577/07. Umoyomuhle is an isiZulu word which is translated as “Pleasant Air or Purified Environment” which urges our communities to always care for the environment to maintain healthy life style for the inhabitants. This name was agreed upon by members among other names since it was found very suitable for promoting nature conservation in many aspects since there is a lack of accommodation for wild life in the urban areas due to a lot of business and residential development. This undertaking was started in 2013 as a group of five directors from ward 11 under eThekweni region. Our company was formed around the work of invasive alien plant control which is where we had a chance to develop a lot of our skills and experience. All our directors are residents of ward 11 under eThekweni Municipality, KwaZulu Natal.

**Figure 6.2: Proposal – introduction of Umoyomuhle Environmental Services (Pty) Ltd**

*Access and pathway:* Umoyomuhle Environmental Services (Pty) Ltd emerged from the Huletts’ Bush working team. It consisted of a dynamic group with a variety of skills who through Working for Ecosystems were able to create a contracting business and did so of their own volition. Each director was a worker for Working for Ecosystems prior to forming the company. I include each director’s response to questions in the interview in the context of access and learning pathways:

*SN: I have many skills that I came with in the business because before I joined the co-operative I was a first aider, a secretary for ANC in my ward, and I did have my small business selling alcohol and also at home there is a tavern. I also did business studies but I did it as a subject, the business studies helps me to understand more about business. (3-Int Ph3 All Umoyomuhle, p. 1: 23-26)*

As someone who had studied business science, SN became the managing director. She referred to the business in the extract above, as a ‘co-operative’, a slip of the tongue which is

I assume, a business concept with which she is more familiar. Co-operatives have been put forward as a social-economic enterprise and support that ideology in structure and in policy and practice by the Department of Trade and Industry (South Africa. Department of Trade and Industry, 2012):

*NMS: At first I was a worker working for somebody selling clothes, in that business the owner said to me, I have to take that business as mine, I have to treat customers with respect, as they say the customer is always right, the customer will fit the dress and when the customer has finish fitting that dress, if they leave it down you should pick it, and not argue with the customer about that, you should take that dress and put it where it was, that what I was doing before I enter into environmental career, then I join Umoyomuhle... I didn't start working for Umoyomuhle I started working at WESSA. (ibid., pp. 35-41)*

*PM: When I came to WESSA the work that I was doing and which I like to do was to sell, I was a seller, and I sell amagwinya, mealies, polony. I also have my small garden where I grow spinach. (ibid., p. 2: 35-46).*

*XL: Okay I also understand now, so before I came here I was in the musical group singing gospel, and we were hired in many places like at funerals, weddings and in other events where we perform and get some money then see what we can do... (ibid., p. 3: 77-79).*

*DK: Now I get you, I spent a lot of my life as a seller this was long time ago I didn't know that I would meet WESSA. I was selling cigarette at Siphingo of which that gave me better understanding of how the business works. (ibid., p. 3: 85-87, my emphasis)*

Selling, was the most common form of income for each of the directors prior to becoming contractors. This evidence was supported in research studies by Peberdy (2000) and Venter (2012) in the South African context, which I discuss in analytical statement, Section 7.4.3.5. In the above extracts from the interview (3-Int Ph3), it was only XL who acquired a different form of income through entertainment services, as opposed to trading in goods.

**Management and leadership:** Each of the five directors had a clear function as part of the team.

*Muziwandile: She [Margaret] was asking about the management of your business who is doing what, as you are five directors, she likes to know your structure maybe it is only one who does everything but you can explain that... (3-Int Ph3 All Umoyomuhle, p. 10: 333-335, my emphasis)*

The following is an extract from the Working for Ecosystems proposal document (9Doc Ph3 Pr):

**DK** who holds a 20% share in the company is a qualified motor body repairer, a Health and Safety Representative (valid until 2015), and a skilled invasive alien clearing practitioner. He is general manager for Umoyomuhle Environmental Services.

**XL** who holds a 20% share in the company in the company. Has a national certificate in security (grade E, D). He is also trained in invasive alien plant clearing. He is the head

of human resource assistance for Umoyomuhle Environmental Services.

**PM** has a 20% share in the company. She holds a certificate in Traditional Healing and is trained in invasive alien plant clearing. She is a supervisor in the company's daily operations. She assists in the company's staff management and is also a member of a School Governing body.

**NMS** has a 20% share in the company. She holds a certificate in Ancillary Health Care (level 1). She has also trained in invasive alien plant clearing. She is the operational manager for Umoyomuhle Environmental Services.

**SN** holds 20% shares in the company. She has a certificate in Ancillary Health Care (NQF level 1), HIV AIDS and Counselling (community service) and First Aid (level 3), Home Based Care and an Intermediate level for Alien Plant Training facilitated by WESSA Stop the Spread (August 2013). SN is currently studying Business Economics, Economics and Accounting and Mathematics Grade 12. She completed Geography, English and isiZulu in 1999 for her matriculation. She is the financial manager in the company.

The interview sessions seemed to allow greater freedom in asking questions. Questions pertaining to the way the business was organised or managed. It seemed as if the setting of the interview provided an opening to question business partners.

*SN: I would like to add with it might happened that as she is asking that [PM on number of meetings], some of us when we say we need a meeting who don't like that and don't see the importance of meetings. (ibid., p.11 340-342)*

I was surprised when the term 'capital build up' was brought in to the interview. This issue was related to how the funds in the business should be allocated. There was a clear parrying between two of the directors who used the interview as an opportunity to clarify concepts to settle disagreement. This difference was related to discrepancies in daily wages for directors, whether wages formed part of funds available for capital build up and which portion of income should be disbursed as opposed to allocated for the business itself. It was expressed that it was hard to be a director and yet feel poor – these were all interpretations of entrepreneurship and working for a company as an employee, yet having the responsibility of being a director of the same company.

*PM: Can you please go back to the point of what is a capital build up because she wanted all of us to be clear on that, because I don't know what it is the reason, why I don't know, it is as we are all directors, our wages are not the same, with a hope that we will split the capital build up after we have paid all the expenses we must get that money, as you have advise us that for us to see the profit we must also work in the field and you find that as we are directors doing the same work we are not getting the same wages. I am not happy if now I don't get this capital build up I was hoping to*

*get, that why I said we need more training because we are not clear on financial side, if I don't get the money when do I see that I am a director*

*SN: And someone might not say what he wants he keeps quiet ...*

*PM: And someone agrees even though he is not happy. (3-Int Ph3 All Umoyomuhle, p. 14: 447-454; 470-471, my emphasis)*

A request for more training was diplomatically verbalised as the solution to understanding issues in respect of business finances, and then parry and riposte responses followed between the dominant personalities of the company directors. Strong leadership was evident in two of the directors who continued to ask and respond throughout the interview. The presence of Muziwandile (go-to person for business queries) and Busisiwe (the social worker) was invaluable. This allowed me to be on the periphery, at times, and not take up valuable time with my own voice. The following extracts in respect of people management, business management and collaborative learning, served to further illustrate the value of collective discussions in a more neutral environment such as the WESSA offices.

#### People management

*PM: Let's say the worker encounter a problem and he goes straight to SN to report it and SN told the worker to go to supervisor first.*

*Muziwandile: In that matter you need PR. The person who will deal with that, but you need not oppress that worker because he goes to you as a director and not supervisor and make him feel bad.*

*SN: The thing is the workers sometimes are very rude. They undermine us sometimes and said there is nothing I can take from so and so...*

*Busisiwe: But I would say it starts with you. How are you treating each other because that is what the worker will take and treat you that way. (3-Int Ph3 All Umoyomuhle, p.17: 557-564).*

#### Collaborative learning

*I also learnt to offer my help to other colleagues, like for example if you see someone cutting the wrong tree and tell him/her that she is making a mistake, we teach each other. (3-Int Ph3 All Umoyomuhle, p. 4: 104-105)*

*... As we work together we are able to help one another. (ibid., p. 4: 109)*

*Toolbox talks. We have our teacher SN who always teaches us about environment. (ibid., p. 4: 112)*

*... Learning to tell others that not everything in the bush must be removed. (ibid., p. 5: 142)*

## Business management

*... If we do not have the knowledge of expanding our business into other fields of work. (ibid., p. 7: 235)*

*Knowledge on how to write a proposal, business profile and to be guided on how we handle the tender. What steps we need to follow when applying for it and what we need to do after we got it. (ibid., p. 8: 237-239)*

**Entrepreneurial identity:** The Umoyomuhle contracting team took leadership seriously. This was evident in the section on practice knowledge which follows next. Their identity was one of “*we have a business and we want more work*”, “*we want to learn how to run our business properly*”, and “*to expand our businesses. In order to do so we need help and need to learn more step by step since this is a complicated process*”. In addition to being serious about business, these contractors were serious about learning which can be seen from a desire to understand and expand their practice and knowledge beyond the immediate practice to a more professional level.

**Practice knowledge:** Figure 6.3 is related to work method and practice and is an extract from the proposal document for the Working for Ecosystems tender (9Doc Ph3 Pr). The steps in preparation and planning are systematic and well presented. Of interest was the concept of “*observers*” who “*serve to investigate the demarcated areas ... which forms the basis of how the area is going to be tackled*”. The content of the excerpt was self-explanatory but execution requires participants with good plant and procedure knowledge to plan how the teams will work the area.

### **Preparation and Planning**

When we are assigned to work in a particular area or contract we work as follows:

We look at the size of the area and check how many hectares need to be cleared of invasive alien plants and how much time given to complete the work given. We therefore establish the planning based on the target species, extent of invasion, geology and topographical phenomenon of the land taking into consideration the main aim of clearing. We therefore divide the area into blocks and mark boundaries with danger tape. We then assign ourselves with respective tasks among which there are observers who serve to investigate the demarcated areas through walking and checking the Geographical phenomenon which forms the basis of how the area is going to be tackled. The findings therefore are discussed such as a steep slope, which needs to be worked from top to bottom in order to eliminate chances of re-growth of invasive alien plants in the area that has been worked through during rainy days as a result of erosion. It is also considered important to work the area from where it is grass land and least invaded towards the more densely confinements in order to allow inhabitants to move towards the denser areas.

**Figure 6.3: Proposal method and practice Umoyomuhle Environmental Services (Pty) Ltd**

Practice knowledge, through training and workplace learning, as well as prior knowledge, all served to connect and consolidate learning with intent (Rogoff, Paradise, Arauz, Correa-Chavez, & Angelillo, 2003). In the following excerpts from the main interview we reviewed practice knowledge and asked what knowledge had been gained since working with WESSA. Replies from the five interviewees were summarised as follows:

#### Learning how to take care of nature

Learning how to take care of nature was repeated a few times. This phrase was used in the context of new knowledge and awareness which did not exist before. There was a progression in that learning how to take care of nature was also learning to protect animals and plants. Knowledge about animals and trees was equated with learning not to kill snakes any more, learning not to kill birds, learning not to take honey from bees, learning not to burn, learning to discriminate between indigenous trees and alien invasive trees. Trees were no longer just trees, there are different types of trees, and bush is no longer just bush. Trees have families. There was also evidence of learning that one must collect rubbish from the bush. PM stated:

*PM: There are also different types of trees of which some you have to cut them and others not. I didn't know at first that trees have families, that there are parents and children, what I knew was that trees are just trees. (3-Int Ph3 All Umoyomuhle, p. 3: 100-103)*

Learning to take care of nature was equated with learning how to care for one another:

*DK: I also learned that you must collect rubbish from the bush not in your home only I didn't know that. I also learn to respect other people and be able to work with each other as before I knew that if you have a problem with someone you must hit that person, I learn how to solve the problem with the people because if you only hitting people you won't grow as people, you need to sit down with the person and to work as a family I have learned a lot at WESSA. (ibid., p. 5: 141-146)*

Learning to take care of nature meant learning to take care of one another but also learning to take care of oneself, especially in potentially dangerous situations:

*NMS: I also learn to be careful in the bush and to be watchful of everything that is happening in the bush, as we work together we are able to help one another. (ibid., p. 4: 108-110)*

The following excerpt illustrated a clear progression from learning how to learning why to take care of nature. Learning why was extracted from training material, teaching others through Toolbox talks, reading, buying books and finding relevant information. The phrase

*“[I] have learned to be careful of small things that we do”* was to my mind significant. There was an explanation of at first I did not know, then I learnt, and then I wanted to know why *“we are cutting these trees”*. Then there was an answer as to why, but the answer was not satisfactory because in some instances, the same trees were grown for commercial purposes, which was explained in the words *“I also wanted to know that if some plants came here for the purpose of growing the economy as we are cutting them now, how will the economy grow now, and that tells me that we are growing the alien plants, but they are grown in a specific area not anywhere”*. SN went on to say that:

*... through learning all of this I enjoyed working with WESSA well. At Umoyomuhle we came having chued up of what is happening and with more understanding of the work. What I also enjoyed is that when WESSA sees that we have gained some knowledge about invasive plants they take us to training where they then teach us about indigenous plants, where they wanted us to know more about indigenous plants not to learn about alien plants only. (ibid., p. 4: 132-137)*

The work-related knowledge had been well learnt. In reply to what new knowledge had been gained, answers included that doing the work of removing invasive alien plants was because alien plants take lots of water, tourists will see their plants instead of our plants (so the economy won't grow), invasive trees take lots of space (of indigenous trees) and use more water.

In finding reasons and learning why we have invasive plants, participants mentioned that people wanted to decorate with ‘that particular tree, accidental invasion, purpose of growing the economy’, but at the same time there was learning of the value of indigenous plants.

Learning through training was valued. Experience was gained through working and training, Workers’ initial training and intermediate level for supervisors and prospective directors was organised through WESSA.

***Summative perspective on learning pathway:*** The Umoyomuhle SMME consisted of a group of five diverse directors. The assortment of skill sets that each director brought to the business enabled several management and administrative roles to be allocated to five directors instead of a single director. Corporate terminology has been adopted for director responsibilities, such as general manager, general manager assistant and supervisor, operational manager, human resources manager, and staff management (9Doc Ph3 Pr). This spreads the work load and meant that a director was always on site, as supervisor or as management. Collaborative learning was taking place as the interview and observation of site work indicated. It was, however, clear that the social-political interactions within the group,

required strong interpersonal relationship skills to be fostered. This group had two strong women at the helm (according to my judgement and perspective). One had the business knowledge and the other had the plant knowledge; both had socio-political skills built from experience as members of committees. The remaining three directors did not question operational management (in the single story of which I am a part). Thus, my understanding was that there existed in Umoyomuhle, a combined learning pathway of learning to get along, learning to negotiate within the group and potentially create a strong SMME if this pathway is followed with motivation and interest to keep the business of the company as the focus.

### **6.2.6 Umhlakuva Enterprises (Pty) Ltd – *work is capacity building***

Umhlakuva Enterprises (Pty) Ltd was one of the pioneer SMMEs to emerge from Working for Ecosystems in 2012. An initial attempt had been made during the first phase to register a company for the two female partners. However, official registration was never received or followed up at the time. When the renewed emphasis on SMMEs was launched, with an emphasis on handing the supervision of the work over to contractors, it was a familiar option to the two women who decided to try again, complete all the documentation and wait to see what happened.

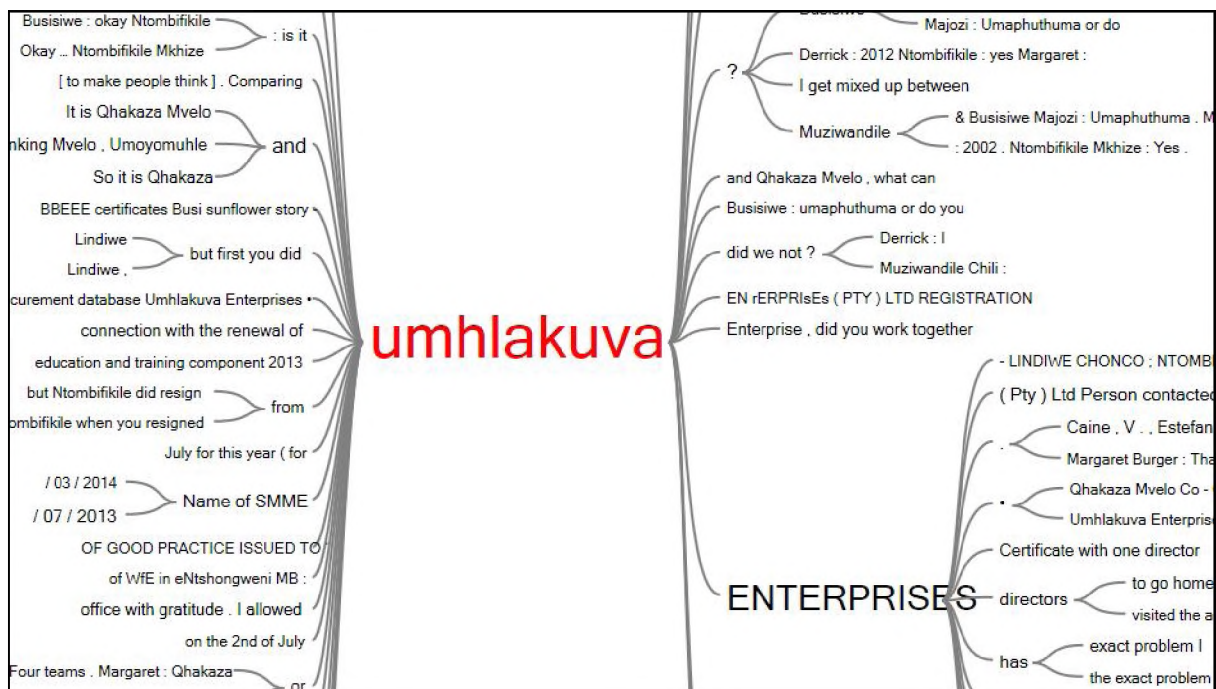
Umhlakuva Enterprises (Pty) Ltd was successfully registered in 2012 (6Doc Ph3 CIPC company download). Section 4.4 refers to an insert in the eThekweni Municipality's Biodiversity Report 2012/2013 which included a story on Umhlakuva (Pty) Ltd. emphasising the education and training of Working for Ecosystems, and referring to the women directors from the semi-rural Ntshongweni area. Both women started as workers in Phase 1 of the Working for Ecosystems programme removing invasive alien plants.

Table 4.3, in Section 4.6, refers to the deliverables in the initial phase of Working for Ecosystems (Sver, 2011). The table lists 17 attendees who attended entrepreneurial training for a two-day training workshop. Sver (refers to two enterprises that were formed as a result of the first Working for Ecosystems intervention, one of which was already established (Lithu Investments (Pty) Ltd.) and the other not being finalised in its registration (Umhlakuva Enterprises (Pty) Ltd). According to the two directors of Umhlakuva Enterprises, the company was never officially registered despite their applications being submitted to SEDA. This is confirmed in Sver's document as "too little too late" (7Doc Ph1 GS 2011).

During 2014 the partnership encountered difficulties resulting in one partner remaining within the company Umhlakuva Enterprises (Pty) Ltd, and the other partner resigning and

opening a new company. This left each with their own company acting as a single director. The new breakaway SMME was named Vikelimvelo Environmental Services (Pty) Ltd., and is discussed in Section 6.2.9 as a company formed out of the experience of running Umhlakuva Enterprises (Pty) Ltd.

Figure 6.4 is a horizontal dendrogram extracted from the NVivo program showing clusters of words linked to Umhlakuva Enterprises (Pty) Ltd from the various Working for Ecosystems data sources. The words clustered on the branches of the diagram enable a narrow (similar) and broad (different) view of items connected within and beyond the immediate context of Umhlakuva Enterprises. Connections are made in the dendrogram to other SMMEs, resigning from the company, interview narratives, times and dates, and administrative links.



**Figure 6.4: Horizontal dendrogram showing clusters of words associated with Umhlakuva Enterprises (Pty) Ltd created in NVivo.**

Umhlakuva Enterprises (Pty) Ltd provided the learning ground for NM to create her own company which she named Vikelimvelo Environmental Services (Pty) Ltd. This company is discussed in the next section.

### **6.2.7 Vikelimvelo Environmental Services (Pty) Ltd – *work is being the best***

**Company administration and compliance:** Vikelimvelo Environmental Services (Pty) Ltd is registered (27Rep Ph2 MDC MB 2014). A proposal was submitted for the new contract, handwritten, in a style that the work knowledge was evident (12Doc Ph3 PR Version 2). In addition, the director's work ethic was known to WESSA management which enabled access to the new period of work in Working for Ecosystems.

**Access and pathway:** Section 6.4 is a step by step analysis of connected knowing and constituents of agency. I used bundles of 'sayings, doings and relatings' and the domains to which these bundles belonged to examine the steps to empowerment through work and training (Kemmis & Grootenboer, 2008). The extracts function as examples from two interviewees, one of whom was NM. The section is evidence of the pathway she followed to obtain access to having a job. In a sequence of ten steps utilising several extracts from interviews, a progression of doing and learning through practice and training became clear. In the following section during the interview conversation we referred to prior knowledge and experience, relevant to running a business:

*Muziwandile: Before you worked in WFE is there any previous work or experience that helped you to open your own business?*

*NM: I was a dressmaker even though I was not that good, but my mom was a good dressmaker. I used to go and sell those clothes, and I can say that's what motivated me. Because when I am at home I would know that if you give me your trouser and you wanted me to fix it for you, I can charge you some money; even though I can't make cuts but I know how to sew because my mother asked me to help her, I did that and then went and sold what we did. (1-Int Ph3 Vikelimvelo, p. 2: 42-48)*

During the site observation, I noticed that some of the women workers wore skirts over their trousers. Trousers form part of the regular uniforms supplied to workers at the start of each contract as protective clothing (PPE). It was explained that some of the women preferred to wear skirts over their trousers. NM had sewn skirts from a similar fabric which she too wore as part of her own work uniform (1\_OBS\_Roosefontein site 2014 Vikelimvelo Team). As the preference for a skirt became evident she had created an additional enterprise which matched the skills she had learnt from her mother. All the skirts were sewn on a manual sewing machine as the pinafores her mother created would have been.

**Management and leadership:** Discussion followed on the steps around financial compliance and it became clear that NM was managing the process and asked for assistance when she felt the need to do so. We spoke about the possibility of claiming expenses for any business, such

as air time, taxi fares, printing, official fees and more. She explained when asked how the accountant could submit income tax returns for the company that she supplied him with her bank statements only:

*NM: Yes, every month on the day we pay our employees we transfer UIF also.*

(1-Int Ph3 Vikelimvelo, p. 5: 142)

It was in the context of income tax returns that we discussed bookkeeping skills. In each interview, the directors valued the presence of the research assistants who could shift the interview from the immediate context of the work to extra individual domains of functioning.

I made notes in a memo as follows:

*[UIF not required with SPWP short contracts as opposed to EPWP, the current contract signed between Working for Ecosystems / WESSA SMMEs are entitled 'SPWP contract', in researching the meaning of special public works projects the Act refers to short-term contracts and UIF payments not being required - mention SANBI and COIDA agreement where a blanket workmen's compensation cover applies, it is then not necessary for each SMME to go through the owner's process of registration, and annual returns; Rob Davies as Minister who stated that BBEEE certificates would not be needed for each small enterprises in the future, the cost of each certificate is R850.00]. (Mail & Guardian, 2013)*

We discussed NM's resignation from Umhhlakuva Enterprises and the formalities that go with resigning from a company. These questions were directed mainly to Muziwandile since he had become the advisor and liaison with the accountant. We then went on to discussing paying UIF and wages as well as banking and the danger of handling cash. It was evident that NM's ability to manage her company and its administration as well as compliance has added to her becoming a successful contractor. Her ability to manage extended to her leadership and the ability she showed in managing her team of workers. There have been occasions in the past where Vikelimvelo was called in to finish work which was behind schedule. NM worked alongside her teams and remained on site with the workers.

***Entrepreneurial identity:*** The director was regarded as an example of a semi-rural woman who has managed to create a strong team of workers, who worked alongside her team, and showed strong leadership skills and an exemplary work ethic. The proposal for the contract was handwritten and rewritten. The passion for work was evident in the writing and came through in the interview, as well as the observation and interview in the field where video footage can be utilised to show why invasive alien plant control is an important biodiversity management tool (1\_OBS\_Roosefontein site 2014\_VikelimveloTeam; 1-Int Ph2 NM).

In the interview with NM (after the Bernina Shop 30 years of business celebration) together with Busisiwe Majosi and Muziwandile Chili, we spoke about running a business:

*NM: In the business, you must be passionate about your work and don't make money your first priority and everything must balance. I did everything for myself as I have decided to work alone so that I would know that it is my responsibility. It is difficult to work with people, it's better to work on your own [referring to company ownership, not team work]. (ibid., p. 3: 70-75)*

**Practice knowledge:** In several of the interviews I asked Busisiwe to recount her personal experience in the context of the invasive alien plant, *Tithonia diversifolia* commonly known as Mexican Sunflower which is found in large numbers in most Durban townships (Section 5.5). This was usually a trigger to open discussion on different perspectives on indigenous and invasive alien plants, as well as an opportunity to explore narratives in respect of socio-cultural meaning attached to certain ways of knowing:

Busi's sunflower story:

*Busisiwe: 'Umaphuthuma' or do you use the name 'unyawolenkukhu'? [use of names for IAPs as well as local use of the plant]*

*Muziwandile: I didn't know that it also called 'unyawolenkukhu'. [feet of the chicken since the leaves are indented and resemble chicken feet]*

*Busisiwe: Ja, because where we come from we call it 'umaphuthuma' [literal translation refers to rush or hurry and the remedy is used for cleansing] but when you go maybe to Umlazi they call it 'unyawolenkukhu'. When I first saw 'unyawolenkukhu' here and Margaret told me it is invasive I was surprised that it is invasive; I asked why, because we are using it and when I grew up it was there so how come it is invasive? I was confused because I thought when you say something is invasive you are talking about something I don't know...*

*NM: Yes, because even Guava is invasive.*

*Margaret: First ask, why was NM attracted to imvelo [nature] what made her think that this is something rather than going to make dumplings or sell chickens or to sew; but this is something that NM wanted to do, why she was attracted to the invasive alien plant control programme? (1-Int Ph3 Vikelimvelo, p. 7: 174-241)*

*NM: I will say nothing really there is nothing that attracted me, because as I have said, as we were working in the community, we were helped by our councillor to find jobs when the contract of making toilets was finished, he then took us and put us in WESSA. They were taking like ten people in each community and that is where I started. I love this job because we just started working; when we started, they trained us which opened my eyes and I started to like this job. We were told that as we are here, we are not here to cut the trees but we are here to protect or to take care of*

*nature or environment. We asked them why are we not cutting everything in the bush? They then explained to us that as the streams are becoming dry if we take out invasives, we would see the streams coming back, and we would be able to show our children who don't know anything. That is where I started to love nature. Because even to start my own business Wayne [project manager WESSA] assisted us and gave us the opportunity to start our own business. (ibid., p. 9: 253-254)*

*Margaret: Where do you think we can do better?*

*NM: My wish Margaret is to see the children in schools being educated about alien plants because before we used to visit the school and teach them for like hours but we were not teaching them about invasive plants we were teaching them about ecosystems, what is an ecosystem sort of things and by that they get to know about invasive and indigenous... (1-Int Ph3 Vikelimvelo, p. 9: 266-269)*

**Summative perspective on learning pathway:** The transcript from video

3\_OBS\_Roosefontein site 2014 serves as example of learning and has been left in the words of the proprietor:

*Margaret: Can you please explain to me why you are clearing the invasive alien plants?*

*NM: We are clearing this because it destroys our environment*

*Margaret: What is the name of this plant?*

*NM: It's Chromolaena, usandanezwe in isiZulu.*

*Margaret: Have you been clearing a lot of this here?*

*NM: Yes, the density level is quite high and that includes other species such as the Spanish Reed (umhlanga).*

*Margaret: What other species have you cleared in this area?*

*NM: We have cleared species such as Lantana camara (ubhici) ...*

*Margaret: Do you love your job?*

*NM: Yes, I can't imagine myself doing any other job, and I'm happy with my team... they are doing a great work.*

*Margaret: Would you like to add more stuff from what you've just said?*

*NM: I have learnt a lot about invasive alien plants. One of the things I learnt is that when your food garden is surrounded by invasive alien plants, it doesn't get enough nutrients from the soil because it competes with the invasive alien plants since they utilise too much water.*

*Margaret: Do you think indigenous plants are good for the environment?*

*NM: Of course, yes... For instance, in Ntshongweni where the invasive alien plants were cleared the streams are reviving. You can actually see the water flows.*

*Margaret: Please explain the reason why you do this job, is it because you make money?*

*NM: Despite making money it's more of preserving the environment. This has nurtured me in such a way that I'm able to teach school pupils when they ask the difference between indigenous and invasive alien plants. I also share that knowledge with my employees in the field. I teach them about fauna and flora so that when they come across a snake in the field they mustn't interfere with it.*

(3\_OBS\_Roosefontein\_Vikelimvelo\_transcript)

### **6.3 Perimeter SMMEs**

Muziwandile Chili was part of the above discussions, and many others. At times, I referred to administrative reports which have been produced by Muziwandile Chili (Appendix B). Below is an example of an extract which reports on interaction between the Vikelimvelo director and Muziwandile of PR Conveniences (Pty) Ltd. This latter company, PR Conveniences (Pty) Ltd, was set up because of an opportunity which became evident in the Working for Ecosystems programme. The category 'perimeter SMME' was then created for tracking peripheral activity in the relationship space of the Working for Ecosystems intervention which, through its influence, facilitated creating businesses. As such, perimeter SMMEs have emerged from the Working for Ecosystems programme and its implementation activities. While this SMME owner was not involved in invasive alien plant control, the work was created through linking skills, access and agency, as well as strong motivation on the part of the owner. The learning pathway led to enrolment in a diploma in public relations and marketing. A total of 33 reports, reporting back on several actions of prospective SMMEs taken to register their businesses and to ensure compliance for the SMMEs, have been used as source documents in this study. While these reports were utilised by the implementing agent, WESSA, the interaction between the Working for Ecosystems directors and the perimeter SMME, PR Conveniences (Pty) Ltd, occurred spontaneously and outside of the immediate Working for Ecosystems immediate deliverables (1-33Rep Ph2 MDC MB 2013-2014). The learning pathway did, however, emerge as a result of access to the legal office environment in which I also work. This enabling environment provided capacity building and constituents for agency (Section 6.7).

Figure 6.5 is an extract of a report on the Vikelimvelo actions reported in the PR Conveniences document. These reports formed part of the study and were sent to WESSA regularly. Attendance at monthly reporting meetings also took place.

On the very same day the director of Vikelimvelo Environmental Services Ntombifikilefikile Mkhize contacted me asking how long it take to remove a director. She told me that Umhlakuva Enterprises Certificate with one director has not come back. I was very surprised because it takes only one month to remove a directors and they submitted their application almost 4months ago. I asked which number they used as a contact person, she said It Lindiwe Chonco s number. I then told her that, It possible that the accountant had contacted Lindiwe a few months ago. I told her, I will go to see the accountant and query about their company amendment. She said she will appreciate that.

**Figure 6.5: PR Conveniences (Pty) Ltd - Extract on Vikelimvelo in (Pty) Ltd report**

Working for Ecosystems serves as a catalyst for creating businesses, not only within but also on the periphery of the programme. In several instances, there has been a trial and error process of who can operate a business with whom. There were directors who fell by the way side and others who have continued. Most companies seem to prefer the option of a single director acting as owner of the company (in Chapter 5 all SMMEs are single directors of their companies; Chapter 6 represents seven entities of which three are single directors). Whichever option is selected all will admit that it is a difficult path to follow. The analytical statements in Chapter 7 reflect on diverse pathways to becoming an SMME.

## **6.4 Practice jurisdictions and SMME practice context intertwined**

Becoming an SMME, a fully functioning SMME, is a process (in examining this process we look for patterns, structures and relationships). Those who have become contractors to Working for Ecosystems have followed their own pathways to the point of entry to Working for Ecosystems, after which a more structured path was followed (training, situated learning and mentoring through the implementing agent, WESSA). Various skills or prior knowledge (either as informal prior learning, or as formal learning) have influenced the process of becoming an SMME, as well as the functioning as an SMME (which requires knowledge, skills and competences – see Sections 6.3 - 6.7).

A window of opportunity existed for workers engaged in Working for Ecosystems fieldwork to become small businesses during Period 3, 2012 - 2013 (Table 4.5). Learning to ‘get on’, shifting entrepreneurial identities, is a continuous process. Change and separations still occur within SMME structures. New combinations are formed (Qhakaza Mvelo Co-operative,

6.2.4); partners prefer to work on their own (Umhlakuva (Pty) Ltd, 6.2.8); and incompatible directors are asked to resign (Thinking Imvelo, Section 6.2.2). Seeking stability is ironically a process of trying out what works best and entails a willingness to try out the new and test change. This is not the same as giving up or abandonment. This is a process of learning, an acknowledgement that functioning is impaired and could be improved through taking action and changing the situation (Makhaye Environmental Services as well as Taumbe & Ndimande derived from Qhakaza Mvelo Co-operative explained in Section 6.2.4).

In Working for Ecosystems, the work involved invasive alien plant removal. The priority of the business was to do its obligatory contract work. Contract work had to be completed at a set quality over an allocated period in each location. Work needed to be completed at a prescribed quality level and according to a standard practice method for remuneration to happen (see contract deliverables in Section 5.2 and Appendix H).

Economic transacting was an additional process (a *modus operandi* leading to an end result). This was a process of fulfilling contract work with the immediate goal of achieving remuneration. Those who remunerated required the work to be completed to a given standard. There were several tasks that needed to be completed to fulfil the contract requirements. Structures have been set in place for verifying that the work was completed per the prescribed standards. These structures presupposed a hierarchy of checking, reporting and auditing.

The contractors did the work, the site-managers checked, gave advice and reported to the project manager; the project manager in turn reported to the programme manager, and so on. Monthly meetings were set aside between the implementing agent and the Restoration Ecology Branch of the Environmental Planning Department to report and discuss, per a set agenda, on the work taking place. Additional municipal and relevant government departments were invited to these monthly report-back meetings to provide all stakeholders with contextual knowledge of the Working for Ecosystems work. A large network of stakeholders existed (see Model 1.1).

The areas where work place have a designated municipal custodian within the city structures of Natural Resources Management. Working for Ecosystems task teams have supplemented the municipal workers engaged in invasive alien plant control (21-27Doc Ph1 ETM Biodiversity Reports). The immediate connecting role players and stakeholders are invited to attend monthly meetings. In addition, site meetings took place. Site meetings served the purpose of observation, enquiry and liaison as a physical visit to the site where the invasive

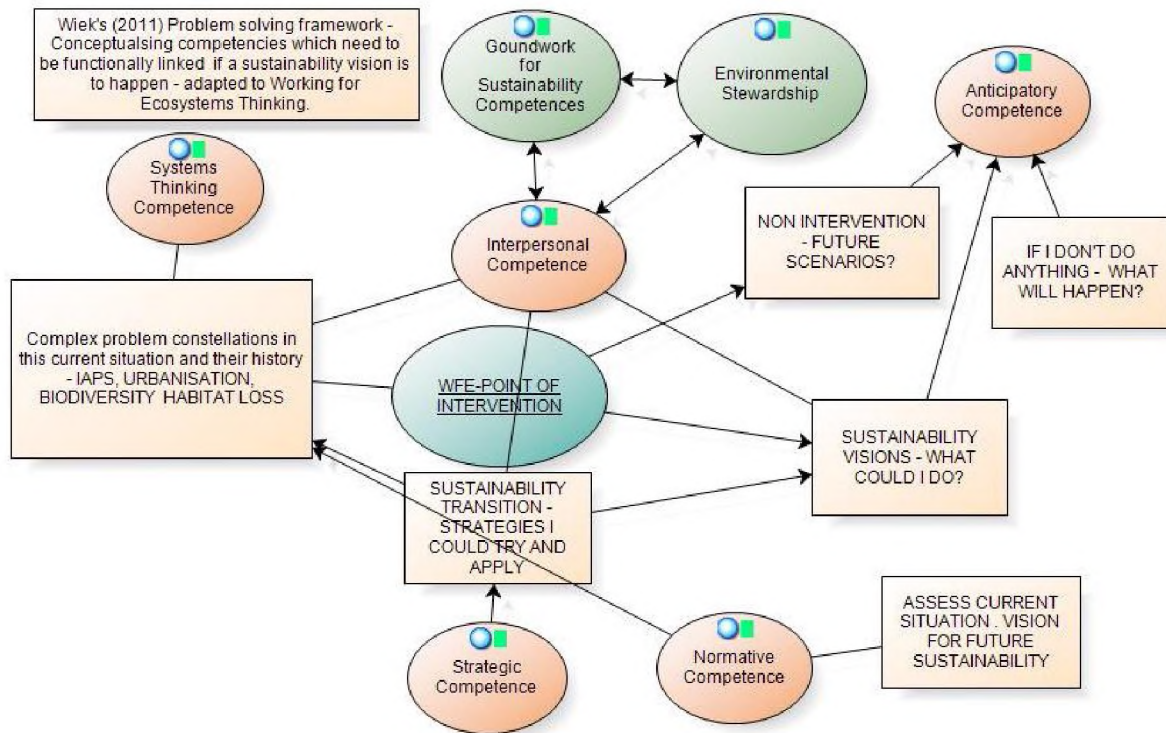
alien plant control was taking place (source documents Phase 3: WFE Hulett's Bush Site meeting Oct. 2014, 2\_Report site meeting MB; WFE Roosefontein Site meeting Sep. 2014, 1\_Report site meeting MB).

This section describes the arrangements, of the 'extra-individual realms' of 'cultural-discursive, material-economic and socio-political' domains that form the relational structures which sustain the Working for Ecosystems entity (Section 2.6). The contractors who make up the SMMEs which have emerged from (or are supported by) these interacting structures have their personal 'individual' knowledge and identity reference frameworks. The workplace practice of invasive plant control work and SMME work are shaped by 'mediating preconditions' and 'unfold in human and social action' (Kemmis et al., 2012). Section 1.5 refers to the City context and the work of the Environmental Planning Department as critical to future resilience and sustainable development. The sustainability competences description follows in the next section.

## **6.5 Environmental stewardship – groundwork for sustainability competences**

The act of redrawing and adapting the competences for the sustainability diagram by Wiek et al. (2011, Figure 1, Section 2.7) started with the environmental stewardship concept in mind. As stated in Section 3.6, Phase 2 of the research examines changing practices. In the data analysis overview, it became clear that the capacity for environmental stewardship could not exist without interpersonal skills. The Wiek et al. (2011) model displays the relevance of individual competencies as part of a 'problem-solving framework' and relates other competences to the critical skill of interpersonal competence. I therefore created a model in NVivo using the Wiek descriptive diagram but added environmental stewardship as a critical link in Model 6.1 below. I then included the point of intervention as Working for Ecosystems since this was the intermediary factor to enable the learning pathways to sustainable livelihoods.

**Model 6.1: Competences for Sustainability diagram adapted to include the concept of Environmental Stewardship (adapted from Wiek et al., 2011)**



The groundwork for developing sustainability competencies starts with the development of skill sets in self-understanding and an understanding of others. Through communication and discourse, further capacities to ‘do’ and ‘act’ happen. These ‘doings’ enable agency and access and the ‘socially produced self’ becomes a connected member of society. The ‘relatings’ build self-identity, enable greater ‘doings’ and *enable a leap into the practice of SMME work*.<sup>12</sup> An empowerment process is set in motion which, through training and learning (as part of the practice), builds on prior knowledge and creates a feeling of legitimacy to move forward. The total of 133 pages of 13 transcribed interviews and additional data seem to point to a learning pathway that continues only if people are able to get on with one another hence the centrality of interpersonal competence in Model 6.1 above. This claim is made in the context of sustainability competences and the reflexivity that

<sup>12</sup> It is my assumption that the offer of an SMME pathway was taken up spontaneously as a result of a possible opportunity that may work out for SMMEs, and not necessarily as a result of a planned premeditated pathway, arising from passion, but rather out of necessity.

accompanies forward thinking and normative thinking (see Section 2.7 for a more detailed description of the competences). In the context of developing competences for sustainability in this chapter, and the context of practices in Chapter 5, as well as the larger context of this study of poverty alleviation, public works programmes, access to the green economy and the New Growth Path (South Africa, 2009), the discourse on the deeper meaning of business ethics has relevance:

*... The purpose of business ethics is to help students understand that both egoism and altruism, for example, can be problematic positions. The work of business ethics thus seems to be to identify which relations and interactions between agents and systems - including processes of decision-making, structures and institutions - impact negatively or positively upon a specific ethically-problematic situation. Accordingly, we should shift our focus from agents to the constituents of agency with in a specific local and global context. In order to achieve this, an approach that emphasises the context in which both formal and informal systems are continued (rather than a strictly theoretical agent-orientated approach), should be employed in teaching business ethics. (Hattingh & Woermann, p. 6., my emphasis by underlining)*

Competences in respect of sustainability narratives were coded in the data of this study as sub-themes within knowledge, competence and groundwork for sustainability competences. Sustainability groundwork described the Working for Ecosystems programme as represented by the site managers and key participants of this study. Additional data was drawn from the proposals submitted by contracting SMMEs to WESSA for the Working for Ecosystems contracts for the period 2014-2015. These proposal documents provided a good indication of understanding and levels of skill-sets and work context. The contractors were instructed to submit proposals of how and why the invasive alien plant removal was to be completed.

Sustainability competences are linked to management strategy, and explanatory documents and reports. Whilst sustainability competences form part of policy, these competences are evident in site managers and in only some interviews with contractors as forward thinking narratives. The sustainability competences require groundwork to happen. The eThekweni presentation (prepared for COP17, 2011) refers to tackling climate change as 1) a project based approach; 2) project implementation preceding policy; 3) trying by doing approach; and 4) successes and failures recognition (Tooley\_O'Donoghue\_ETM\_Climate Change\_PP\_2011). Figure 6.6, shown below, is a list of documents and photographs analysed for the theme groundwork for sustainability competences.

## Goundwork for Sustainability Competences Summary

Name	In Folder	References	Coverage
Errol Douwes_WfE youtube_transcribed_E	Internals\\Documents\\Phase 1 - TIME	1	24.00%
Greg Sver_A Rough Guide to IAS_Section	Internals\\Documents\\Phase 1 - TIME	9	12.55%
Greg Sver_At the Coal Face_Section 5	Internals\\Documents\\Phase 1 - TIME	7	10.32%
Greg Sver_But did it work_Section 6	Internals\\Documents\\Phase 1 - TIME	6	4.47%
Greg Sver_Dramatis Personae_Section 8	Internals\\Documents\\Phase 1 - TIME	8	4.87%
Greg Sver_Linda saves the world from alien	Internals\\Documents\\Phase 1 - TIME	10	7.29%
Greg Sver_The Genesis of WfE_Section 4	Internals\\Documents\\Phase 1 - TIME	8	10.35%
Katheryn Terblanche_WfE youtube_transcri	Internals\\Documents\\Phase 1 - TIME	8	12.88%
Linda Mlotshwa	Internals\\Interviews\\Phase 1 - TIME	35	26.64%
Linda Mlotshwa_Biodiversity Report_EPC	Internals\\Documents\\Phase 1 - TIME	3	32.30%
Linda Mlotshwa_Notes on meeting_MB	Internals\\Documents\\Phase 1 - TIME	12	14.38%
Lindelani Zuke	Internals\\Interviews\\Phase 1 - TIME	15	6.17%
Lindelani Zuke_Notes on meeting_MB	Internals\\Documents\\Phase 1 - TIME	2	2.63%
Lindelani Zuke_WfE Minutes of the meetin	Internals\\Documents\\Phase 1 - TIME	1	2.07%
Mlungisi Mathenjwa	Internals\\Interviews\\Phase 1 - TIME	40	11.99%
Sithembile Shoji	Internals\\Interviews\\Phase 1 - TIME	17	15.63%
Wayne Stead_Notes on meeting_MB	Internals\\Documents\\Phase 1 - TIME	6	12.73%
Tooley_O'Donoghue_ETM_Climate Chang	Internals\\Documents\\Phase 1 - TIME	16	34.93%
1_PIC LZ MZINYATHI	Internals\\Observation\\Phase 1 - TIM	1	100.00%
2_PIC WATER MZINYATHI	Internals\\Observation\\Phase 1 - TIM	1	100.00%
3_PIC MM ROOS	Internals\\Observation\\Phase 1 - TIM	1	100.00%
4_PIC LM ROOS	Internals\\Observation\\Phase 1 - TIM	1	100.00%
5_LZ MM ROOS	Internals\\Observation\\Phase 1 - TIM	1	100.00%
6_LZ ROOS	Internals\\Observation\\Phase 1 - TIM	1	100.00%
7_LZ CONGO	Internals\\Observation\\Phase 1 - TIM	1	100.00%
8_LZ POMPOM	Internals\\Observation\\Phase 1 - TIM	1	100.00%



**Figure 6.6: List of documents and photographs analysed for the theme ‘groundwork for sustainability’ competences [Source: M. Burger, 2013; 2014]**

Analytical statement seven (Section 7.3) refers to the groundwork for sustainability competences, where these competences are evident and the importance of interpersonal skills for any competency development to take place. The building of capacity is an initial pathway of access (first) and agency (second) which I illustrate in the steps ‘what is work?’ contained in the following Section 6.6.

## 6.6 Training as skills development

Training is regarded as an important component of EPWP work. Special Public Works Programmes (SPWP) are similar in all respects to those of EPWP and also state that two days of training are required for every 20 days of work. Work is practice-based and learning continues as training in the work environment. In Working for Ecosystems invasive alien plant training forms part of the implementing agent's obligations, and is currently facilitated by the WESSA Ecosystems Services business unit (WES). The WESSA Stop the Spread educational campaign provided much groundwork, in advocacy to enable further initiatives in the field of invasive alien plant control to develop (Section 4.4).

The Working for Ecosystems training manuals and curriculum have been specifically produced for the EPCPD of the eThekweni Municipality by WES. Municipal staff from other departments such as Nurseries, Parks and Natural Resources, also have an allocated number of training days within the Working for Ecosystems budget for invasive alien plant training. The Working for Ecosystems training courses are custom designed and not accredited. Accreditation would increase training costs and as a result, limit attendance numbers.

Training takes place at basic (general worker), intermediate (supervisor, field manager) and advanced levels (project manager) for the workers and SMMEs over a three- to five-day period. Training is theoretical as well as practical. Workers are introduced to invasive alien plant control with a general introduction, plant identification and control methods course. The building foundational knowledge course is presented in the mother tongue as follows:

### **Day 1**

Introduction to environmental issues  
Background, definitions (e.g. biodiversity, biome, ecosystem, climate change)  
Invasive alien plants  
Definitions (e.g. indigenous, alien, invasive alien), growth forms, impacts  
Invasive alien plant identification

### **Day 2**

Practical identification of invasive alien plants (area specific)  
Control methods  
PPE, field safety and awareness, mechanical control methods, herbicide awareness, chemical control methods, integrated control methods

### **Day 3**

Awareness  
Health and Safety, First Aid, HIV/Aids

The general worker induction training programme is aligned to the SAQA unit standards at NQF levels 1 to 2, details of which can be seen in the summary schedule below in Table 6.1, and in the full version in Appendix J. The unit standards listed below originate from different fields of work. These are an indication of the cross disciplinary skills required in the practice of invasive alien plant removal (pamphlet WESSA 2014, WES Invasive Alien Training Matrix; SAQA Unit standards and outcomes).

**Table 6.1: WES Training Unit Standards and Outcomes general worker level**

<b>UNIT STANDARD TITLE</b>	<b>SPECIFIC OUTCOME 1</b>
Practice environmental awareness	Demonstrate an understanding of how the environment works
Understand the nature and importance of conservation	Describe the scope of conservation.
Combat problem plants	Identify all key target problem plant species in a conservation area.
Apply herbicides to noxious weeds	Prepare for chemical weed control.
Demonstrate knowledge of basic safety in forestry operations	Explain the duties of employers and employees and identify the safety representative and first aid person for the specific work place.
Explain basic health and safety principles in and around the workplace	Explain both employer and employee duties with regard To occupational safety and health in the workplace.
Describe the functions of the workplace health and safety representative	Describe the framework of workplace health and safety legislation pertaining to health and safety representatives.
Apply health and safety to a work area	Identify potential hazards in the work area.
Identify, explain and demonstrate standard safety procedures during active wildfire suppression	Identify unsafe acts and conditions and explain standard safety rules and measures applied to overcome dangerous fire situations.
Demonstrate an understanding of factors that contribute towards healthy living	Explain the basic principles of personal hygiene.
Counsel workgroup members in respect of HIV/AIDS	Explain and discuss various approaches to counselling
Demonstrate an understanding of HIV/AIDS and its implications	Describe and explain nature of HIV/AIDS.

The Intermediate course is aimed at the supervisor, field manager level. A deeper level of knowledge is required in addition to a collaborative, interactive method utilised by the facilitator of the course with learners. Specific reference is made to the following areas:

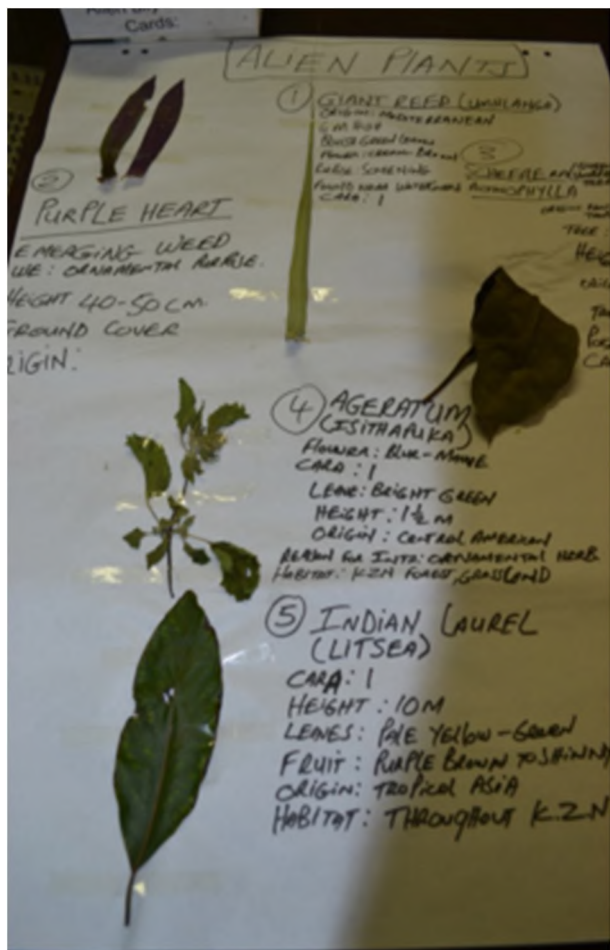
Herbicide application training

Improved understanding of herbicide usage

Field manager reporting (how to be proactive, show initiative, be open to see more)

Practical chemical control on site

As the level of understanding of theory and practice of invasive alien plant control work and management increase, so does the expected application skill (J. Rodel, (personal communication, April 4, 2013). These increased skills are aligned to critical thinking and questioning. Initially knowledge requirements focus on definitions of relevant concepts used in the practice. Dialogue is encouraged and practical examples of invasive plants from personal home areas are brought to the sessions for discussion. Posters are made in groups for further collaboration. The EPCPD and conservation partners have produced updated versions of posters and flash cards as guides entitled, “Beautiful but Dangerous Invasive Alien Plants of the eThekweni Municipal Area” (2014, EPCPD). These guides list alternative indigenous plants. Training materials for the course participants consist of a manual for each session made up of the WESSA KZN Invasive Alien plant book, posters and flash cards as well as notes, a worksheet and work book.



**Figure 6.7: Poster made during WES training of invasive plants brought from a home environment for a training session (Photo: M. Burger, May 2013]**

The courses build on one another and include a facilitator’s guide. Trainers may be SMME contractors, field managers and project managers. Expert skills sets such as mapping, EPWP/SPWP compliance, administrative assistance, and accounting skills have been provided as focused course days or provided in a mentoring one on one process (W. Stead, personal communication, April 9, 2013). Several contractors have been able to complete a Pest Control Operator’s qualification (PCO course), which refers to a registered licensed qualification. The field of invasive plant control requires knowledge in the practice niche of invasive alien plant control and not the broader field of pest control.

Further Education and Training Certificate Pest Control Operations is a level 4 qualification (SAQA, ID 57830). The PCO certification has an annual licence requirement and is a sought-

after registration since it provides access to contract work with larger companies who require strict compliance in respect of herbicide application practices.

## **6.7 Connected knowing and ‘constituents of agency’**

In a search for the components of agency within the narratives of the SMME contractors, I could identify dispositions connected to opportunities, a capability to access opportunities and a context that facilitates a pathway to work (as jobs).

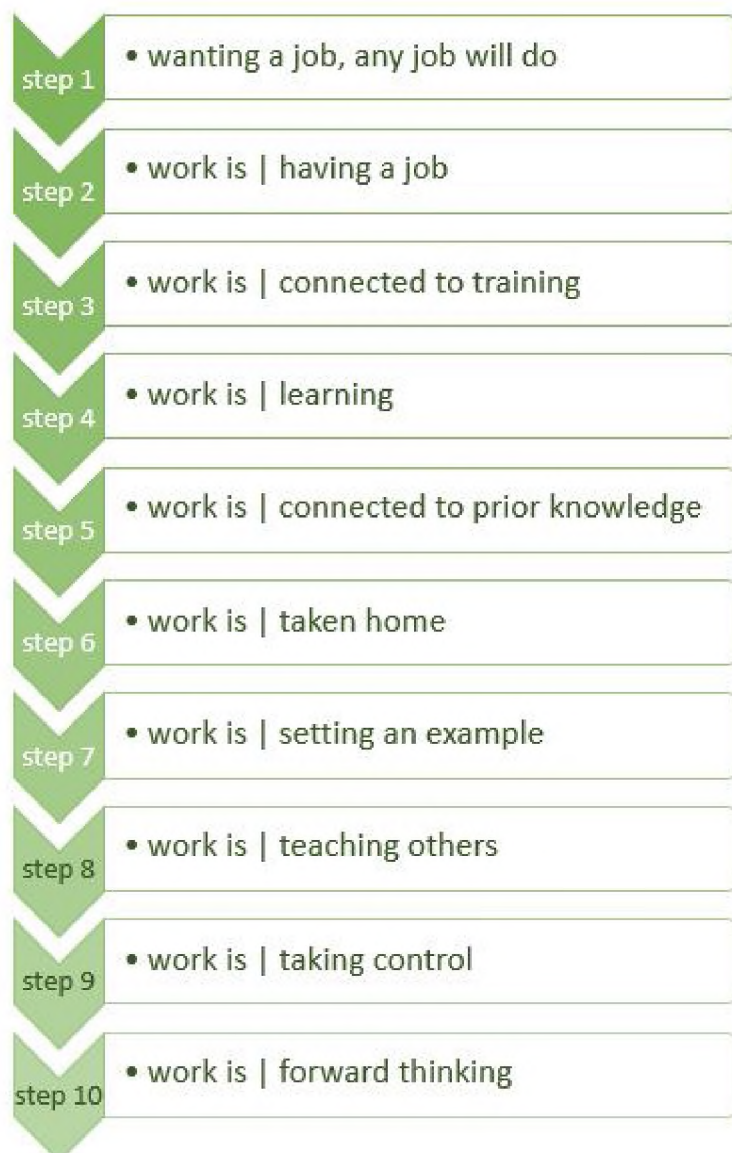
Work within the paradigm of Working for Ecosystems as well as the relationship created with contractors who do the work, aligns with policy in respect of the 2015 – 2020 period of consolidation of Government’s New Growth Path. In the appendix of the policy document on job drivers, reference is made to ‘seizing the potential of new economies’ such as the ‘green economy’ and growing the ‘knowledge economy’ (amongst others that of green technology connected to biotechnology; this links to my understanding to the discourse by the Parliamentary Monitoring group on Indigenous Knowledge Systems in the context of ownership, hegemony of Western knowledge and Intellectual Property Rights; see Section 5.4.3 of this study). Such jobs (amongst others) are located in natural resources management and recommended core actions of ‘special measures for SMMEs and co-ops’ are mentioned. The ‘social economy’ locates jobs in co-ops (amongst others) community and social initiatives with in the ‘public sector’ of ‘youth employment’ and ‘community works programmes’ (South Africa, 2009, p. 35). These policy details are clearly connected to the happenings on the ground where the interviewees refer to an assortment of jobs (to which I refer next) which they access through their local ward councillor as a representative of the municipal structure.

In the next paragraph, I set out ten steps which relate to personal pathways extracted from narratives, which in turn refer to the initial phase of Working for Ecosystems (Section 4.3 Ntshongweni Community induction) – steps in the process which start in the acceptance of ‘any job’ lead on to learning and empowerment pathways. I discuss each step separately and why it is relevant as part of the process of change.

Evidence from data of the narratives of each of the key informants (Chapter 4) showed a learning pathway similar to the steps set out in the example of learning and empowerment pathways. I was however primarily focused on this group and their sustainability competences as field managers, project manager, SMME owner and auditor of the WFE teams, and as an environmental education officer. The ten steps of looking for a job, and the

learning and empowerment pathways etc. was a common narrative in almost all cases of SMMEs' directors and Co-operative members, as well as the key informants. Appendix M substantiates the claim of a generalised pathway for participants except where professional or tertiary learning happened before 'looking for a job', or strong personal agency was involved (a case of creative dressmaking and a case of completing grade 12 business economics), or illness intervened (in two cases).

The summary at the end includes a link to the 'sayings, doings and relatings' and how the succession from individual to extra individual realms is evident in the "practice as constituted and reconstituted by human agency and social action" (Kemmis 2009).



**Figure 6.8: Looking for a job - learning and empowerment pathways**

***Extracts from interviews in support of the above 10 steps of learning and empowerment pathways:***

➤ Step 1 – wanting a job, any job will do

*NM: Before I worked for a company but I didn't work that long... there is nothing that attracted me because as I have said, we were working in the community we were helped by our councillor to find the jobs. When the contract of making toilets was finished he then took us and put us in WESSA (in Ntshongweni). (1-Int Ph3 NM, p. 8: 234-238)*

*SS: It was part-time but some sort of the contract, every time you needed to be there. If they start at six you need to be there, close the road [for traffic calming] and then since after that as I was taking everything that's coming... I just told the ward councillor's wife that I'm looking for anything that's coming. (8-Int Ph1 SS, p. 6: 22-26)*

➤ ***Analysis***

Section 2.3 on poverty as a disqualifier to a decent life quoted Sen (2001, p. 87) and the capability theory connected to social structures, education and a freedom to choose; where “the extreme case of insecurity is the certainty of deprivation, and the absence of any chance of avoiding that fate”. The deeper analysis of these two extracts assisted the first step in the analysis of any job will do... we bear in mind the phenomenon in South Africa of discouraged workers who no longer seek jobs.

➤ Step 2 – work is having a job

*NM: I did work as a labourer for three years then was appointed as supervisor [for two years] then after that I then started the business. (ibid., p. 1: 19-20)*

*SS: He came and he told us that we are going to be cutting out, alien invasive plants, so that was new words for us all. We were worried about getting a job... (ibid., p. 1: 29-30)*

➤ ***Analysis***

Having a job entails more permanency, stability and sustainability. According to theory, those with jobs face less risk and have a greater ability to withstand disaster (Section 2.9). Regular income would mean forward planning could become a reality. The opposite is contract work. There is the issue of contracts ‘in breaks forms’ with contractors receiving a smaller slice of the pie (Section 7.4.3); EPWP vs SPWP - where Special Public Works Programmes are defined as “short-term, non-permanent, labour-intensive programmes initiated by government and funded, either fully or partially, from public resources to create a public asset” (South Africa. Department of Labour [DOL], 2002). The Working for Ecosystems contracts signed by SMMEs were SPWP contracts and were as little as one

month in duration in the early 2015 contracts. This has the implication that UIF is not payable, an administrative burden lifted from the SMMEs but disadvantageous to the worker. Workers are remunerated according to a fixed rate in return for a fixed quantity of work which is task-based.

➤ Step 3 – work is connected to training

*NM: When we started, they trained us which opened my eyes and I started to like this job. (ibid., p. 9: 247)*

*SS: At that time, we were not aware that we are doing training because when they told us that we would go to training we were expecting a class with a desk... each guide did an interpretative trail for example we saw a spider, and he would tell us this is a kite spider, or a rain spider, but we still didn't know that we're at training, we thought we were going to be taken to training. (ibid., p. 2: 64-68, emphasis mine)*

➤ **Analysis**

EPWP training requirements are two days of training for every 22 days worked. In SPWP specific mention is made of entrepreneurship training, training with structured workplace learning, and identification of possible career paths available to workers exiting the SPWP. The extract above from the interview “when we started they trained us which opened my eyes and I started to like this job” clearly links training (which leads to the next step of learning), a new experience of “opening my eyes” and a further reinforcement in the comment “I started to like this job”, which entailed a change in attitude. It is my assumption that an elevated level of engagement through quality training, stimulated learning and shifted the attitude which we see in step one as “there was nothing that attracted me” or “taking anything or everything” that was offered as work for the sake of a source of income.

➤ Step 4 – work is learning

*NM: We are not here to cut the trees but we are here to protect or to take care of nature or environment ... (ibid., p. 9: 249)*

*SS: While we were there, there were people coming telling us how it is done ... [guiding]. They would take us to the forest, in grasslands and water studies and so on and then we came back and went to Mthunzini [Twinstreams Environmental Education Centre] and we did the same ... (ibid., p. 3: 94-98)*

➤ **Analysis**

Learning, to Sfard (1998), was both ‘acquisition and participation’. Working for Ecosystems is workplace learning and learning in and through practice which takes place in a participative environment. However, in training, new knowledge is acquired, and the above

extracts are an attempt to show how, immersive situated learning (even though it was a question of ‘*telling us how it is done*’) of visiting the forests, grasslands and rivers, reinforced newly acquired learning. Heikkinen, Huttunen, Syrjälä and Pesonen (2012, p. 8) listed a *principle of evocativeness* for validation of action research as part of narrative enquiry. This principle asked “how well does the research on narrative evoke mental images, memories or emotions related to the theme?” The narrators’ stories certainly engender the principle of evocativeness to the listener.

➤ Step 5 – work is connected to prior knowledge

*NM: My mom was a good dressmaker and I used to go and sell those clothes and I can say that is what motivated me. (ibid., p. 2: 44)*

*SS: My granny would have a big sack of beans, mealies and she would sell that, my granny was rich... there was no paper even in her garden anywhere even though they were burning the papers they would always dig a hole. When it was almost full she would cover it up and maybe start a garden there on top of it. (ibid., p. 7: 225-229)*

➤ **Analysis**

Scaffolding of learning in the context of business skills is relevant in this study as prior knowledge and claims that ‘what I already know assists in the process of acquiring new knowledge’. A skills assessment completed with the Qhakaza Mvelo members prior to the official registration of the co-operative supported the understanding that “just because people are illiterate it does not mean that they are incapable”. Rogers (2002) pointed out that after many career years of supporting the link between literacy and development he had come to realise that “900 million people cannot be excluded from their own development for ever simply because they are illiterate”. Rogers used poignant examples where it was not necessary to become literate before learning a skill such as sewing, or planting for sustaining livelihoods. He further questioned which literacy was being taught; if this was out of context and a learning programme applied uniformly, it is not ‘contextualised’. Access to literacy skills is useful and will be of value if it is relevant to the context in which that person functions.

➤ Step 6 – work is taken home

*NM: Our house was surrounded by Lantana and Yellow bells, Yellow bells caused a problem since their roots damaged the floor. (ibid., p. 2: 29-30)*

*SS: When you go home, you will find that we have Syringa tree in the yard, Guava tree and the fence is Lantana. (ibid., p. 5: 172)*

➤ **Analysis**

Squire (2012) was quoted in Sections 3.2.3 and 4.6. She referred to Narrative Enquiry in a description of ‘similarisation’ narratives (as connecting across boundaries) and familiarisation narratives (as having strong commonality and supporting change). These narratives build equivalence rather than individual identity, within the context of social connection. In the above extract for step six where what was learnt, if work was taken home, a process of internalisation was taking place and new knowledge was applied in the home context. The phenomenon of applying workplace knowledge to one’s own environment, entails a scaffolding to step seven which pertains to setting an example to the broader community.

➤ Step 7 – work is setting an example

*NM: I then taught my family members and told them that we must get rid of that lantana and after we have removed this lantana and in the place where we were planting lantana that place became rich soil. (ibid., p. 1: 25-26)*

*SS: Sometimes my story motivates people. It is so good to tell, it gives them hope. (ibid., p. 10:325)*

➤ **Analysis**

Knowledge is extended into the community; knowledge is internalised and as a result showing others how and why takes place. In Kemmis and Grootenboer’s practice architecture (2008), self-understanding and understanding formed part of the socio-cultural domain. Step seven of work as setting an example leads to the next step of teaching others.

➤ Step 8 – work is teaching others

*NM: They also ask that if we say Syringa and other trees are invasive which plants are indigenous and we tell them umdoni, flat crown... (ibid., p. 7: 189-90)*

*SS: They must learn to buy locally grown food, they also need to be taught to plant and go back to planting, even if you don’t have space you teach them about permaculture gardening, you can plant in all the pots, all those things... (ibid., p. 7: 234-237)*

➤ **Analysis**

Work is social and seldom solitary. In practice in a workplace setting it is interactive and reciprocal and collaborative.

➤ Step 9 – work is taking control

*NM: In the business you must be passionate about your work and don't make money your first priority and everything must balance. I did everything for myself as I have decided to work alone so that I would know that it is my responsibility. (ibid., p. 3: 70-73)*

*SS: Sometimes you even find a professional who does not know, even find that you are busy talking, teaching, this person is looking at you because you start getting worried because you know he is a professor and because they were writing down a few sayings and then at the end of the day they come and ask you how did you know this, I did not know this. Then you feel more confident. (ibid., p. 12:398-402)*

➤ **Analysis**

Stability, through work and regular income, encourages future planning. This is empowering and enables planning and self-improvement (see Section 4 on resilience as a buffer to climate change and part of the strategy of the Environmental Planning and Climate Change Protection Department of the City).

➤ Step 10 – work is forward thinking

*NM: My wish is to see the children in schools being educated about alien plants, what is an ecosystem sort of things and by that they get to know about invasive and indigenous. (ibid., p. 9: 266-268)*

*SS: Things started happening, when the shop came, it looked like an easy thing to do, if you have money go and buy, why do you need to grow beans if you can buy beans, why do you need to grow mealies if you can buy? And we were not aware our cultures would end up disappearing, because every time there is something new, people would just go the easy way... (ibid., p. 7: 225-230)*

➤ **Analysis**

Planning for the future, participating in lifelong learning becomes a reality through stability. It is then that one can become reflexive, enthusiastic and imaginative.

***Learning and empowerment pathways in to SMME development:*** In reviewing the data, it was evident that not every worker wanted to become an SMME (15Doc Ph1 LZ MB 2013). In the learning and empowerment pathways to SMME development, an important step is that of having a mind-set for work. This means that step 1 and 2 of the previous section on ‘wanting a job, any job will do, and having a job ’ could be excluded from the pathway to

becoming an SMME. Work experience, especially continued work experience, improves the possibility of entrepreneurship. When work is connected to training, understanding changes: *“training opened my eyes and I started to like this job”* (1-Int Ph3 Vikelimvelo). Training and learning is connected to pedagogy. The situated learning taking place in the examples above serve as examples of engaged participation which demonstrate how the project assists motivation (intrinsic and extrinsic) through forms of engaged participation and social connectedness (Sfard, 1998; Lupele & Lotz-Sisitka, 2012).

Prior experience related in any way to a form of business or trade enables a scaffolding of learning (analytical statements 7.4.5, 7.4.6 and 7.4.8 have relevance; 4Doc Ph3 Qhakaza Skills Assess 2012). However, in each interview or skills assessment, the relation between informal skills and formal skills of being an SMME, had to be pointed out to directors as connected to the current context of becoming an SMME. Understanding skills acquired through experience forms part of the educational framework, as Recognition of Prior Learning (RPL) (Cooper, Ralphs, Moodley, & Deller, Prior Learning Centre, undated; SAQA Policy Document, 2002, UNISA 2009 Reader; Lotz-Sisitka & Olvitt (2009).

Once learning is internalised and ‘taken home’, teaching others forms part of collaborative and proximal learning. Learning and education is empowerment, and enhances independence and enables critical thinking. Being an SMME is not connected to a formal accredited learning phase. In the next section, the training within Working for Ecosystems is briefly discussed, as well as how the training is located within the South African Qualifications Association (SAQA) framework. In addition, skills associated with accredited programmes are reviewed.

In the summary below of the ten steps to changing mind-sets, I have added the most obvious level in which the narratives connect to Kemmis’ domains of individual and extra-individual realms “mutually constituted through practice” (Table 2.2) (Kemmis & Grootenboer, 2008).

<p><b>step 1</b> wanting a job   any job will do</p>	<p>NM: <u>but I didn't work that long... there is nothing that attracted me</u></p> <p>SS: <u>I was taking everything that's coming... I just told the ward councillor's wife that I'm looking for anything that's coming</u></p>	<p>Material   economic</p>
<p><b>step 2</b> work is   having a job</p>	<p>NM: <u>I did work as a labourer for 3 years then was appointed as supervisor [for 2 years] then after that I then started the business</u></p> <p>SS: <u>he told us that we are going to be cutting out, alien invasive plants, so that was new words for us all. We were worried about getting a job...</u></p>	<p>Material   economic</p>
<p><b>step 3</b> work is   connected to training</p>	<p>NM: <u>when we started they trained us which opened my eyes and I started to like this job</u></p> <p>SS: <u>at that time we were not aware that we are doing training because when they told us that we would go to training we were expecting a class with a desk...</u></p>	<p>Cultural   discursive</p>
<p><b>step 4</b> work is   learning</p>	<p>NM: <u>we are not here to cut the trees but we are here to protect or to take care of nature or environment</u></p> <p>SS: <u>while we were there, there were people coming telling us how it is done ... [guiding]</u></p>	<p>Cultural   discursive</p>
<p><b>step 5</b> work is   connected to prior knowledge</p>	<p>NM: <u>my mom was a good dressmaker and I used to go and sell those clothes and I can say that is what motivated me</u></p> <p>SS: <u>my granny would have a big sack of beans, mealies and she would sell that, my granny was rich...</u></p>	<p>Material   economic</p>
<p><b>step 6</b> work is   taken home</p>	<p>NM: <u>Our house was surrounded by Lantana and Yellow bells, Yellow bells caused a problem since their roots damaged the floor</u></p> <p>SS: <u>when you go home, you will find that we have Syringa tree in the yard, Guava tree and the fence is Lantana</u></p>	<p>Material   economic</p>

<p><b>step 7</b> work is   setting an example</p>	<p>NM: <u>I then taught my family members and told them that we must get rid of that lantana and after we have removed this lantana and in the place where we were planting lantana that place became rich soil...</u></p>	<p>Material   economic</p>
	<p>SS: <u>Sometimes my story motivates people. It is so good to tell, it gives them hope</u></p>	<p>Cultural   discursive</p>
<p><b>step 8</b> work is   teaching others</p>	<p>NM: NM: <u>they also ask that if we say Syringa and other trees are invasive which plants are indigenous and we tell them umdoni, flat crown...</u></p>	<p>Cultural   discursive</p>
	<p>SS: <u>They must learn to buy locally grown food, they also need to be taught to plant and go back to planting, even if you don't have space you teach them about permaculture gardening...</u></p>	
<p><b>step 9</b> work is   taking control</p>	<p>NM: <u>I did everything for myself as I have decided to work alone so that I would know that it is my responsibility</u></p>	<p>Material   economic</p>
	<p>SS: <u>Sometimes you even find a professional who does not know, even find that you are busy talking, teaching, this person is looking at you because you start getting worried because you know he is a professor and because they were writing down a few sayings and then at the end of the day they come and ask you how did you know this, I did not know this. Then you feel more confident</u></p>	<p>Cultural   discursive</p>
<p><b>step 10</b> work is   forward thinking</p>	<p>NM: <u>my wish is to see the children in schools being educated about alien plants, what is an ecosystem sort of things</u></p>	<p>Cultural   discursive</p>
	<p>SS: <u>things started happening, when the shop came, it looked like an easy thing to do, if you have money go and buy, why do you need to grow beans if you can buy beans, why do you need to grow mealies if you can buy? And we were not aware our cultures would end up disappearing, because every time there is something new, people would just go the easy way...</u></p>	

Figure 6.9: Summary of ten steps in learning and empowerment pathways connected to Kemmis and Grootenboer's (2008) theory of multi-dimensional domains

## 6.8 Conclusion

Chapter 6 examined the knowledge, practice and competences as learning pathways towards capacity development and sustainable livelihoods. Practice jurisdiction describes the operational parameters of the ‘extra-individual realms’ of ‘cultural-discursive, material-economic and socio-political’ domains that form the relational structures which guide the Working for Ecosystems entity as a functioning project. Sustainability competences, including the additional competence of environmental stewardship was added to Wiek et al.’s (2011) set of competences. Aligned to interpersonal competence is the capacity for environmental stewardship. I described practice as a sequential process where, through training and learning, work became connected to self-identity in the specific environment of the Working for Ecosystems programme. These are steps in a process that led to feelings of empowerment as well as agency. Narratives were selected and represented from each unique SMME group of directors to demonstrate claims of distinctive learning pathways. Little is known as to how an intervention such as Working for Ecosystems acts as an enabling environment for such learning pathways to be developed. In the final chapter, I summarise findings drawn from the narratives and data from this study. I discuss these findings in the form of analytical statements each with a generalised theme pertaining to the study. I end with recommendations for further research.

## CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

### 7.1 Introduction

In this final chapter, I relate how data from the preceding Chapters 4, 5 and 6 provided an overview of the timeline of Working for Ecosystems and an understanding of work place practice, knowledge and sustainability competences as foundations for developing skills for small business contractors. I relate next, how the raw data drawn from several different sources, interpreted, and then discussed (in the preceding three chapters), has helped to provide insight for this study's focus, the *story* of Working for Ecosystems. The story as told by the participants; "Story as 'sequence of events' is not separable from, but always imbricated in narrative; the terms are used interchangeably ..." (Squire, 2012, p. 65). In the next section I provide an overview of the three data chapters critical for deeper insight of learning pathways.

### 7.2 Overview of data chapters

*Chapter 4* is the story of Working for Ecosystems from its inception, its historicity, or what I have termed its 'timeline'. It is narrated by key informants who were able to add depth of understanding through long-term experience in the programme. Each of the four key informants followed their own learning pathways into environmental work. All four have in common that they have at some point been workers in the field of invasive alien plant control (see Section 4.5). Extensive data from document analysis, interviews, observation and participation was utilised to track Working for Ecosystems as a journey to enable an understanding of the origin, the shaping and the unfolding of learning pathways in the work environment.

Chapter 4 also examined policies and structures which function as mechanisms enabling Working for Ecosystems to be used as a tool for poverty alleviation and biodiversity enhancement. The introduction of the Working for Ecosystems project to the Ntshongweni community as a focused intervention in several different environmental formats, was understood through narratives of key informants and several other interlocutors throughout the study. The interdependence of people and place was examined and connected to how the eThekweni Municipality applies national policy to a local context. Working for Ecosystems has expanded to include many more communities in the work of invasive alien plant control

based on the initiative started in Ntshongweni.<sup>13</sup>

**Chapter 5** is the story of the Working for Ecosystems practice, how learning pathways emerged from Working for Ecosystems. In Chapter 5 the learning pathways described were twofold. Firstly, the story of how work became taking responsibility for others was examined in the narratives of five SMME contractors. These five contractors had created their own access to becoming an SMME *independently of* Working for Ecosystems.

Involvement in the practice of invasive alien plant control was one of several business ventures for this group of micro-entrepreneurs. In addition, each of these SMMEs was a single proprietor who, through training and learning (at times from experienced workers in the field), became businesses associated with the green economy in the category biodiversity management. The theoretical focus was on changing practices where the practice was work. Chapter 5 described how established SMMEs learn additional skills in and through Working for Ecosystems.

In **Chapter 6** the focus was on knowledge, practice and sustainability competences. The narratives of SMMEs who *emerged from within* Working for Ecosystems were examined for a deeper understanding of learning pathways specific to the programme. Reorganisation of directors within three of these SMMEs led to the creation of several newly created companies. The theoretical focus on sustainability competences enabled an understanding that interpersonal skills was critical to all competences. This formed the foundation for reflexivity and the formation of environmental stewardship.

In order to understand the transition from worker to SMME, extracts from interviews were used in Section 6.7, and further analysed across all participants as shown in Appendix M. These narratives showed the reader how it was ‘work’ which evolved from ‘any job’, through training and learning to ‘having a job’.

The sections that follow in **Chapter 7** contain analytical statements. These relate to the

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<sup>13</sup> Tracking all invasive alien plant work happening throughout the eThekweni municipal area, under the various facilitators, would be of great value for biodiversity reporting requirements. Not all action on the ground is reported to the EPCPD and the Natural Resource Management authorities. The eThekweni Conservancies Forum has recently been formed which should assist with keeping these records where frequently it is civic effort that keeps natural areas within the city free of invasive problem plants.

motivation for this study, the research questions, the theoretical framework(s) and the content of the preceding chapters. I have extracted from all the combined narratives and data the indications of learning pathways that signal societal change. Change in understanding can be acquired through gaining knowledge and through learning in being a part of the WFE system. The official definitions of learning contained within SAQA's National Qualifications Framework connect national and local policy to implementation actions. This study represents the reality on the ground of one local policy in practice. Reality is understood in the current context as the here and now, the everyday experience of being a participant of the Working for Ecosystems programme.

**Reflection:** Sver (2011) in his review of Working for Ecosystems asked “But did it work?” (7Doc Ph1 GS Story of WFE by Greg Sver with COP17 in mind). At the time Sver's review was able to focus only on the Working for Ecosystems intervention in Ntshongweni. He was not able to confirm the establishment of any small business contractors as part of a programme, nor claim that tourism had succeeded. An attempt at creating a nursery had failed. WESSA's Stop the Spread programme was still primarily focused on public education, and not on project implementation. However, through the narratives and stories told, in the course of this research study, by contractors, and participants there is now a certainty that the actual work of the Working for Ecosystems programme, as implemented by all its participants, can be regarded as a fully functional ecological project positioned within the green economy and poverty relief context. Pressing societal and environmental conditions require accelerated change in how we manage, and regard, our natural resources. Working for Ecosystems as a programme has an opportunity to support deeper understanding on how knowledge and learning is acquired (and then internalised) through participation.

O'Donoghue (2014) referred to an “ESD [Education for Sustainable Development] terrain where knowledge and ethics-led learning in relation to valued purposes might enable citizens to become engaged in change that secures a sustainable future for generations to come” (p. 7).

The analytical statements which follow are the culmination of participatory research and validate findings of the study, which in turn enable recommendations for further research and a deeper understanding of how to facilitate conscious learning. While each analytical statement describes a finding from the research study, each statement is connected to and supported by the other analytical statements.

### 7.3 Reflections on the research process

**Reflections on purpose:** The context of this study was specifically that of *how* SMMEs emerged from the Working for Ecosystems programme: How did the programme enable entrepreneurship to surface? In addition, the question of *why* needed to be answered, for what purpose did Working for Ecosystems add SMME development to the tender deliverables, and outcomes? (see Appendix H). Parson and Clark (1995) added the pertinent question of “why bother asking?”, a question I needed to keep in mind in Chapter 7, as this study is concluded.

**Why bother asking?** The short answer is related to poverty alleviation and biodiversity management. Within the broader context of the study, the short answer is that it is important to know if there is a value associated with the Working for Ecosystems programme. Connected to asking about benefit, is another question as to where the judgement of worth would lie. This judgement is also related to the kind of research study in which we are engaged. Since the study is in the field of environmental education, we now have three different strands of interwoven research. The third is that of education which is embedded in the role of learning. In this study, it is *environmental* learning where we have an interest. This gives an indication of how we, as environmental educators, regard the role of learning. There are thus three criteria of importance: poverty alleviation, biodiversity management and environmental learning. To Parson and Clark (1995), an enquiry focused on a social intervention (such as WFE) may need to be validated in asking “what works?” (p. 457). They went on to say that current relevant studies:

*... all point toward a fundamentally messy, contingent, and ambiguous intermingling of knowledge, power, interests, and chance in the workings of the worlds. These studies nonetheless provide what we have found to be useful beginnings for efforts to understand and manipulate long-term improvements in the management of sustainable development policies. (ibid., p. 457)*

The above extract helped to validate, the use of three theoretical lenses in this study: practice architectures (Section 2.6); competences for sustainability learning (Section 2.7), and a relational ontological lens to maintain a focus on how things are always interrelated and transdisciplinary (Section 2.8).

**Learning-to-change:** O’Donoghue (2014), in his research on how to expand learning to understand a need for change from the way things are, examined several frameworks for Education for Sustainable Development (ESD). It is important that an elaboration of this study shifts more strongly towards understanding how the practice of Working for

Ecosystems could serve as a “route that approaches ESD as a situated process of co-engaged reflexive change within a transgressive expansion of existing education and social practices” (p. 22). O’Donoghue explained “The paper notes the importance of knowledge-informed learning sequences to enable better-situated knowledge acquisition that enables higher-order critical and systems thinking in the contexts of both schooling and wider multi-stakeholder reflexive learning in a changing world” (p. 23).

***WFE as situated social learning opportunity:*** As the researcher, I know the value of the Working for Ecosystems programme is unequivocally that of alleviating poverty, contributing to social justice, creating equity and building capacity (in order to allow people to live decent lives); the value of biodiversity restoration is to enhance functioning of ecosystems which advances diversity and in turn serves to improve functioning (in order to benefit planet and people). I now must ask why environmental learning is the third important criteria.

The title for this study is “Working for Ecosystems: An account of how pathways of learning lead to SMME development in a municipal social-ecological programme within the green economy context”. The words ‘social-ecological’ are hyphenated to imply a connection. Reverting to the three important criteria, I may assume that the social is that of enabling people to have decent lives, while the ecological is that of a healthy environment. In order to connect the third condition of environmental learning, I turned to a simple analysis of searching for a pattern and returned to Kemmis and Grootenboer (2008), Kemmis (2009), Hemmings et al. (2013), as well as others such as Meaney and Lange (2010) and Taylor et al. (2012) who used the theory of practice architectures in their research. Ignoring warnings of the dangers of reductionism (Sterling, 2009; Rogers et al., 2013), I tested several iterations of the thesis title<sup>14</sup> which enabled a deeper understanding that environmental learning, or social-

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<sup>14</sup> I deliberated if the title should not read, “Working for Ecosystems: An account of how pathways lead into SMME development in a municipal social-ecological-learning programme within the green economy template” or “Working for Ecosystems: An account of how pathways lead into SMME development in a municipal social-ecological-learning programme within the green economy template” or “Working for Ecosystems: A programme within the green economy template which facilitates SMME development in a municipal social-ecological-learning programme”. The title for this study ultimately is “Working for Ecosystems: An account of how pathways of learning lead to SMME development in a municipal social-ecological programme within the green economy template”.

ecological-learning, straddles the “individual and extra individual realms mutually constituted through practice across all three dimensions” (Kemmis & Grootenboer, 2008). This reflection enabled an appreciation that in this study, the social-ecological-learning is grounded within the narratives and actions that happen, in and through the work practice of invasive alien plant control, and the management practice of SMME work, all mutually influential (Taylor & Taylor 2012).

**Who or what learns?** Parsons and Clark (1995) asked the question in the context of sustainable development as social learning, “who or what learns?” They questioned:

*Societies, governments, and organisations or just individuals? Our basic conceptions of learning are formed from observing individuals, but collections of people large and small also exhibit clear changes in task performance, coordination, complexity of communication, and goals that look very like individual learning. Any writer who uses the term learning to apply to a collection speaks to this common perception, implying some form of relationship between what the collection is doing and individual learning. (ibid., p. 455)*

The above extract helped to validate the methodology used in this study. It became clear that a study of social-ecological-learning needed to examine policies and mechanisms within different societal structures (Sections 2.2, 2.3, 2.4, 4.2 and 4.4). These multi-dimensional structures were linked to the ‘practice architectures’ described by Kemmis and Grootenboer (2008) as ‘cultural-discursive, material-economic and social political’ (Section 2.6). The intention of this study then, more specifically, was to locate the learning pathways within the ‘individual and extra-individual realms’ of ‘communication, work and relatings’ to examine and understand how participants negotiated these fields. It was important to understand how the learning pathways would enable competence development, in relation to the field in which the small businesses operated (Sections 4.5, 4.7, 5.4.3, 5.4.3). Wiek et al.’s (2011) framework for the analysis of sustainability competences was utilised to examine the competences of systems thinking, strategic thinking, forward thinking, normative thinking and interpersonal skills evident in the narratives. The functional relationality amongst the competences for reflexivity and sustainability emergence was firstly ascribed to interpersonal skills as a prerequisite for developing ecological stewardship (Section 6.5). This critical skill of social connection was vital in the daily context of workplace practice. Interpersonal skills formed the foundation of collaborative learning.

**Point of intervention:** Working for Ecosystems was located as the point of intervention which enabled a multitude of actions to take place. Each action was linked to another action

(appropriate action at an appropriate time in the given context). Action as practice links to Section 2.8 in the description of relational ontology as a perspective. This perspective was introduced with the intention of emphasising the relationship between practice, knowledge and context. A relational ontological perspective permits and takes into account outsider views, views of the other, and is reflexive, all of which are relevant in this study (Stetsenko, 2008).

To Kemmis and McTaggart (2000), in Section 2.6, Table 2.3, this would entail a “reflexive-dialectical view of subjective-objective relations and connections” as evident in practice (as human agency and social action). Cook and Wagenaar (2012, pp. 20-22) referred to the non-dualist approach of Japanese philosophy and introduced three concepts to enable a relational understanding of practice as “actionable understanding” (mutually held understanding that enables mutually acceptable action), “ongoing business” (shared experience) and the “eternally unfolding present” (where all is process). They used this approach to “reconceptualise the relationship between knowledge and practice” and stated further that “all knowledge, including formal knowledge, is embedded in ordinary experience, and, in an essential sense, gets its meaning, its life, from it” and thus they regarded knowledge as a human artefact (*ibid.*, pp. 8, 11, my emphasis).

***Understanding social learning in WFE:*** I borrowed guidance and inspiration from Lotz-Sisitka (2012); Cundill and Rodela (2012); Cundill et al., (2014); Wals and Rodela (2014); Dyball, Brown, and Keen (2007); and Parson and Clark (1995) in respect of social learning and its relevance as a means of creating social change towards sustainable livelihoods. It became clear that Working for Ecosystems fell squarely within the practice architecture of natural resource management (Cundill & Rodela, 2012). Terminology such as ‘learning-by-doing approach’ triggered the understanding that the eThekwini management structures of the EPCPD, function in this professional domain using the framework of that practice architecture. It became evident that each step of learning in the pathway of this study required more research in new understandings of how knowledge and learning assist societal change.

## **7.4 Analytical statements**

### **7.4.1 Analytical statement 1: Site selection is a critical factor for expansive learning pathways development**

Section 4.3 referred to the start of Working for Ecosystems as an intervention within the Ntshongweni community. In this finding, the Ntshongweni initiative served as an example to support the analytical statement. Closely related to the sense-of-place factor is also the passage-of-time consideration. It is currently ten years since the start of the Working for Ecosystems intervention in Ntshongweni. I have not made time a separate finding but evidence shows this to be a relational component. To support this claim, it can be shown that several participants who demonstrated environmental stewardship capabilities have close to ten years' experience or more (key informants in Chapter 4, SMMEs in Chapter 5, Appendix N).

Narratives from several participants indicated that their story, as part of Working for Ecosystems, was related to being a member of the community where the programme was initiated (4.2.1; 4.2.2; 5.3.1; 6.2.2; 6.2.6 and 6.2.7). Model 4.1 represents participants from the Ntshongweni Community and pathways into Working for Ecosystems by particular persons and/or organisations.

Investment in groundwork for environmental stewardship and learning pathways development increases the possibility of 'similarisation and familiarisation' narratives in respect of action and doing and opens the gateway to understanding, self-understanding and enhanced freedom to choose (Squire, 2012; Section, 2.9). These interconnected sequences scaffold doing. It is in the doing that empowerment happens and learning is enriched (Section 6.7 on looking for a job). Exposure to the Working for Ecosystems programme, in its many forms at the time, enabled a proximity to where the action was taking place. These actions were all different forms of environmental initiatives, involving many different levels of interactions across the community, by people from the community.

The intense input of resources in the initial phase of Working for Ecosystems within the Ntshongweni community (which was a combination of role-players, DEAT, WESSA and the eThekweni Municipality) created an impact which was difficult to measure in output terms of traditional evaluation figures. However, evidence from the study showed that several entrepreneurial initiatives had emerged from the Ntshongweni community (Section 4.4 and Model 4.1). In addition, learning pathways diversified into different environmental fields. I

refer to small businesses being created, invasive alien plant control work as fieldwork, an environmental education officer as well as a period where over 3 700 learners were exposed to schoolyard learning in respect of invasive alien plants and indigenous plants, and a period where planting of 7 000 trees took place (10Doc Ph1 GS 2011 Story of Working for Ecosystems by Greg Sver with COP 17 in mind).

The following extract from an interview with one of the original WESSA field managers and a resident from Ntshongweni, validated the data analysis in respect of the value of Working for Ecosystems using Ntshongweni as a trial site, and initial point of intervention for the project, as well as the claim that transformation happens. Rogoff et al. (2003) referred to observation as a form of learning which involves ‘attentiveness and intentionality’. They referred to “intent participation as keenly observing and listening, in anticipation of or in the process of engaging in an endeavour” (p. 178).

In the extract below with the WESSA field manager, LM (ki-1) referred to how he dealt with transformation in the community and then referred to his own process of transformation as a reference for his own pathway to learning in respect of invasive alien plant problems. In the example below, with underlining added for emphasis, LM referred to a form of ‘intent participation through observation’ generally. Here he corresponded with Rogoff et al. (2003) that “intent participation within families and communities worldwide, the aim may be (although it is not invariably) to support the learning of all members of the community, and [that] learning is organised in ways that allow this aim to be accomplished” (p. 196). Intent participation, in the example below is situated social learning, it is socio-cultural, and it shows practical reason as well as reflexive deliberation (O’Donoghue & Lotz-Sisitka, 2006).

*... and on the 28<sup>th</sup> we are having a workshop with the school teachers at Ntshongweni [outside of the WFE project initiative] ...*

*It goes back to say, like one of the ways of trying to make people understand, because even in business, you take them, you sit with them and not go home, then it will be the same old story... [of patience and repetition]. **Once you go like into the practical part of the things, then it will start slowly to generate some sort of interest, it happened to me, then I started to ask questions**, started to ask questions. Then I thought maybe Eco-schools could be a very small tool on those children, because like, their mothers wake up in the morning they go to work ehlathini (in the bush). So now the child will understand my mother is going to work in the bush, this is what exactly, so now you can see, from school, you will take information back to your mother, mom why are you doing this? The child will tell her mother why we are doing this, then it will start within the community. (2-Int Ph1 LM, p. 18: 542-556)*

Section 6.4 examined narratives of two participants in the project (both from Ntshongweni, one now an SMME and the other an educational officer; see also Appendix M). In the section on ‘steps’ of looking for a job, (where an assortment of public works and municipal jobs were available) learning and empowerment pathways are analysed to support the analytical statement of concentrated intervention leading to action and doing through agency, training and learning, using the Kemmis (2009) framework of individual and extra individual realms (Table 2.3 in Section 2.6).

Kemmis and Grootenboer (2008) stated that “in relation to each form of action, some relevant knowledge is required” (p. 46). In addition, they referred to the shaping of practice, where “practices must be seen as dynamic and evolving, being reproduced and transformed over time as they meet changing needs and demands in different places at different times” (*ibid.*, p. 51). Tables 2.2 and 2.3 in Section 2.6 showed:

*... how the ‘realms’ of the individual and the social or societal (cultures, societies, material-economic conditions) shape one another over time through the **generic practices** of communication, social connection and production-consumption. On this view, individuals as **agents** (persons with agency) shape cultural, social and material-economic structures, and cultural, social and material-economic practices dialectically and reciprocally shape individuals over time, **through practice**. (*ibid.*, p. 51, authors’ emphasis).*

They went on to discuss a complex practice and clarify what makes such a “practice distinctive, is the *content* of sayings, doings and relatings characteristic of the practice, and *the way sayings, doings and relatings are bundled together* in the conduct of the particular professions” (*ibid.*, p. 51, emphasis in the original). The aforementioned quotes are very much about the *shaping of practice*. There is a reciprocal relationship between the individual and the practice. However, practices also share interdependence. In this study, invasive alien plant control as a practice is linked to small business practice. In Phase 1 of Working for Ecosystems, the practice of running a small business was not yet instituted. However, the setting for SMMEs to manage the work (as opposed to field managers) was put in place. The initial phases of Working for Ecosystems allowed for re-employment of workers within Ntshongweni, Giba and Drummond. This nurtured field workers to build experience and expertise over time and where such workers emerged as business owners, knowledgeable management has enabled strong leadership and a competent workforce (1, 2, 3-Obs Ph3 Roosefontein).

This study has shown how the Working for Ecosystems project has shaped participants from

Ntshongweni, and how those participants in turn have, through different relationships, shaped the Working for Ecosystems project. It is in the integration of the multiple diverse dimensions, and the two specific pathways of workplace and SMME practice, that the learning pathways were immersed. The complexity of analysis is evident when participants are added as particular agents with various dispositions.

The local councillor is a source to which community members turn who wish to find work (as jobs), or whom SMMEs approach as the liaison between municipal departments and procurement for local work. A hands-on and supportive councillor, as a representative of social-political support structures, networks, as well as material-economic resources, increases support for programmes such as Working for Ecosystems (Section 6.4). Traditional cultural structures existed side by side with political ward structures. At times, these structures complicated communication networks and may lead to misunderstanding and tension (Rogerson, 2015). Where the governing structures of traditional and political entities could communicate satisfactorily, there was enhanced functioning and getting along with one another.

I have referred to the selection of site as critical as not each intervention is necessarily successful. Roberts and Diederichs (2002) referred to Strategic Environmental Assessment of the Durban South Basin Community in respect of sustainable development guidelines, and added that:

*The extensive public participation process, undertaken during this project included an environmental education and capacity-building component. Although much time and effort was spent on this element of the project, it had limited impact due to the heightened tensions that existed between local government and local communities as a result of the study's findings that certain future development options could result in the loss of existing residential areas. (2002, p. 193)*

In the selection of the Ntshongweni community site as the first intervention of the Working for Ecosystems project (in 2006), community support was regarded as the most important factor for success. In an interview the WESSA KZN manager at the time commented, "Working for Ecosystems is sustainable solely because of community support ... The real deliverable is winning the trust of the community, because that would be something you could build on. Even if this was all we had done (in Phase 1), this would have set the foundation for whatever we wanted to do later." (Cobus Theron, undated; 7Doc Ph1 GS Story of Working for Ecosystems by Greg Sver with COP17 in mind, p. 6).

#### **7.4.2 Analytical statement 2: Intersecting, diverse levels of participation and knowledge flow are particularly important for learning pathways development in the field of invasive alien plant control where divergent values and norms and levels of practice are operational**

‘Equity from the middle’ refers to theory in which Unterhalter stated “Flows of ideas, skills, material resources and time which substantively expand the capability set are associated with equity from the middle” (Unterhalter, 2009, p. 421). Achieving this ‘equity from the middle’ implied that knowledge from practice in the workplace was transferred to practical learning, or situated learning, and transferred as an acquired new way of doing. It was knowledge, for example, from invasion biology and legal compliance in respect of problem plants, being accessed from structures above, and then flowing through levels of management and understanding, to a grassroots worker in the field. Such a worker over time (in this study as a particular SMME over a five-year period), through access and agency, formed her own company and was subsequently positioned as employer who mentored, instructed and became an entity at a level in the middle of the structural hierarchies of society (Section 6.2.7).

Unterhalter clarified:

*... Equity from the middle, without the connection to reasoned legal frameworks associated with equity from above and participation, dialogue and critique associated with equity from below is likely to become a sterile managerialism... From the bottom it is important to look at agency, from the top to look at rules and institutions that frame negative and positive freedom is linked to a theory of Justice, and from the middle to ensure our flows of resources, a dynamic between ideas and values that is attentive to limits and judgements, but not just merely constrained by these assessments. (ibid., p. 422, my emphasis)*

A visualisation process of the meaning of the above extract entails an ethereal image of the ‘flows’ of resources or knowledge which connects to a relational ontological lens used to examine the deeper meaning of how the narratives and data connect to the understanding of the Working for Ecosystems project (Emirbayer, 1997).

Equity from the middle, to my interpretation and understanding, also entailed various management levels. It was important not only to avoid ‘sterile managerialism’ but also to learn from one another through a participatory process and placing a value on other forms of knowing (de Sousa Santos, 2007). Learning takes place through interaction with a worker at a grassroots level where local and embedded knowledge is stronger, more relevant and situated. It is a form of co-learning and co-understanding through doing, through connected learning

(Lotz-Sisitka, 2013). This process facilitates critical thinking and enhanced comprehension through continuous dialogue and then opens up learning pathways through an understanding that more than one perspective is possible. Values change where economic interpretations challenge ecological interpretations (Section 6.5) (Hattingh, 2001; Dickie et al., 2014).

In the context of facilitating enterprise development, equity links to a redistributive process using policies as leverage for previously disadvantaged communities to access the economy and a better life. Nhamo (2014) referred to sustainable development in the global context and stated “Therefore, SD+ goes beyond the common three pillars of sustainability, namely, economic, environmental and social sustainability. Human beings simply need to do the right thing. We need new deliberation platforms and a world where equity is central to everything. Some nations and individuals cannot continue to be more equal and quench their thirst through oppressing the poor” (p. 22).

The discourse on values and morals, and equity versus equality, is taken up in discussions on environmental ethics and research on sustainability and environmental education (Kronlid and Öhman, 2013; Olvitt, 2014).

### **7.4.3 Analytical statement 3: Intermittent work creates instability and disruption in learning pathways formation**

Contracts in ‘breaks forms’ refers to a coined term, an in vivo term, used in an interview with Ki-1, the site manager. He mentioned “contracts in breaks forms, not solid”, as problematic to the contractors. Evidence from several interviews supports the claim that intermittent work creates instability. Comments along the line of contractors waiting for payment, waiting for the next contracting period to start and in some cases requesting assistance in finding additional contracts, emphasise lack of continuity in the contract periods as being an issue to the contractors:

*Margaret: [referring to timeline of Working for Ecosystems] That’s actually quite nice because you can see the phases quite easily, you know the three-year phases and you can see the development of how first it was just having the supervisors then 2010 to 2013 you were the field manager with WESSA?*

*Linda: No, let’s say 2006 up to 2009 and though in breaks. Not straight not solid...*

*Margaret: Solid form?*

*Linda: Not in solid forms so I was the supervisor. Then in 2010, I was brought in as a trainer for Stop the Spread of which I was part (1-Int Ph1 LM, p. 9: 257-262)*

In addition, intermittent work created further lack of sustainability for the workers who were employed by the contractors. It also meant that workers would find alternative employment and this in turn destabilises the teams with new workers entering and having to learn the practice from the beginning. During the interview process with contractors, it was evident that participants were resilient in that Working for Ecosystems was an opportunity, but this did not mean that participants did not have another source of income prior to the Working for Ecosystems work (see also Appendix N).

Skills assessments were conducted in some cases, with potential contractors who came forward to become companies (4Doc Ph3 Qhakaza Skills Assess 2012; Section 6.2.4). Connected to ways and means of finding a source of income, was the possibility of additional research in respect of how income was generated prior to Working for Ecosystems. This data could be added to the SMME directors' database under attributes in NVivo and related to the theme of 'how people make their way in the world'. From a swift overview of Appendix H in which the SMMEs are listed, it is clear that those who were established SMMEs prior to Working for Ecosystems are most likely to have additional contracts, larger networks in sourcing contract opportunities, and have become able to sustain work over a period of time in the entrepreneurial environment (Chapter 5). Those SMMEs who were established during the Working for Ecosystems period remained more vulnerable (Chapter 6). Individual directors at times returned to a previous source of income (hairdressing, sewing, carpentry, baking, panel-beating, childcare) during winter months and waiting for their contract period to commence (1-Int Ph3 Vikelimvelo; 3-Int Ph3 Umoyomuhle; 6-Int Ph3 All Qhakaza).

***Recommendation - New Venture Creation:*** The purpose of the New Venture Creation qualification is to enable contractors to further their skills in order to become more sustainable business operators with knowledge of the skills required to run a successful business. This need has been recognised by SAQA in the creation of the SAQA New Venture Creation (SMME) National Certificate NQF level 2 (SAQA Qual. ID 49648) and level 4 (SAQA Qual. ID66249); extracts can be viewed in Appendix K. In the context of Working for Ecosystems it would seem that a NQF level 2 qualification would align most appropriately with those SMMEs who would benefit from capacity building in managing their businesses. The purpose and rationale of the qualification is:

*...to provide a qualification that can form the basis for structured programmes for potential and existing entrepreneurs to capitalise on opportunities to start and grow sustainable businesses that form part of the mainstream economy, enabling the*

learners to tender for business opportunities within both the public and private sectors. This qualification is designed for learners who intend to set up or have already set up own ventures. Assessment of the competencies and knowledge in the qualification needs to be done in the context of the learners own new venture. Research has indicated that people working with their own new ventures at this level need the following competencies:

- acquisition of an entrepreneurial profile which includes an innovation orientation;
- an understanding of the industry sector in which they wish to establish a new venture;
- an ability to match new venture opportunities to market needs within a chosen industry sector;
- an ability to determine and manage the financial requirements of the new venture;
- an ability to match new venture opportunities to market needs; and
- an ability to compile and utilise a business plan to manage new venture and also where relevant, to seek funding for a new venture SAQA New Venture Creation. (SMME National Certificate NQF level 2, SAQA Qual. ID 49648; my emphasis)

The National Qualifications Framework (NQF) in South Africa has the complex task of ‘articulating’ learning pathways so that prior learning, recognised as experience in a field of practice, is recognised and credited as a competency within a more formal assessment framework. A longstanding research partnership between SAQA and Rhodes University, Environmental Learning Research Centre (ELRC) has concentrated on the articulation of learning pathways and the connections that are made without a formally structured pathway of learning being in place (Lotz-Sisitka & Ramsarup, 2013):

*... how best to understand systemic articulation within the context of Learning Pathways. In other words systemic articulation can be understood in the technical sense, involving ensuring available qualifications for structured learning pathways that may or may not be ‘joined up’. It may be possible to conceptualise systemic articulation within the wider concept of an ‘articulated system’ in its broadest sense however, where this broader system carries meaning regarding the shape or manner in which things come together and in which connections are made (or about where connections are most necessary). (p. 33)*

**Recommendation - Networks and links:** A further recommendation would be to facilitate networking and linking various departments within the city and several socially minded organisations to utilise the procurement database of the municipality, when looking for contractors who can do environmental work. eThekweni Municipality has a policy of employing co-operatives as contractors and equity-based small businesses, who, when necessary and possible, are mentored to build capacity. Appendix H refers to a selection of

pages of the tender document for Working for Ecosystems which stipulated training as well as business support and development. In addition, the tender document stated that ‘community resilience to climate change should add up to 3% of total contract value which is to be focused on improving societal and adaptation or community resilience to climate change’ (eThekweni Municipality, 2014, Tender Document Contract No.: IN-15765, p. 17) (Sections 1.5; 2.9; 4.6; 4.7; 6.6).

In Section 6.4 I refer to EPWP versus SPWP. Contracts may be as little as one month in duration. However, an emphasis remains on two days training of every 22 days in the workplace. The preamble of the Code of Good Practice for employment and conditions of work for Special Public Works Programmes reads as follows (South Africa. DOL, 2002):

*Reducing unemployment is one of the greatest challenges facing South Africa. Government has undertaken a number of initiatives to address unemployment and poverty, including the promotion of labour-intensive Special Public Works Programmes (SPWP). A SPWP is a short-term, non-permanent, labour-intensive programmes initiated by government and funded, either fully or partially from public resources to create a public asset.*

In addition, the code encouraged:

*Optimal use of locally-based labour in SPWP.*

*A focus on targeted groups namely: women, female-headed households, use, the disabled and households coping with HIV/AIDS.*

*The empowerment of individuals and communities engaged in SPWP through the provision of training. (p.1)*

Unemployment and job creation has led to prioritising labour-intensive programmes. Unemployed youth, the discouraged job seeker – these are all part of the fabric of our South African society. Yet each individual director of the small business contractors involved in the Working for Ecosystems project experienced access and displayed agency in some form or another (discussed in Chapter 5 and 6). The SMME contractors in turn assist in creating jobs. SMMEs who formed companies outside of Working for Ecosystems, had already survived economic, management and compliance realities of running a business, as shown below in the extract from an interview with one such director. It is of additional interest that she regarded her knowledge acquisition as a result of tertiary learning through ‘negating her own knowing’ prior to tertiary education (see also Section 7.4.6 analytical statement 6):

*... Where I grew up is like in rural areas. So, we do not have much knowledge, we do not have much knowledge about environment and conserving nature and all those things. Until I went to tertiary education level at Mangosuthu Technikon where I was studying community extension. I specialised in agriculture but my sister was doing nature conservation. But I ended up being more interested in nature conservation than in what I was studying. So, each time when she was doing her project I was the one helping her mostly, so each time this thing grew up inside me of understanding about nature, so that is where it came from ... (my emphasis)*

She does, however, go on to narrate how through being in the work place:

*I was blessed with the opportunity of working with Working for Water back in 2007 ... we thought about everything. We ended up knowing about fishes, and everything that was there and about what must we do. Each day the love for nature kept on growing ... (8-Int Ph2 ZN Lihlithemba, p. 2)*

SMMEs formed within Working for Ecosystems started as workers in the Expanded Public Works Programmes context. Yet each worker who became a director within a company or a cooperative came forward prepared to occupy unfamiliar territory reflecting a particular disposition and agency to engage, which Kemmis and Grootenboer referred to as “the shaping of forms of action” and the “capacities needed for praxis” (2008, p. 46), (see also Section 2.6 and Section 6.7 which refers to connected knowing and constituents of agency). The issue of not having contract work available is reflected in the following excerpt:

*DK: Let me say, as you can give us advice, as we are not working at the moment can't you give us advice on how can we get other jobs while we currently don't have a contract?*

*Muziwandile Chili: That's what we are going to discuss as I have said, that you should divide tasks like you must have someone who will deal with the finance in the business who will go to SARS and all those things, you also need a person who will deal with the marketing of the company who will go to seek tenders and so on.*

*SN: Can I ask a question, is it not allowed to get jobs from other provinces or we should find tenders [only] here in KwaZulu-Natal? (3-Int Ph3 All Umoyomuhle, p. 18)*

**Reflection on building further capacity:** Reflecting on the above recommendations, the capacity to act exists within most of the small business owners. We may confidently claim that the practice of doing the work of invasive alien plant control has been mastered. However, the practice of doing the work of being a fully functional SMME, requires additional skills. If we then add the requirement of understanding sustainable livelihoods, the development of skill sets becomes even more complex. The question that now needs to be asked is, would it be possible for selected directors to attend one of the SAQA New Venture

Creation (SMME) National Certificate NQF level 2 or 4 structured learning programmes? Additional training as Poisons Certified Operator (PCO) was organised by WESSA for a group of directors who were deemed to have the capacity to manage scientific naming of chemicals, mathematical calculations of quantities and to be examined in respect of competency. In order to work for large companies, it is essential to have a registered PCO in charge of herbicide application. This additional skill was deemed necessary to progress as a legitimate contractor in invasive alien plant control. While skills in respect of running a successful business, have been recognised as an important aspect of the Working for Ecosystems project, there was limited budget available within the project, other than for a mentorship role and the practical everyday functioning of running a business in the project (understanding the contract, time sheets, invoicing and payments to staff for example). Perhaps a broader question in the context of this study is more appropriate, that of how could the Working for Ecosystems programme enhance integration of the two workflows, one being the practice of invasive alien plant control, and the other being the practice of running a successful small business?

Two relevant extracts, from the document commissioned by the Secretariat of the Convention on Biological Diversity, UNEP, with assistance from the Chief Director of Natural Resources Management, South African Department of Environmental Affairs entitled, “Leveraging public programmes with socio-economic and development objectives to support conservation and restoration of ecosystems: Lessons learned from South Africa” (Sykes & Jooste, 2014) are copied here. The first extract is self-explanatory and refers to lifting restrictions in respect of employment periods. The second extract, refers to SMMEs.

*... the EPWP has lifted earlier restrictions on the period that individuals could be employed by the programmes, and accepts that for many people they will cycle through several rounds of projects.*

*Secondly, the DEA has been proactively investigating the possibilities for permanent jobs based on an appreciation of biological diversity and conservation, and other aspects of a sustainable environment. This has led directly to the development of the Wildlife Economy sub-programme, and an ongoing effort to support the development of small businesses which support the environmental goals of the DEA. (p. 42, my emphasis)*

These extracts support a trying-by-doing approach, and learning lessons which assist in changing policy rules. Cundill and Rodela (2012) referred to this method as adaptive co-

management of natural resource management practices, with an emphasis on learning-by-doing (p. 19). Cundill and Rodela explained, in a search for coherence in the understanding of social learning, in the field of natural resources management that:

*The term social learning in this literature has been used increasingly to describe processes in which experimentation and reflective practice are at focus, with the goal of improving decision-making. In the case of collaborative management, the primary reason that social learning became a prominent theme was because rights-based discourses led to management situations in which multiple stakeholders, with different world views and values were brought into interaction. These situations were inherently conflictual, and therefore learning how to work together was considered fundamental to successful management, and became a key outcome pursued through social learning. (p. 24)*

In the local Durban context, Roberts et al. (2012) referred to “exploring ecosystem-based adaptation in Durban, South Africa: Learning-by-doing at the local government coal face”. Roberts et al. referred specifically to the Working for Ecosystems programme as an example of “ecosystem management and restoration programme initiated in 2006 and based on an expanded public works programme model” (p. 187).

***Diversification of pathways for greater sustainability:*** In the context of WFE, as mentioned in Section 4.7, there was a window of opportunity for SMMEs to become established within the programme. Once this transitional period was over, the programme structure changed to one where SMMEs as contractors were responsible for work to be completed in the field at a management level. This did not mean that it was not possible to become an SMME within the programme. There is evidence of reorganisation within SMMEs of their own structures, but with the influx of outsider SMMEs gaining access to the programme, each contract period for each SMME was potentially shorter. In some instances, the contract period could be a month. This meant that *diversification became an important condition for survival*. Broadening networks, strengthening entrepreneurial identities, accessing additional procurement databases and diversification are issues which can be put forward as possible solutions to challenges.

#### **7.4.4 Analytical statement 4: A prime competence for sustainability is interpersonal skills as it forms an essential link with most other competences and should be foregrounded in training and learning pathway development**

The above analytical statement has two elements contained in a single statement. It has a claim (a prime competence for sustainability is interpersonal skills) and a solution (interpersonal skills should be foregrounded in training and learning pathway development). The prerequisite of interpersonal skills was so strong in this study that a counter claim can be made: if interpersonal skills are lacking, sustainability functioning cannot take place. The motive for and emphasis on interpersonal skills development is related to the skill/trait of environmental stewardship. This finding is based on instances where work in the Working for Ecosystems project was constrained due to participants not being able to get along with one another. This was either at a worker, director, or worker against management level (in Section 5.3.4, the Lihlithemba director describes how she approached a troubled team that was ‘ready to kill one another’ with skills learnt through tertiary education on how to manage staff, significantly her approach is culturally grounded; Section 5.4.2 describes group socialisation workshops to enhance team members’ getting-along-skills as a peace building process; Section 6.2.4 refers to disagreements amongst directors of the Qhakaza Co-operative).

Interpersonal skills were regarded as an essential link with most other competences, in particular those related to future sustainability, strategic thinking, forward planning and critical thinking in finding strategic solutions to complex problems. These competences are “conceptually embedded sets of interlinked competences... because sustainability problems and challenges have specific characteristics ... analysing sustainability problems requires a particular set of interlinked and interdependent key competences” (Wiek et al., 2011, unpagged). Key words in the descriptions use the following descriptions in their account of the interpersonal competence definition:

*This capacity includes advanced skills in communicating (Crofton, 2000; Byrne 2000), deliberating and negotiating (Sipos et al. 2008), collaborating (de Haan 2006; Sterling and Thomas 2006), leadership (Ospina 2000; Kevany 2007), pluralistic and trans-cultural thinking (de Haan 2006; Kelly 2006; McKeown and Hopkins 2003; van Dam-Mieras et al. 2008), and empathy (de Haan 2006; Sterling and Thomas 2006). All of these skills are particularly important for successful stakeholder collaboration and a necessity for the majority of methods assigned to previous competencies. The capacity to understand, embrace, and facilitate diversity across cultures, social groups, communities, and individuals is recognized as a key component of this competence. (ibid., unpagged, my emphasis)*

Justification from the research completed by Wiek et al. (2011) was stated as follows:

*Sustainability challenges are caused by, and affect, multiple actors with specific experiences, resources, perspectives and preferences. Solving sustainability problems and generating sustainability opportunities requires strong stakeholder collaborations as well as negotiations among scientists from a variety of disciplines (interdisciplinarity), politicians, entrepreneurs, artists, farmers, business and community leaders, and many more. A critical competence for addressing these challenges is interpersonal competence, i.e., the capacity to understand, compare, and critically evaluate different positions, perspectives and preferences (epistemological pluralism). (ibid., my emphasis)*

They went on to list “the concepts, methodologies and peer-reviewed classics” as follows (*ibid.*, my emphasis) in Table 7.1.

**Table 7.1: Concepts, methodologies and peer-reviewed classics for interpersonal competence (Wiek et al., 2011, unpagged)**

Concepts	Methodologies	Peer-reviewed “classics”
Functions, types, and dynamics of collaboration (within and beyond academia; <b>interdisciplinarity, transdisciplinarity</b> )	<b>Participatory methods</b> , including negotiation, mediation, deliberation, <b>constructive conflict methodology</b>	Prominent sets of <b>participatory approaches</b> (e.g., Rowe and Frewer 2005)
<b>Strengths, weaknesses, success, and failure in teams</b>	<b>Teamwork methods</b>	Prominent <b>collaborative settings</b> (e.g. Model United Nations: McIntosh 2001)
Concepts of <b>leadership</b>		
Limits of <b>cooperation and empathy</b>		
Concepts of <b>solidarity and ethnocentrism</b>		

I have included the extracts from Wiek et al. (2011) at length for emphasis but also to provide recommendations for future research possibilities in respect of learning pathways associated with developing interpersonal skills.

Management of staff and labour relations formed a critical part of getting the work done as a contractor. In addition, where there was more than one director in an SMME’s management structure, getting on with co-directors was essential. Evidence from this study was able to

show how particular SMMEs who have several directors and clear task descriptions for each director (in the form of a managing title and definition – Section 6.2.2; 6.2.5) function more efficiently than an SMME where continuous conflict exists between directors or members (Section 6.2.4).

Small stories of power relations are continuous and creep in to the narratives, especially where the group has several participants. The Thinking Imvelo directors also referred in their interviews, to a sceptical community who thought they would fail. Preconceived ideas of what a business person should have and display as an evidence of wealth adds to the mix of the ‘sayings doings and relatings’ of the young company owners and how the community regard their actions. These are complex situations which they have to negotiate as young people from within the same community.

It is significant that SMME structures examined in Chapter 5 all contained only one director. This is a group of contractors who were established before joining Working for Ecosystems (5.3.1-5.3.5). SMME structures examined in Chapter 6 were all created as businesses from within the Working for Ecosystems programme, from worker to business owner. Several SMMEs in this group have changed ownership structures and created new small businesses as working relationships shifted amongst directors and members (Sections 6.2.4; 6.2.6).

Conflict resolution and peace building assist social cohesion crucial for harmonious communication and psychosocial learning as well as greater functioning as an SMME as found in this study. Learning pathways to develop interpersonal skills relate to self-understanding, understanding others, and self-identity enhancement, gaining access and through this access gaining agency, and then through agency improving personal and work skills, which has a cascading effect on other spheres of life and work.

#### **7.4.5 Analytical statement 5: Learning pathways can be enriched by more explicitly integrating observation of local and indigenous knowledge of biodiversity in everyday work and practice**

Local and indigenous knowledge of biodiversity assumes a value in accessing embedded knowledge to augment learning, social interconnection and collaborative empowerment through situated work place learning. An opportunity exists to localise and contextualise the work of invasive plant removal to the purpose of biodiversity and ecosystem service enhancement.

Essential knowledge in the Working for Ecosystems work on invasive plant removal requires

a continuous focus on invasive plants. The main context of work does not promote an understanding of the bigger picture without extensive emphasis as to why the work is relevant. However, removal of indigenous plants in error has severe consequences in respect of how the work is audited. This means that the person doing the removal must be able to discern the desirable plants from the non-desirable plants. Once again, a discernment or variation in knowledge application takes place in grassland restoration, where indigenous pioneer plants are removed as a result of encroachment. In such an instance a different principle applies to the plant removal process. Understanding the principle connects to context and a deeper knowledge of the broader aims of the Working for Ecosystems programme.

All training included an emphasis on biodiversity theory with a practical application of which invasive plants exist in the local home environment and how biodiversity functions across spectrums of how we live our lives. While training did cover sections on biodiversity (Section 6.6), and site managers provided advice on particular indigenous species as important, the major focus remained on invasive alien plants. This was a difficult issue to rectify and needed to be aligned to the goals of biodiversity enhancement and included learning as to why problem plants are removed. Toolbox Talks were used, once a week, to discuss health, social issues and life skills. These were possibly opportunities to include various other topics relevant to the programme and its social-economic and well as environmental challenges.

The interviews, document analyses and observations focused on the immediate problem of compliance in getting the work done. As a result, deeper issues around cause and sustainability, do not often form part of the daily discussions or learning. However, that said, a councillor did remark that ‘the cattle had more grass to graze since the invasive alien plants were removed’. This comment was reported at a Working for Ecosystems monthly management meeting as positive community input regarding the value of Working for Ecosystems work.

A sub-theme entitled ‘local plant knowledge’ was created with 35 sources linked to 134 coded references (Appendix E), the lack of deep knowledge in respect of African flora as part of the socio-cultural dimension was relevant (see Section 3.6.3, Figure 10). Many of the references in interviews referred to knowledge of invasive plants of the area, to the work place learning requirements. However, immersive learning creates knowledge that through awareness and reflexive thinking enabled transfer of knowledge across boundaries as

described in the narrative that follows (Ki-1, Node WFE Key informants; 9Doc Ph1 GS Story of WFE by Greg Sver (2011):

*The Giba Gorge site was also experiencing some difficulties and in early 2009 LM was sent there to assist with the clearing*

*The ginger lilies lay thickest, his first thought was only of how remarkably beautiful they were, a riot of orange and white flowers along the sides of the river.*

*Astonished at the sheer quantity of liquid held within these plants, he carried out a little experiment. He says, "I pulled one out, hung it up, left it till the end of the week... It was still full of water, still alive." Now at the start of his employment with WfE LM had been told that one of the main reasons for clearing IAS was due to the loss of water that resulted from their spread, now as he looked about and saw the Ginger Lilies spreading across the Giba Gorge site, under the trees and over the far bank of the river, he realised that for all their beauty the situation was wrong. The reality of the IAS' ability to steal water from an ecosystem struck him forcibly ... (9Doc Ph1 GS, p. 7)*

The above excerpt is evidence of relational situated learning and emergent active learning processes which have enabled a developing understanding of the natural environment, and invasive plant removal, in particular in the context of this study (Schudel, 2012).

Recommendation is that further research in respect of local embedded knowledge around indigenous plants would add great value to the Working for Ecosystems programme.

Edwards referred to a 'relational turn' in expertise as well as 'cross practice collaborations' in research on boundaries between professional practices (Edwards, 2011; 2012). While her research was in the context of the professional domains, expertise exists in the domain of Working for Ecosystems practice and knowledge as well. Using a similar lens to examine embedded or traditional knowledge as well as societal understandings in respect of the context of indigenous plants, problem plants and biodiversity enhancement could shed light on what Edwards regarded as 'common knowledge'. She stated "Common knowledge is seen as comprising the *motives that take forward each contributing practice*. It is woven into continuously contestable organisational narratives. These mediate interactions across practice boundaries and *give strategic direction* to activities in and across services which are in the process of integration". Edwards further stated "the focus is therefore the middle layer of analysis between the *system and the individual* and *in particular the expertise which is exercised in relationships where specialist knowledge and skills are mobilised*" (2012, p. 22, my emphasis).

**Recommendation on further research possibilities:** Further research could entail examining how participants in Working for Ecosystems regard the work in invasive alien plant removal. During training, the trainers are regarded as experts by trainees. Participants learned that everyday familiar plants which are utilised as medicines, to create hedges, as herbal and food sources, were problem plants which should be removed. Practical application of knowledge acquired during the training week was applied in creating posters with problem plants collected from the home environment, displayed on each poster, and followed by critical discussions. During the interview process with SMMEs, we frequently requested Busisiwe to relay the story of her surprise about Mexican sunflower, *Tithonia diversifolia*, a problem plant, which I repeat below:

*WM: Yes, so she was like Bushell and bush. So if we had the Zulu names for everything, because she is a mature person, it is not easy to grasp all the English and scientific names [in the context of establishing common isiZulu names for invasive plants]*

*Margaret: There is something called Citizen Science. You are not a professor or a scientist, it is the people who are the scientists. When you are working there every day you have better knowledge than anybody else. It is called embedded knowledge. People are starting to realise that local knowledge is very valuable. So those people are like Citizen Scientists.*

*Muziwandile: So how could you think of names if it is invasive? It invaded the space and then took over so it is not indigenous and it cannot get a straight Zulu name.*

*Margaret: Busisiwe tell your story about the Mexican Sunflowers – that is my favourite story.*

*Busisiwe: When my baby had a stomach-ache, I used leaves from the Mexican Sunflower which is an exotic, to boil and make medicine because my neighbour had told me that this is a good plant to use. So, I was very surprised to hear that this useful plant was invasive. And I said but we use this plant for a good purpose.*

*Margaret: But you see that to me is also part of the research – the knowledge that the people have and what the people are using the plants for. So, when all of you do your next degrees you can add that in. What you are saying is you want to keep the local knowledge that is what you want to use, so then it is nice to have the names on the tree labels and to know the history of the plants. (11-Int Ph2 All Thinking Imvelo, p. 15, my emphasis)*

The next excerpt from an SMME interview is an example of a discussion on the dilemma of removing invasive plants which are in the last remaining urban vestige for particular animals which survive in the space:

*Margaret: So, when we are working in an environmental sphere we have to look at the big picture. To see what habitat is it, for whom. But if you are a contractor and you have a contract that says take out invasive alien plants category 1, 2 and 3, you are going to do that.*

*So, one of the things that I think I would love to work with this SMME is, ask what the deeper knowledge is. If we see like at the Umhlangane River, this last section where I have to work there are bush pigs and otters, 'mthini'. If I take down these Mexican sunflowers, what is it 'umsondenezwa'?*

*Busisiwe: No, Mexican sunflower 'maphutuma'.*

*Margaret: If I take these down, it is just rubble and bricks, nothing else will grow here. It is just those invasives Bugweed, Mexican sunflower that are growing there. These animals will not have a place to go. But it was cut down. Herbert Chamane came to me and said to me what we can do Mac? 'I have seen the bush pig and the otter here, if they the cut it [sunflowers and bugweed] they [animals] have no place to hide any more...' But it is part of the contract and if your boss says it is part of the contract, then you must do it.*

*TM: But the contractors can be that clever to know nature, if that [animal] does not have a home to stay, that means we did not protect the nature. So, we did not do like, what we supposed to do? (5-Int Ph2 TM KBT, p. 33)*

In addition to creating an ultimate goal focus (not an easy task), a relevance and value component, could be added to Working for Ecosystems. This component is a citizen science component that could be further explored. An emphasis on the value of indigenous plants and indigenous plant knowledge would also link collaborative learning amongst older and younger generations, and in so doing ensure that traditional knowledge was retained. One of the young directors stated the following which I repeat here:

*We have so much information and knowledge on invasive alien plants but less on indigenous. So, we realise there is an opportunity to inform me and I think to inform us also on indigenous. We struggle with the indigenous names you know ... (11-Int Ph2 All Thinking Imvelo, p. 10)*

Additional research could focus on the use of the invasive plants in communities and traditional healers so that the value of invasive plants as herbal remedies is ascertained (Shava et al., 2009a; Semanya et al., 2012; Shackleton et al., 2007). While the aim of invasive plant removal is a pristine indigenous environment, this is a difficult goal to achieve. If, however there is a market value on invasive plants, these plants will retain value. On the other hand, the use of invasive plants reduces the pressure on indigenous plants harvested for traditional use. This is a topic that could encourage discourse and critical thinking in training situations. The hegemony of Western knowledge systems / epistemological access is part of

this discourse (Sections 2.8; 5.4.3; 6.7).

In Working for Ecosystems invasive alien plant removal is a compliance act. In training, more is learnt about invasive alien plants than indigenous plants, since that is the core practice (the goal however is to restore local African flora). Methods of removal and legislation in respect of invasive plant categories all form part of the content of the practice (Section 6.6 provides greater detail on training). We discuss ‘value added products’ for sustainability of the programme. These may include possibilities such as making furniture from *Lantana camara* as in India (Priyanka & Joshi, 2013); biochar from various plants (32Doc Ph1 VAI Biochar business plan) and broom handles from young *Syringa* saplings, *Melia azedarach*.

Traditionally broom handles were made from indigenous trees such as Crossberry, *Grewia occidentalis*. Harvesting indigenous plants for use as handcraft is regularised and requires a permit for harvesting. This makes it simpler to harvest exotic invasive plants. Shackleton (1996, p. 33) referred to “vast quantities of secondary products [which] remain unavailable due to protectionist land-use policies” in the context of local communities and entrepreneurs and poverty alleviation. The policies referred to above in Section 2.3 and 2.4 and the actions in the practice of workplace learning in the field of invasive alien plant control, and SMME development, form the ‘arrangements’ which make the Working for Ecosystems programme happen. Knowledge, indigenous knowledge systems and knowledge management is an additional complex field of research relevant to the Working for Ecosystems context (Hattingh, 2001; O’Donoghue & Neluvhalani, 2002; Neluvhalani, 2007; Mukute, 2010).

***Mediating knowledge in situated co-learning from workers in the field:*** The heading suggests learning in the context of a ‘type of citizen science’ in the Working for Ecosystems workplace. It is understood that what is learnt, is situated, and contextualised in a natural environment, where invasive alien plant control takes place. The term ‘observers’ already existed in some contracting teams. Further research could explore managing knowledge in the citizen science domain. However, we need to search for a more local metaphor, starting with the meaning and translation of ‘observers’. Section 6.6.5 in Figure 6.5: Proposal method and practice Umoyomuhle Environmental Services (Pty), shows an extract from a work proposal for a new contract in Working for Ecosystems: “we then assign ourselves with respective tasks among which there are observers who serve to investigate the demarcated areas through walking and checking the geographical phenomenon which forms the basis of how the area is going to be tackled” (underlining added). However, this form of field

knowledge is not recognised even though there are potentially 12 observers one from each team operating as ‘knowledge gatherers’. It is an amazing collaborative opportunity to learn from those in the field that is, as yet, unharnessed.

#### **7.4.6 Analytical statement 6: Prior knowledge scaffolds SMME skills through relevance and connected learning**

Knowledge and competence is developed in the context of Working for Ecosystems practices, and involves doing the work of invasive alien plant control. The practices are therefore focused on dealing with invasive alien plants and their control and use. Prior knowledge which has connections or is in relation to invasive alien plant control serves as scaffolding for Working for Ecosystems learning and invasive alien plant control practices work, as well as entrepreneurial experience. Here the work of Van Damme and Neluvhalani (2004) referred to *indigenous ways of knowing* to capture this concept of prior knowledge. O’Donoghue and Neluvhalani (2002) suggested that indigenous ways of knowing are also embedded in practices and provide useful knowledge and ways of knowing that can shape new sustainability practices.

Prior knowledge acts as a scaffold to new knowledge. While being an SMME contractor encompasses areas of new knowledge to the Working for Ecosystems contractors, business skills form part of a survival strategy in the context of many unemployed. A detailed skills assessment was conducted prior to a particular co-operative being formed (Qhakaza\_Directors\_2012\_04\_18\_SMME\_skills assess). All members had some prior income. This means that each member was able to sustain some form of business transactions in order to make ends meet. No member was permanently employed; some however were employed at one stage or another.

In most interviews, I made a point of emphasising that each participant was familiar with business principles through some or other form of activity with which they had managed to sustain themselves and their families, as part of an informal economic system (Peberdy, 2000; Venter, 2012; Rogerson, 2016). These were relevant skills that already existed in many participants but most did not regard these actions as valuable skills. In the process of assisting another company in putting together a proposal, it was important to extract existing skills as an acknowledgement of capabilities for the new contract. Again, it became a process of extracting information that showed an answer to my insistence “look you have these relevant skills, add these to the capabilities you have listed”. The issue of skills recognition connected

to experience in any field of work is critical to Recognition of Prior Learning (RPL) and building self-worth (Section 6.6.6; 6.6.7 and Figures 6.2 and 6.3).

Prior knowledge is also related to knowledge accumulated in respect of workplace learning, in Working for Ecosystems. The SMMEs formed within Working for Ecosystems (Chapter 6) all had work experience, as general workers, though mostly as supervisors. Experience in invasive alien plant work ranged from three to five years before forming a company (Appendix N). In each interview these contractors mentioned the period of learning how to do the work, as a significant stepping stone to becoming a contractor.

Prior knowledge for those SMMEs formed independently of Working for Ecosystems, pertained to experience in other projects and with other contracts (examined in Chapter 5). This group of contractors ranged from one SMME formed in 2004 through to 2010. A mentoring process noticed in this study was between two companies who were from the same area (Section 5.3.4 and 6.2.1). Contractors may at times train together, or meet for specific instructions from WESSA. There is no business hub that exists for all these SMMEs to learn from one another and share experiences. At one point, WESSA offered to facilitate teaching company and management skills, but there was no budget available, or time in the programme for this learning extension to take place. A single SMME mentioned that administration was the responsibility of the directors and not the responsibility of the implementing agent, WESSA (Section 5.3.1). The interview itself was short and to the point. It was clear that MM was in a hurry to get to his next appointment. This was different to the majority of the other SMMEs where the opportunity for discourse was appreciated and extensive queries were part of the discussions. The interview with MM was focused and helped me to extract relevant details for creating a template in respect of the SMME research (Section 3.6.4 and Figure 3.13 refer to the Memo in NVivo created for Indabengapheli).

Knowles (1991) created a list of skills and competencies which he regarded as crucial to adult education and learning. These he regarded as characteristics of adult learners who are self-directed. Knowles' dream was to have a community who shared and supported one another in their various roles and acted as a resource throughout life to one another. His Utopia was "new forms of education that are emerging from a society in the process of transformation", who are "themselves learning systems". The aptitudes which Knowles regarded as paramount were to be a learner, to be self-aware and to be a fully-fledged member of society. These 'outcomes' are parallel to an ideal society where, as a result of self-understanding, respect and acceptance of others and their values, a rejection of an act but not the individual will

contribute to positive social change. Cross (1978) provided the distinction of ‘cradle to grave’ learning rather than ‘adult’ learning. Chance and circumstance or stimulus through opportunity or change may also act as incentive to self-directed learning. As adult learners who choose to learn, control of the process and choice from available resources is assigned to the adult learner. Lifelong learning connects with terms such as human capital development, workplace learning and ultimately ESD with a focus on sustainable livelihoods in a global and local context (Mavunga & Cross, 2015).

The analytical statements in Chapter 7 also aim to explore *ways of learning that are flexible and disregard formal learning structures*. Research in respect of lifelong learning is ongoing. More recent studies will need to be examined at a deeper level to explore alternative learning pathways and the articulation that could be followed by those working as small business contractors in Working for Ecosystems. In a complex field such as lifelong learning, Edwards, Armstrong and Miller, (2001) reviewed policy concepts and notions of exclusion and inclusion through critical readings; Preece (2009, 2013) examined lifelong learning and policy as a perspective from the ‘South’ linked to poverty alleviation and social justice; Walters and Jones (2015) engaged with literature on ‘flexible learning’ possibilities in South Africa; Yorks and Barto (2015) looked at interconnections between workplace, organisational and societal domains in respect of learning for 21<sup>st</sup> Century cities; Mavunga and Cross (2015) explored the culture of employee learning and discussed the South African context; Koper et al. (2015) proposed forward design models for lifelong learning networks.

#### **7.4.7 Analytical statement 7: Clarity of management roles and solidarity within management enhances SMME functioning and learning pathway development for others**

Analytical statement 7 in respect of clear management roles and solidarity within management itself, while connected to analytical statement 4, and the necessity for peace building and conflict resolution to build social cohesion, is not the same. SMMEs within the programme that function well show similarity in respect of two important management functions. These are firstly, that each director has a clear description of duties and roles within the company; secondly that directors or members get along with one another, agree on critical issues and feel free to question one another when uncertain (6.2.2; 6.2.5). This refers to cohesion within management itself. It is also not the same as *not* being able to disagree with one another.

All SMMEs in Chapter 5 operated as single directors of the company. This is the group of SMMEs who established themselves prior to joining Working for Ecosystems as contractors. SMMEs in Chapter 6 became established within the Working for Ecosystems programme. Section 6.2.2 described an SMME consisting of five directors, where a sixth director who did not regularly attend meetings, was asked to resign. Section 6.2.5 described the only other remaining SMME which had a number of directors. Each director in this company had a title and a function and all reported for duty each day. Section 6.2.4 referred to the co-operative established within Working for Ecosystems but which has since fragmented into two different companies, one of which is now owned by two women from the original co-operative.

Section 6.2.6 referred to a company owned by two women from Ntshongweni, which has now been divided into the original company and a new company. The aforementioned is an indication that more than one director running a company is, more often than not, problematic. There are several examples of SMMEs trying to find the best fit in respect of directors and ownership. Single ownership means simpler decision-making, but also greater responsibility for all aspects of running a small business.

#### **7.4.8 Analytical statement 8: Learning pathway development needs more support to realise the possibility of entrepreneurship and its political and social significance also in terms of sustainable livelihoods**

The first reference in this study to ‘peace’ is in Section 2.3 with the heading ‘poverty as disqualifier to a decent life’. The introduction quoted Welzer in respect of peace and prosperity where he stated that “the normative idea of social peace to continuous economic growth is probably most responsible for making limitless growth paradigmatic for today’s economic and social policies. Institutional infrastructures regulate growth; the material ones manifest it; and mental infrastructures translate it into lifeworlds” (2011, p. 12). Numerous sections in this study focused on and described structures and policies in place, in local and national contexts, which aim to rectify social justice issues through economic growth. Section 2.2 examined Public Works poverty alleviation programmes, such as EPWP; Section 7.4.8 reviews this same context referring to the DEA ESSP (South Africa. DEA, 2010) document. Section 6.7 set out ten steps in respect of ‘wanting a job, any job will do’ as part of the previous life world of some of the current directors of the Working for Ecosystems SMMEs. Evidence from data in this study points to the possibility of entrepreneurship being connected to work environment opportunities and not necessarily being a career choice. In the Working

for Ecosystems programme, the possibility of entrepreneurship is connected to sustained work in the field (analytical statement 7.4.3 above, in respect of intermittent contracts, has relevance).

In some cases, the SMMEs currently within Working for Ecosystems as contractors, existed outside of the Working for Ecosystems programme. Several of these small businesses were formed through government initiatives and structures designated to do so. Rogerson (2016) reviewed these policies and initiatives albeit with the informal sector and noted how that sector is not fully recognised as an economic reality. Intobeka Yesizwe Pty (Ltd) was formed as a military veteran support initiative (5.3.2); KBT Creations Pty (Ltd) was already in existence and an opportunity to become the conduit for payment to workers (at an IDT meeting) changed the field of work for this company from sewing creations to that of invasive alien plant control facilitation (5.3.3); Lihlithemba Multi Service Consultants CC's first contract was with Working for Water (5.3.4).

The above analytical statement refers to the political significance of becoming an entrepreneur. However, not each participant presented with the opportunity to become a small business contractor within Working for Ecosystems, accepted the challenge. This leads to the question, why did some participants who were presented with the prospect of becoming an SMME not do so, where others (who form a minority group) felt able to take on the task. Several authors have explored the concept 'entrepreneur' linked to agency, self-identity (Phillips, 2013; Jones, 2011 Warren, 2004a; Warren, 2004b; Fuller & Warren, 2006a; Fuller & Warren, 2006b) and the social construction of the systems supporting entrepreneurship (Downing, 2005; Hart & McKinnon, 2010; Dodd & Hynes, 2012; Perren & Dannreuther, 2012; Venter, 2012). These social systems have an economic motive and reveal societal structures and mechanisms set in place to promote enterprise.

Research papers on entrepreneurship and entrepreneurial capabilities refer to enterprise education to assist students in creating successful businesses. Dodd & Hynes (2012) referred to enterprise education in less and more developed regions of Europe. In the summary of their findings in less developed regions they referred to, amongst other factors, characteristic support from local government (as opposed to little support), and "enterprise education that creates a more successful self-narrative", a "cultural resistance to the image of the exploitative entrepreneurs", and the "meaning of enterprising theory as small-scale stories" (p. 760, Table 9).

Jones (2011) in her PhD research with the title, *The Gendering of Entrepreneurship and Higher Education: A Bourdieuan Approach* (in an Australian context) assisted my data analysis in two ways, firstly in the practical acknowledgement of the value of a software analytical program such as NVivo, of needing to reframe and move up to a more abstract level of higher thinking which in a way was constrained by the software. Secondly, in returning to her research questions (a back to basics mind-set), she linked her data to a) struggles and fields of a social space, b) positions about capital, and c) choices of habitus. I felt able to draw a parallel between Jones' research and that of this study. I asked how entrepreneurship is approached in the Working for Ecosystems setting (Sections 4.2, 4.3, 4.4 and 4.5); I asked what responses resulted from the opportunities on offer; also if there was a gender disparity in those who responded and those who did not; I asked if the push from government was so well thought out that these policies underpinned the actual work; I asked how ideas influence people and come into society through policy (such as a 'green economy' or 'sustainable development'). For further comment on the green economy, the research paper by Death (2014) sets out interpretations of how South Africa has approached the concept and application of the green economy.

Recommendations going forward are in order to develop environmental stewardship, or a championing strategy. A large measure of time and effort is necessary to develop leadership, managerial skills and people skills. These include a self-understanding, understanding of others, feelings of empowerment, efficient management of time and administration and so on.

***Recommendation: Various methods in which different government departments mentor and assist SMMEs***

The possibility for research could be extended outside of Working for Ecosystems, to contractors connected to the Environmental Planning Climate Change Protection Department (EPCPD) municipal projects, as well as other government departments. It is evident that departments such as, SANBI, SANPARKS and Working for Water/Natural Resource Management utilise SMMEs as contractors for government work to be completed. In addition, some departments assist the SMMEs in respect of administration and compliance. These structures are mentoring structures in that administrative assistance is a prescribed format simplifying processes of capture and record. Independence outside of these structures is not guaranteed, but can be regarded as a process of learning in practice, possibly a form of articulation of workplace learning pathways.

***Recommendation: Learning pathways of well-established SMMEs in environmental work***

Further research with well-established SMMEs who have joined Working for Ecosystems would assist additional understanding of learning pathways in SMME development. In each case, the contractor had more than one contract (in addition to WFE). Examining how access was enabled as well as a comparative analysis in respect of the various contracts would assist understanding articulation across fields of work available to such micro-enterprises.

There are two SMMEs who come to mind. In one case establishing the SMME was a condition of the National Lottery Development Trust Fund (NLDTF) to the recipient Dusi-Umgeni Conservation Trust (DUCT), where at the end of the funding period (2010-2013), the ownership of the vehicle and tools would be transferred to a field supervisor who showed most promise as a future entrepreneur and scored more than 80% in an evaluation assessment. A three-year period of funding allowed a mentorship relationship as an incubation period during which specific individuals deemed to have potential were selected and nurtured (1Doc Ph2 PR Inapla). When the NLDTF period was concluded, WMH of Inapla Environmental Solutions (Pty) Ltd became a service provider to DUCT and other organisations, such as WFE/WESSA and SANBI. In the second case, the SMME is self-made. A pathway of self-motivation and passion in environmental work was followed accompanied by an interest in learning and gaining knowledge to expand business opportunities through membership of environmental conservation networks such as Kloof Conservancy and WESSA. The learning pathway entailed working as a gardener for seven years over school holidays and weekends, completing Grade 12, concluding a course in landscaping and garden design (13Doc Ph2 PR Msenge closed corporation). Both SMMEs are currently fully functional and able to sustain continuous workflow. Each have their own regular teams of workers, a vehicle, and more than five years of experience (see also list of SMMEs in Appendix I).

**7.4.9 Analytical statement 9: There is need to recognise diversity, multiple ways of knowing and learning in learning pathways development**

I used the various ways of knowing in relation to all participants to support the claim that there is a need to recognise diversity and multiple ways of knowing and learning in learning pathways development. The objective for inclusion was that there was not a single exact duplication of access to becoming a partner in Working for Ecosystems. Each case in the study provides evidence of pathways relevant to understanding how learning pathways in the

Working for Ecosystems context develop. The broader aim was to locate commonalities that could be examined and applied to improve the Working for Ecosystems programme and, as such, also promote environmental learning pathways. Bassey (2001) referred to these ‘generalisations’ in educational research as ‘fuzzy predictions’ and suggested that:

*...wherever possible, the outcome of empirical educational research should include fuzzy predictions. The findings (or results) give an empirical statement of what has been found out about the actual people-events-situation under study. The prediction is a fuzzy generalisation which extrapolates the findings to similar people-events-situations and suggests that similar findings may be discovered elsewhere. (p. 17)*

I examined 27 participants in ten fields to understand the claim of multiple pathways of knowing and learning in pathways development. I show these details in Appendix N. The dominant commonalities that emerged showed how strongly Working for Ecosystems is aligned to SMME participants, where only one participant followed a pathway away from or had no association at any point, with being an SMME director or contractor. SS became an environmental educator through tourism training. WESSA employees (as implementing agents) have been able to upskill over time to, in one case, project manager or in another, an external SMME who acts as the auditor of the Working for Ecosystems programme through his company. Employees of implementing agents can leverage the knowledge they gain from work place learning. A period of five to ten years or more of work experience in the field of environmental work enables environmental learning pathways development and builds capacity in various ways associated with environmental learning and SMME management skills. In most cases, a supervisor of the working teams is more likely to become an SMME than an ordinary worker.

An additional motivation to recognise multiple ways of knowing was to emphasise the immense diversity in the pathways followed to access Working for Ecosystems, as well as the varied environmental understandings. The transition from participating in the informal sector of trade to a formal regulatory environment, is fraught with administrative time consuming tasks. All participants listed in Appendix N have switched from an informal to a formal economic structure. Crossing this boundary and the policies related to SMME development is examined by Rogerson (2016). The business incubation system for small enterprise development as they exist in South Africa was analysed and described by Masutha and Rogerson (2015), and Lose and Tengeh (2015). The Working for Ecosystems tender document referred to a ‘model’ for SMME mentoring and development (Appendix H).

Prior knowledge was the great variable in scaffolding new knowledge gained through practice and training. To enhance an understanding of environmental work and stewardship, diverse ways of knowing and learning are critical for future learning, as co-learning for a more sustainable world, where “social-ecological systems transition theorists suggest that transformations to sustainability occur in ‘niches’ at local level, and it is from this level that wider social changes and *regime shift transformations* can be driven/emerge” (Lotz-Sisitka, Wals, Kronlid, & McGarry, 2015, p. 77). Yet, “disruptive competences” that are “change oriented” for “transformative environmental learning” will assist in striving for continuous re-assessment of ‘*better practice*’ (as opposed to a stagnant ‘best practice’) in the context of the biodiversity management programmes and especially so in the field of invasive alien plant control where we have the opportunity to learn from “multi-voiced engagement with multiple actors” (*ibid.*, p. 78; my emphasis in respect of ‘better practice’).

Divergent thinking enables problem solving skills by using different perspectives to analyse challenges and issues (Masuku Van Damme & Neluvhalani, 2004; Stetsenko, 2008; Engeström & Sannino, 2010; Edwards, 2011; O’Donoghue, 2014). Another intention was that of respect for ways of knowing which are different to the familiar, with a broader understanding and tolerance of other ways of knowing, being aware that differing “ecologies of knowledge” exist (de Sousa Santos, 2007), such as the various uses of invasive plants within communities. The ‘notion of hybridity’ supports the concept of continuous modification processes at work.

### ***The notion of hybridity***

Venter (2012) conducted research on the informal trade sector in Johannesburg paying attention to entrepreneurial cultures and values. He argued:

*... that the notion of hybridity allows for an understanding of values which moves away from the essentialism that sees values from a purely Western or African perspective ... the notion of hybridity allows us to consider values as a form of embodied cultural capital (Bourdieu, 1986), and therefore also as a form of entrepreneurial capital (Firkin, 2001, 2003). (p. 225)*

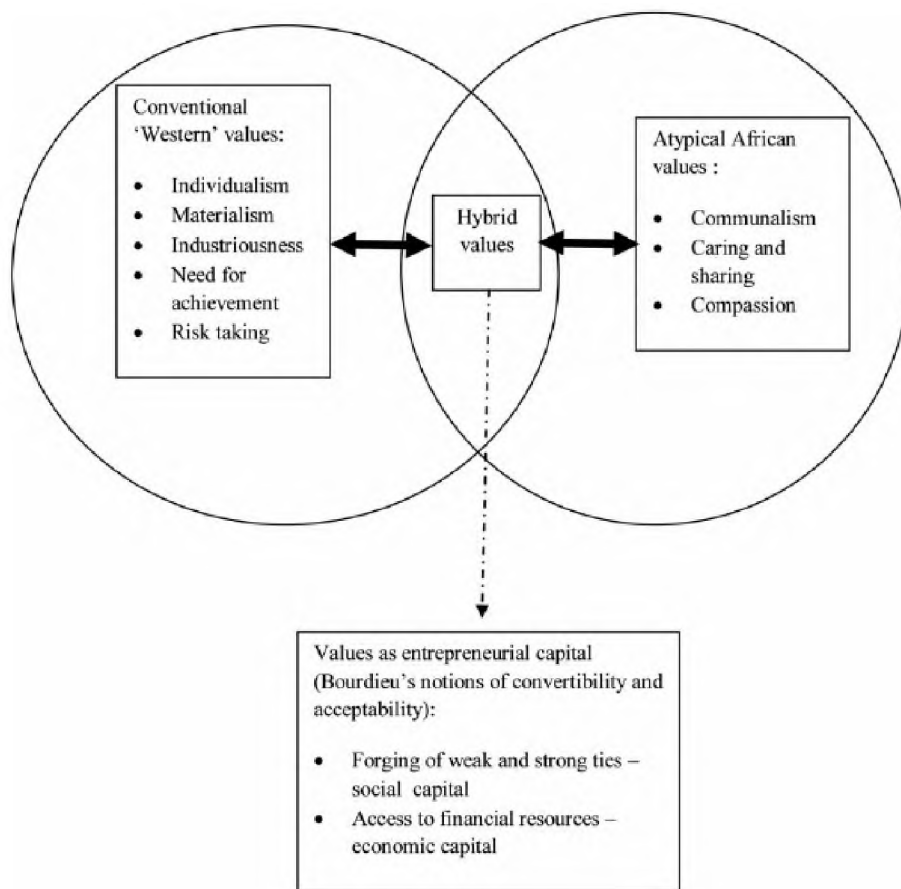
The ‘notion of hybridity’ implies a process of conversion, a transfer of a value item to a different item of value in a transaction between parties. If we contrast this with Hemmings, Kemmis and Reupert (2013) and use the framework of practice architectures (Section 2.6, Table 2.4), the small business practice and the practitioner/entrepreneur, through multifarious relationships, and across ‘intersubjective dimensions’, converts the practice of which he is a

part. To Venter (2012), this transaction can take place because culture has a value and so too, entrepreneurship. Conversion (or barter) can only take place if a reciprocal value exists in the exchange on offer.

It is well-known that informal trading in the South African context, is a vital form of income to many. Peberdy (2000) conducted research on cross-border trade between South Africa and Mozambique. To her, the term informal trade “may be misleading as it obscures the multiple linkages between the formal and informal sectors in both countries ... it implies a degree of illegality and non-regulation which are not always present”. She concluded her research by “questioning the policy and regulatory frameworks within which Small, Medium and Micro Enterprises (SMMEs) operate” (p. 361) as to the designation of ‘informal’... Returning to Venter and the concept of hybridisation, he interpreted Hall (in Hall & Sakai, 1998) and said “hybridisation allows for a position of privilege because it allows for critical reflection on the centre from an insider-outsider’s perspective” (my emphasis).

Venter continued with Bourdieu (1986, p. 47) and the “notion of embodied capital, which means long lasting dispositions of the mind and body and can include values, use of language and the like”; he added “From an entrepreneurial perspective, research has made little of embodied cultural capital (2012, p. 235)”. Venter used the ‘notion of convertibility’ to examine how “values and therefore cultural capital might be converted and entrepreneurial capital accordingly generated”. In Section 7.4.8, I refer to Jones’s research (2011) on gender disparities and entrepreneurship and her ultimate focus on ‘positions, struggles and choices’ in order to make sense of her data on gender disparities, formal learning and becoming an entrepreneur. Venter’s diagram on ‘hybridity as a form of cultural capital’ is copied below to assist in understanding how “more research is required ... to understand the complexities of hybridisation, particularly in entrepreneurial spaces” (Venter, 2012, p. 237).

The concept of ‘entrepreneurial spaces’ as described by Venter above can be used to examine the ‘entrepreneurial spaces’ of the participants in this research. The contrast between the informal and formal trading spaces is important, since it is a transition that the Working for Ecosystems SMMEs, know well. Being a formal business brings with it a host of compliance actions and administration tasks, which if not honoured incur penalties, where ignorance is not available as mitigating evidence. That is the space the formal entrepreneur occupies. It is clear in Venter’s diagram Figure 7.1, that the formal entrepreneur is more closely linked to the conventional ‘Western’ entrepreneurial values.



**Figure 7. 1 Hybridity as a form of cultural capital (Venter, 2012, p. 228) ['Atypical' should read 'Archetypal' in the above diagram]**

**Recommendation: Greater emphasis on the actual pedagogy and learning process** Working for Ecosystems is a complex research study. As such, it became necessary to fully understand and situate the programme in its multidimensional context. This time-consuming factor meant that in-depth research of learning, did not get the attention it deserved. Connected to this is the use of multiple theories adding too many different perspectives such as that of Kemmis and practice theory, Wiek and sustainability competences analysis, and the neglect of relational ontology as possible theoretical underlabourer (Wagenaar, 2007; Stetsenko, 2008). However, despite concern about insufficient research on the learning process itself, or lack of use of relational theory, it **is** clear that the relational space of Working for Ecosystems is evident in this study:

*Relational theories locate the problems in situated relational space. This means (a) that a predominant vantage point of these theories is experiences of environmental and developmental crisis practice, (b) that the question of relational space is central and (c) that they are explicitly concerned with practical implications... (Kronlid & Öhman, 2013, p. 31)*

It would be of great value to conduct additional research with a strong emphasis on how well the work of Working for Ecosystems, as a biodiversity enhancement process is understood by all its participants (Kobokana, 2007). In such a research study, I would prioritise learning, knowledge and societal change as the main topic (Blackmore et al., 2011).

## **7.5 Conclusion**

In concluding the study, it is evident that Working for Ecosystems has, since its inception, evolved to a programme that can showcase local action for biodiversity. At the same time, the Working for Ecosystems programme is able to fulfil the Expanded Public Works Programmes (EPWP) criteria of creating training in the work place. In addition, by establishing an opportunity for small businesses to be associated with the programme, and mentored within Working for Ecosystems, the eThekweni Municipality fulfils its obligations in respect of the National Integrated Development Plan (IDP) (see Sections 2.4, 4.4 and 5.2).

Working for Ecosystems also aligns itself to the current economic emphasis on initiating green jobs. Through placing the Working for Ecosystems programme within the Environmental Planning Climate Change Protection Department (EPCPD), Durban is regarded as a forward thinking and forward planning city. These actions are all connected to climate change mitigation, and creating greater sustainability through safeguarding ecosystems and urban communities who are served by those ecosystems. The Working for Ecosystems project is set up as a trying-by-doing strategy for sustainable urban development (Roberts & O'Donoghue 2013).

This study contributes to an understanding of how the Working for Ecosystems project has evolved since its inception, its historicity. It then examines the pathways of learning in the training and practice of invasive alien plant removal as the work task of Working for Ecosystems. The work is managed at various levels (see Section 6.2). However, the interest of the study lies specifically in how knowledge, practice and sustainability competences of the Small Medium and Micro Enterprise (SMME) participants are put into practice.

Narrative enquiry has served as the method to review Working for Ecosystems as a multi-dimensional intervention. The participants have been those close to the grassroots practice, as directors of SMMEs and project field managers. Their voices have contributed to this research study, to what has eventually become a collaborative overview of Working for Ecosystems as a story, a multi-dimensional story, in strong support of socio-ecological programmes focused on creating sustainable livelihoods.

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## **PERSONAL COMMUNICATION**

Chili, M. D. (2015, December 3). Research assistant, Working for Ecosystems thesis. Durban.

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Rodel, J. (2013, April 4). Manager, WESSA Ecosystem Services Business Unit. Durban.

Stead, W. (2013, April 9). WESSA, Working for Ecosystems Programme Manager. Durban.

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





















## Appendix A: Source Documents Phase 1 WFE Timeline 1Doc Ph1-35Doc Ph1

1	APPENDIX A: SOURCE DOCUMENTS PHASE 1	1DOC PH1 - 35DOC PH1				
2	Name	Description	Classification	Nodes	References	Created On
3	Bheka Nxele_Notes on meeting_MB	1DOC PH1 BN MB 2013	Notes on Meeting	7	46	12/08/2014 06:54 PM
4	Busisiwe Majazi_Intern_Social Worker_personal description	2DOC PH1 BM 2012 UNISA student in SocialWork who	Research Assistant	2	8	31/08/2014 04:30 PM
5	Busisiwe Majazi_Mzinyathi_Peace Building_2012	3DOC PH1 BM MZINYATHI PB 2012	Proposal to WESSA	5	41	23/08/2014 11:57 AM
	Erol Douwes_WFE youtube_transcribed_ED_LZ 2012	4DOC PH1 ED LZ 2012 Youtube transcription ED= Erol Douwes Manager: Restoration Ecology Branch Climate Change, Biodiversity and Resilience Department Development Planning, Environment and Management Unit LZ = Lindelani Zuke ex field manager WESSA - since 2014 SMME to ETHEKWINI and SANBI EThekweni Municipality	Youtube	9	24	12/08/2014 07:05 PM
6						
7	Greg Sver_A Rough Guide to IAS_Section 3	5DOC PH1 GS 2011 Story of Working for Ecosystems by	Narrative text	19	227	12/08/2014 07:44 PM
8	Greg Sver_At the Coal Face_Section 5	6DOC PH1 GS 2011 Story of Working for Ecosystems by	Narrative text	20	603	12/08/2014 07:46 PM
9	Greg Sver_But did it work_Section 6	7DOC PH1 GS Story of Working for Ecosystems by Greg	Narrative text	22	616	12/08/2014 07:57 PM
10	Greg Sver_Dramatis Personae_Section 8	8DOC PH1 GS Story of Working for Ecosystems by Greg	Narrative text	18	364	12/08/2014 07:58 PM
11	Greg Sver_Linda saves the world from aliens_Section 1	9DOC PH1 GS Story of Working for Ecosystems by Greg	Narrative text	22	897	12/08/2014 07:48 PM
12	Greg Sver_The Genesis of WFE_Section 4	10DOC PH1 GS 2011 Story of Working for Ecosystems by	Narrative text	20	500	12/08/2014 07:46 PM
13	Katheryn Terblanche_WFE youtube_transcribed_2012	11DOC PH1 KT Youtube 2012 KZN Wildlife Ezemvelo Sy Youtube	Youtube	20	474	12/08/2014 07:12 PM
14	Katheryn Terblanche_WFE_PP_2012	12DOC PH1 KT Powerpoint presentation as pdf for KZN	Presentations	0	0	12/08/2014 07:15 PM
15	Linda Mlotshwa_Biodiversity Report_EPCPD	13DOC PH1 LM EPCPD 2012	Biodiversity report	19	104	12/08/2014 06:15 PM
16	Linda Mlotshwa_Notes on meeting_MB	14DOC PH1 LM MB 2013	Notes on Meeting	19	566	12/08/2014 06:15 PM
17	Lindelani Zuke_Notes on meeting_MB	15DOC PH1 LZ MB 2013	Notes on Meeting	19	487	12/08/2014 06:26 PM
18	Lindelani Zuke_WFE Minutes of the meeting_Clr Gulo	16DOC PH1 LZ LZ 2013	Notes on Meeting	14	92	12/08/2014 06:26 PM
19	Lindelani Zuke_WFE Minutes of the meeting_Councillor Chii	17DOC PH1 LZ LZ 2013	Minutes of Meeting	16	111	12/08/2014 06:30 PM
20	Tooley_O'Donoghue_ETM_Climate Change_PP_2011	18DOC PH1 G Tooley & S O'Donoghue Powerpoint prese	Presentations	16	198	12/08/2014 07:21 PM
21	Wayne Stead_Notes on meeting_MB	19DOC PH1 WS MB 2013	Notes on Meeting	21	332	12/08/2014 06:54 PM
22	WFE_assessment_criteria_Ntshongweni_2009	20DOC PH1 WS 2009	WFE Biodiversity assessment report	2	2	07/01/2015 02:57 PM
23	WFE_Biodiversity Report_2009_p 18-19	21DOC PH1 ETM 2009	Biodiversity report	1	3	10/01/2015 06:42 PM
24	WFE_Biodiversity Report_2010_p 18-19	22DOC PH1 ETM 2010	Biodiversity report	2	3	09/01/2015 01:38 PM
25	WFE_Biodiversity Report_2011_p 19	23DOC PH1 ETM 2011	Biodiversity report	2	2	09/01/2015 01:38 PM
26	WFE_Biodiversity Report_2012_p 21	24DOC PH1 ETM 2012	Biodiversity report	3	3	09/01/2015 01:35 PM
27	WFE_Biodiversity Report_2012_p 22_LM	25DOC PH1 ETM 2012	Biodiversity report	4	6	09/01/2015 01:35 PM
28	WFE_Biodiversity Report_2013_p 20	26DOC PH1 ETM 2013	Biodiversity report	2	4	09/01/2015 01:35 PM
29	WFE_Biodiversity Report_2013_p 21_Umhakukuva	27DOC PH1 ETM 2013	Biodiversity report	6	9	09/01/2015 01:35 PM
30	WFE_Mzinyathi peace building MB	28DOC PH1 BM MB peace building	Research Assistant	2	13	09/01/2015 02:58 PM
31	WFE_Possible paper on WFE_MB and BM	29DOC PH1 BM MB peace building data	Research Proposal	3	9	09/01/2015 02:58 PM
32	WFE_SOE Headline indicators report 2003_2008	30DOC PH1 ETM 2008	Biodiversity report	1	5	09/01/2015 02:16 PM
33	WFE_SOE Headline indicators report 2006 2007	31DOC PH1 ETM 2007	Biodiversity report	1	4	09/01/2015 03:56 PM
34	WFE_VAI Biochar pilot project proposal June 2012	32DOC PH1 VAI Biochar	Value added industry research	2	4	09/01/2015 01:48 PM
35	WFE_WESSA_SQA Training in IAPS Basic course	33DOC PH1 SAQA Unit standards applied to the WFE WI	SAQA Unit Standards	1	10	10/01/2015 04:06 PM
36	WFE_WESSA_Training in IAPS Manual Basic Facilitator	34DOC PH1 Training Manual Basic Facilitator	Training manual	1	11	10/01/2015 10:09 AM

**Appendix B: Source Documents WFE Phase 2 Knowledge and Practice Reports (MDC) 2013-2014 Official status compliance and actions taken 1Rep Ph2-33Rep Ph2 SMMEs and 1Doc Ph2-25Doc Ph2 SMME CIPC Certificates and Working for Ecosystems Proposals for contract work**

APPENDIX B SOURCE DOCUMENTS PHASE 2		1REP PH2 - 33REP PH2				
Name	Description	Classification	Created On	Nodes	Reference	
20130828_NEW SME BEE AND TAX CLEARANCE POSITIVE FEEDBACK	2REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	4	7	
20130711_UMHLAKUVA ENTERPRISES TAX RETURN S APPOINTMENT	3REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	2	9	
20130724_UMHLAKUVA ENTERPRISES TAX RETURNS FIRST APPOINTMENT	4REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	2	3	
20130731_UMHLAKUVA ENTERPRISES TAX RETURN S APPOINTMENT	5REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	4	
20130802_SME DEVELOPMENT COLLECTION OF REGISTERED COMPANIES REPORT	6REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	2	
20130802_SME DEVELOPMENT QUERY ON MTHINI ENVIRONMENTAL PROJECTS AND STANDARD BANK BUSINESS ACCO	7REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	1	
20130807_NEW SME'S BUSINESS ACCOUNT ARRANGEMENTS AND QUERY ABOUT MTHINI CERTIFICATE	8REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	2	5	
20130808_BUSINESS ACCOUNT APPOINTMENT AN COLLECTION OF MTHINI CERTIFICATE FROM THE ACCOUNTANT.	9REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	8	
20130810_SME DEVELOPMENT SME BUSINESS ACCOUNT APPOINTMENT FOR MONDAY THE 12th OF AUGUST 2013	10REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	3	
20130812_SME BUSINESS ACCOUNT FINALISED REPORT	11REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	5	
20130823_SME DEVELOPMENT WFE WESSA SMME WORKSHOP ABOUT CONTRACT BRIEFING	12REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	2	3	
20130827_SME DEVELOPMENT UMOYOMUHLE N THINKING IMVELO TAX BEE CERTIFICATE APPLICATION APPOINTMEN	13REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	2	3	
20130828_SME DEVELOPMENT 3 NEW SME BEE AND TAX CLEARANCE POSITIVE FEEDBACK	14REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	2	
20130910_SME DEVELOPMENT REPORT ON MTHINI BEE CERTIFICATE COLLECTION AND TAX CLEARANCE QUERY	15REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	2	
20130913_SME DEVELOPMENT REPORT ON AN APPOINTMENT I HAD WITH THULI THE ACCOUNTANT	16REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	2	3	
20130926 REPORT ON MTHINI AND INHLABA TAX CLEARANCE APPLICATION AND COLLECTION	17REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	2	
20131004 REPORT ON APPOINTMENT WITH THULY IN CONNECTION WITH HER COMPANY PROFILE	18REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	2	2	
20131004_REPORT ON APPOINTMENT WITH THULY IN CONNECTION WITH HER COMPANY PROFILE	19REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	3	4	
20131010_REPORT ON PHONE CALLS TO ARRANGE APPOINTMENT FOR PUTING THEIR COMPANY ON DATA BASES	19REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	1	
20131012_REPORT ON GETTING SME S REGISTERED ON ETHEKWINI DATA BASE	20REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	2	
20131122_REPORT ON AN APPOINTMENT WITH UMOYOMUHLE ABOUT GETING THEIR COMPANY AT ETHEKWINI DATA	21REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	3	
20131122_REPORT ON APPOINTMENT WITH THINKING IMVELO ABOUT REGISTERING THEIR COMPANY AT ETHEKWINI	22REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	1	
20131127_REPORT ON AN APPOINTMENT WITH THINKING IMVELO AND UMOYOMUHLE ABOUT REGISTERING THEIR O	23REP PH2 MDC MB 2013	Report company complete	06/01/2015 06:33 PM	1	2	
20140219_REPORT ON PHONE CALLS MADE TO SME S REGARDING THEIR ETHEKWINI DATA BASE STATUS	24REP PH2 MDC MB 2014	Report company complete	06/01/2015 06:33 PM	2	3	
20140320_Report about registering a new company for Ntombikile Mkhize	25REP PH2 MDC MB 2014	Report company complete	06/01/2015 06:33 PM	5	12	
20140512 Qhakaza Mvelo and Vikelimvelo report on recent activities	26REP PH2 MDC MB 2014	Proposal to WESSA	06/01/2015 06:33 PM	5	9	
20140520 REPORT ON VIKELI MVELO & QHAKAZA RECENT APPOINTMENT OR INTERACTIONS	27REP PH2 MDC MB 2014	Report company complete	06/01/2015 06:33 PM	5	8	
20141030_Report about Mthini Environmental Projects Bank Acc updates	28REP PH2 MDC MB 2014	Report company complete	06/01/2015 06:33 PM	1	1	
20141030_SMME's Recommendations on getting their documents upto date.	29REP PH2 MDC MB 2014	Report company complete	06/01/2015 06:33 PM	1	1	
20141126_REPORT ON THE RECENT ACTIVITY WITH SMME'S (1)	30REP PH2 MDC MB 2014	Report company complete	06/01/2015 06:33 PM	3	6	
20141209_APPPOINTMENT WITH THABISILE AND DELISILE ABOUT REGISTERING THEIR COMPANY. (1)	31REP PH2 MDC MB 2014	06/01/2015 06:33 PM	2	2		
20141218_APPPOINTMENT WITH UMOYOMUHLE REGARDING OPENING ANOTHER COMPANY (2)	32REP PH2 MDC MB 2014	06/01/2015 06:33 PM	2	3		
20141223_AN INTERVIEW WITH SIFISO VUKANI LUTHULI AND SINDI NCANE REGARDING THE OPENING OF A HOLDING	33REP PH2 MDC MB 2014	Report company complete	06/01/2015 06:33 PM	2	4	
APPENDIX B CONTINUED - SOURCE DOCUMENTS PHASE 2		1DOC PH2 - 25DOC PH2				
Name	Description	Classification	Created On	Nodes	Reference	
Inaple Environmental Solutions Proposal WFE	1DOC PH2 PR Multi contractor in that th	Proposal to WESSA	18/11/2014 04:27 PM	12	22	
Indabengapheli CIPC	2DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:20 PM	2	2	
Intobeka Yesizwe CIPC	3DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:19 PM	2	2	
Intobeka Yesizwe Proposal WFE	4DOC PH2 PR July 2014 Proposal to WI	Proposal to WESSA	18/11/2014 01:01 PM	6	7	
KBT Creations CIPC	5DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:19 PM	2	2	
KBT Creations Proposal WFE	6DOC PH2 PR July 2014 proposal for V	Proposal to WESSA	18/11/2014 01:02 PM	9	30	
Lihlithemba Multi Service CIPC	7DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:19 PM	1	1	
Lihlithemba Multi Service Proposal WFE	8DOC PH2 PR	Proposal to WESSA	18/11/2014 06:23 PM	5	16	
Lmamo PTY Proposal WFE	9DOC PH2 PR Submitted proposal to W	Proposal to WESSA	18/11/2014 04:58 PM	1	1	
Luxolo Myeza Proposal WFE	10DOC PHE PR Submitted proposal to V	Proposal to WESSA	18/11/2014 04:27 PM	1	1	
Macabzela Co-op Proposal WFE	11DOC PH2 PR	Proposal to WESSA	18/11/2014 05:03 PM	6	16	
MACABZELA CO-OPERATIVE LIMITED (2012_021986_24) - Certificate Disclosure	12DOC PH2 CIPC Macabzela Co-op CIP	CIPC Official Reports	07/01/2015 06:59 PM	2	2	
Msenge Landscapes Proposal WFE	13DOC PH2 PR Multi contractor in that	Proposal to WESSA	18/11/2014 04:26 PM	4	17	
Mthini Environmental projects CIPC	14DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:20 PM	2	2	
Mthini_Name choices_2013	15DOC PH2 CIPC Name choices	Name selection report	07/01/2015 02:51 PM	3	3	
Nguluzane Co-op Proposal WFE	16DOC PH2 PR Submitted proposal to V	Proposal to WESSA	18/11/2014 04:56 PM	3	3	
PR Conveniences CIPC	17DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:21 PM	2	2	
Sabelwe Proposal WFE	18DOC PH2 PR	Proposal to WESSA	18/11/2014 01:07 PM	8	20	
Sala Benabe Co-op Proposal WFE	19DOC PH2 PR Submitted proposal to V	Proposal to WESSA	18/11/2014 04:21 PM	4	5	
Songa Umnotho CIPC	20DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:22 PM	2	2	
Songa Umnotho Proposal WFE	21DOC PH2 PR Songa Umnotho Propoe	Proposal to WESSA	18/11/2014 04:30 PM	6	12	
Thinking Imvelo CIPC	22DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:22 PM	1	1	
Thinking Imvelo Proposal WFE	23DOC PH2 PR	Proposal to WESSA	18/11/2014 05:06 PM	3	18	
Thinking Imvelo_Name choices_2013	24DOC PH2 Name choices	Name selection report	07/01/2015 02:51 PM	2	2	
Uzozwa CIPC	25DOC PH2 CIPC	CIPC Official Reports	31/08/2014 07:23 PM	2	2	

## Appendix C: Source Documents WFE Phase 3 Knowledge and Competence 1Doc Ph3 – 13Doc Ph3

1	APPENDIX C SOURCE DOCUMENTS		1DOC PH3 - 13DOC PH3				
2	Name	Description	Classification	Nodes	Reference	Created On	
3	 Ghakaza Mvelo CIPC	1DOC PH3 CIPC	CIPC Official Reports	1	1	03/01/2015 10:15 PM	
4	 Ghakaza Mvelo interviews_Busisiwe Majazi_March 2012	2DOC PH3 INT BM 2012 Ghakaza Mvelo interviews were conducted with 32 workers in March 2012. These in	Research Interviews	4	10	16/11/2014 03:33 PM	
5	 Ghakaza Mvelo Proposal WFE	3DOC PH3 PR Co-op with WFE since inception, emerged from within WFE where members started as workers.	Proposal to WESSA	3	11	03/01/2015 10:15 PM	
6	 Ghakaza_Directors_2012 04 18 _SMME_skills assessment	4DOC PH3 QHAKAZA SKILLS ASSESS 2012	Skills assessment	3	21	21/08/2014 08:09 PM	
7	 Ghakaza_Name choices for Co-op_formal	5DOC PH3 Ghakaza Name choices	Name selection report	2	2	09/01/2015 12:34 PM	
8	 Umhlakvu Enterprises CIPC	6DOC PH3 CIPC company download	CIPC Official Reports	2	2	03/01/2015 10:14 PM	
9	 Umhlakvu Enterprises Proposal WFE	7DOC PH3 PR	Proposal to WESSA	3	8	03/01/2015 10:14 PM	
10	 Umoyomhle CIPC	8DOC PH3 CIPC company download	CIPC Official Reports	2	2	03/01/2015 10:13 PM	
11	 Umoyomhle Proposal WFE	9DOC PH3 PR Version 2 July 2014 Final version of proposal for WFE. Regarded as the best example of a prop	Proposal to WESSA	4	18	03/01/2015 10:14 PM	
12	 Umoyomhle Proposal WFE draft	10DOC PH3 PR Version 1 July 2014 proposal to WFE for next contract period	Proposal to WESSA	2	2	03/01/2015 10:14 PM	
13	 Umoyomhle_Name choices_2012	11DOC PH3 Umoyomhle Name Choices	Name selection report	2	2	09/01/2015 12:36 PM	
14	 Vikelimvelo Proposal WFE Final	12DOC PH3 PR Version 2	Proposal to WESSA	5	9	03/01/2015 10:14 PM	
15	 Vikelimvelo Proposal WFE Version 1	13DOC PH3 PR Version1	Proposal to WESSA	2	2	03/01/2015 10:14 PM	
16							

## Appendix D: Classification categories of sources uploaded to NVivo

APPENDIX D: SOURCE CLASSIFICATIONS

	Name	Created On	Created By	Modified On
	Biodiversity report	04/01/2015 04:34 PM	M H M	12/01/2015 06:14 PM
	CIPC	31/08/2014 07:27 PM	M H M	31/08/2014 07:27 PM
	CIPC Official Reports	04/01/2015 04:41 PM	M H M	07/01/2015 07:00 PM
	Contractor	23/08/2014 04:32 PM	M H M	11/01/2015 04:27 PM
	<b>Name</b>		<b>Type</b>	<b>Created On</b>
	SMME		Text	23/08/2014 04:40 PM
	Environmental Educator	11/11/2014 06:02 PM	M H M	04/01/2015 05:12 PM
	Ethekwini Climate Change Research	02/01/2015 07:26 PM	M H M	04/01/2015 04:55 PM
	Field Manager	23/08/2014 04:20 PM	M H M	04/01/2015 05:09 PM
	<b>Name</b>		<b>Type</b>	<b>Created On</b>
	WESSA		Text	23/08/2014 04:40 PM
	Interview	04/01/2015 04:32 PM	M H M	09/01/2015 12:18 PM
	<b>Name</b>		<b>Type</b>	<b>Created On</b>
	Interviewee		Text	04/01/2015 04:32 PM
	Interviewer		Text	04/01/2015 04:32 PM
	Transcriber		Text	04/01/2015 04:32 PM
	Date and Time		Date/Time	04/01/2015 04:32 PM
	Location		Text	04/01/2015 04:32 PM
	Interview transcript	04/01/2015 05:00 PM	M H M	15/01/2015 11:27 AM
	Manager Ethekwini Restoration Ecology	02/01/2015 04:54 PM	M H M	04/01/2015 04:54 PM
	Memo	04/01/2015 04:47 PM	M H M	14/01/2015 05:06 PM
	Minutes of Meeting	04/01/2015 04:35 PM	M H M	04/01/2015 04:53 PM
	Multi-contractor	18/11/2014 04:11 PM	M H M	04/01/2015 04:58 PM
	Name selection report	09/01/2015 11:38 AM	M H M	09/01/2015 12:40 PM
	Narrative text	04/01/2015 04:40 PM	M H M	04/01/2015 04:56 PM
	Notes on Meeting	04/01/2015 04:37 PM	M H M	11/01/2015 04:15 PM
	Outsider Contractor	18/11/2014 04:25 PM	M H M	04/01/2015 04:58 PM
	Presentations	04/01/2015 04:39 PM	M H M	08/01/2015 06:39 PM
	Photograph	11/01/2015 12:04 PM	M H M	15/01/2015 01:03 PM
	Profile description	04/01/2015 04:41 PM	M H M	04/01/2015 04:41 PM
	Programme Manager	23/08/2014 04:26 PM	M H M	04/01/2015 04:53 PM
	<b>Name</b>		<b>Type</b>	<b>Created On</b>
	Restoration Ecology branch		Text	23/08/2014 04:41 PM
	Project Manager	23/08/2014 04:23 PM	M H M	04/01/2015 04:54 PM
	<b>Name</b>		<b>Type</b>	<b>Created On</b>
	WESSA		Text	23/08/2014 04:43 PM
	Proposal to WESSA	04/01/2015 04:42 PM	M H M	09/01/2015 11:20 AM
	Report company compliance and act	08/01/2015 07:26 PM	M H M	14/01/2015 10:40 AM
	Research Assistant	02/01/2015 04:27 PM	M H M	09/01/2015 03:02 PM
	Research Interviews	04/01/2015 04:45 PM	M H M	09/01/2015 11:42 AM
	Research Proposal	04/01/2015 04:47 PM	M H M	09/01/2015 03:03 PM
	SAQA Unit Standards	10/01/2015 04:14 PM	M H M	11/01/2015 10:19 AM
	Site meetings	04/01/2015 04:47 PM	M H M	11/01/2015 04:44 PM
	Skills assessment	04/01/2015 04:43 PM	M H M	09/01/2015 11:45 AM
	SMME contractor to WFE	02/01/2015 05:00 PM	M H M	02/01/2015 05:00 PM
	SMME contractor to WFE - experienc	02/01/2015 05:02 PM	M H M	02/01/2015 05:02 PM
	Training manual	10/01/2015 04:19 PM	M H M	10/01/2015 04:20 PM
	Value added industry research	09/01/2015 02:34 PM	M H M	09/01/2015 02:35 PM
	Video Interview	04/01/2015 04:46 PM	M H M	04/01/2015 04:46 PM
	Video observation	04/01/2015 04:46 PM	M H M	11/01/2015 04:27 PM
	Video transcription	04/01/2015 05:35 PM	M H M	11/01/2015 04:26 PM
	WFE Biodiversity assessment report	07/01/2015 02:57 PM	M H M	07/01/2015 02:57 PM
	Youtube	04/01/2015 04:38 PM	M H M	08/01/2015 06:44 PM

## Appendix E: Extract from the process document showing the steps of data management, data generation analysis

Figure 52: Screen shots showing the use of NVivo as data management for thesis chapters and data overview

The figure consists of three screenshots of the NVivo software interface, demonstrating data management for thesis chapters. Each screenshot shows a hierarchical tree of nodes on the left and a search results table on the right.

**Screenshot 1: Overview of Nodes**

The search results table shows the following data:

Name	Sources	References	Created On	Created B	Modified On
Thesis analysis	2	137	23/09/2014 08:55 PM	M H M	18/01/2015 09:51 AM
Validity_phase 1 interviews	5	104	20/01/2015 04:58 PM	M H M	03/02/2015 02:43 PM
Validity_phase 2 interviews	0	0	03/02/2015 02:44 PM	M H M	03/02/2015 02:44 PM

**Screenshot 2: Search for '4\_Time Line\_The Ecosystem of WFE'**

The search results table shows the following data:

Name	Sources	References	Created On	Created	Modified On	
WFE Timeline		15	104	08/01/2015 03:29 PM	M H M	01/02/2015 09:55 AM
2006		31	388	08/01/2015 03:29 PM	M H M	01/02/2015 09:53 AM
2012		24	453	08/01/2015 03:29 PM	M H M	25/01/2015 11:00 PM
Transition to Entrepreneurial phase		18	554	08/01/2015 03:29 PM	M H M	31/01/2015 08:54 PM
Workers and supervisors		3	5	08/01/2015 03:29 PM	M H M	30/01/2015 05:16 PM
Why Working for Ecosystems		20	110	12/01/2015 11:53 AM	M H M	18/01/2015 11:14 AM

**Screenshot 3: Search for '5\_Practice and Knowledge\_Narratives of changing practice'**

The search results table shows the following data:

Name	Sources	Reference	Created On	Created	Modified On	
3_Doings		63	220	14/12/2014 05:36 PM	M H M	20/02/2015 12:59 PM
Contracts 'in break forms'		26	195	07/01/2015 12:11 PM	M H M	20/02/2015 12:59 PM
Local Plant Knowledge		35	134	08/01/2015 04:11 PM	M H M	16/02/2015 09:58 PM
Training		25	644	08/01/2015 04:11 PM	M H M	25/01/2015 11:00 PM
Tourism Guiding		18	302	08/01/2015 04:11 PM	M H M	25/01/2015 11:00 PM
Work and working		15	78	04/02/2015 03:55 PM	M H M	24/02/2015 11:09 PM
4_Relatings		25	74	14/12/2014 05:39 PM	M H M	24/02/2015 11:09 PM
Access and Agency		17	280	31/08/2014 06:39 PM	M H M	25/01/2015 11:00 PM
Conflict and peace building		24	565	08/01/2015 03:29 PM	M H M	20/02/2015 12:59 PM
Ntshongweni Community		25	521	31/08/2014 06:40 PM	M H M	20/02/2015 06:04 PM
1_Enabling and Constraining factors		17	298	26/08/2014 12:25 PM	M H M	08/02/2015 07:27 PM
Equity from the middle		22	306	22/09/2014 07:32 PM	M H M	25/01/2015 11:00 PM

**Nodes** < Look for  Search In  6\_Learning Path Find Now Clear Advanced Find

- Nodes
  - 1\_Introduction and Context
  - 2\_Literature Review
  - 3\_Methodology
  - 4\_Time Line\_The Ecosystem of WFE
  - 5\_Practice and Knowledge\_Narratives of changing
  - 6\_Learning Pathways Emergence\_Knowledge Pract
    - WFE SMMEs deeper narratives
    - 7\_Discussion Conclusion and Recommendations
- Cases
  - 4\_Time Line\_The Ecosystem of WFE
  - 5\_Practice and Knowledge\_Narratives of changing
  - 6\_Learning Pathways Emergence\_Knowledge Pract
- Sentiment
- Relationships

**6\_Learning Pathways Emergence\_Knowledge Practice and Competences as learning pathways in to SMME development**

Name	Sources	References	Created On	Created By	Modified On
Environmental Stewardship	16	53	23/08/2014 08:44 PM	M H M	25/01/2015 11:00 PM
Learning pathways in to SMME development	0	0	24/02/2015 06:34 PM	M H M	24/02/2015 06:34 PM
Practice jurisdiction and SMME practice intertwined	0	0	24/02/2015 06:35 PM	M H M	24/02/2015 06:35 PM
Connected knowing and constituents of agency	0	0	24/02/2015 06:36 PM	M H M	24/02/2015 06:41 PM
Immersive learning	0	0	24/02/2015 06:38 PM	M H M	24/02/2015 10:06 PM
Learning to manage roles and relationships	0	0	24/02/2015 06:39 PM	M H M	24/02/2015 06:39 PM

**Nodes** < Look for  Search In  6\_Learning Path Find Now Clear Advanced Find

- Nodes
  - 1\_Introduction and Context
  - 2\_Literature Review
  - 3\_Methodology
  - 4\_Time Line\_The Ecosystem of WFE
  - 5\_Practice and Knowledge\_Narratives of changing
  - 6\_Learning Pathways Emergence\_Knowledge Pract
    - WFE SMMEs deeper narratives
    - 7\_Discussion Conclusion and Recommendations
- Cases
  - 4\_Time Line\_The Ecosystem of WFE
  - 5\_Practice and Knowledge\_Narratives of changing
  - 6\_Learning Pathways Emergence\_Knowledge Pract
- Sentiment
- Relationships

**6\_Learning Pathways Emergence\_Knowledge Practice and Competences as learning pathways in to SMME development**

Name	Sources	References	Created On	Created	Modified On
Goundwork for Sustainability Competences	26	212	24/08/2014 12:48 PM	M H M	03/02/2015 07:54 PM
Anticipatory Competence	6	9	14/12/2014 05:22 PM	M H M	15/01/2015 12:21 PM
Interpersonal Competence	8	13	14/12/2014 05:20 PM	M H M	15/01/2015 12:21 PM
Normative Competence	5	7	14/12/2014 05:26 PM	M H M	15/01/2015 12:21 PM
Strategic Competence	5	8	14/12/2014 05:25 PM	M H M	15/01/2015 12:21 PM
Systems Thinking Competence	7	9	14/12/2014 05:18 PM	M H M	15/01/2015 12:21 PM

**Appendix F: Represents 4 visual charts for data coded using NVivo software in respect of the four key informants in Chapter 4**

Chart 1 Ki-1

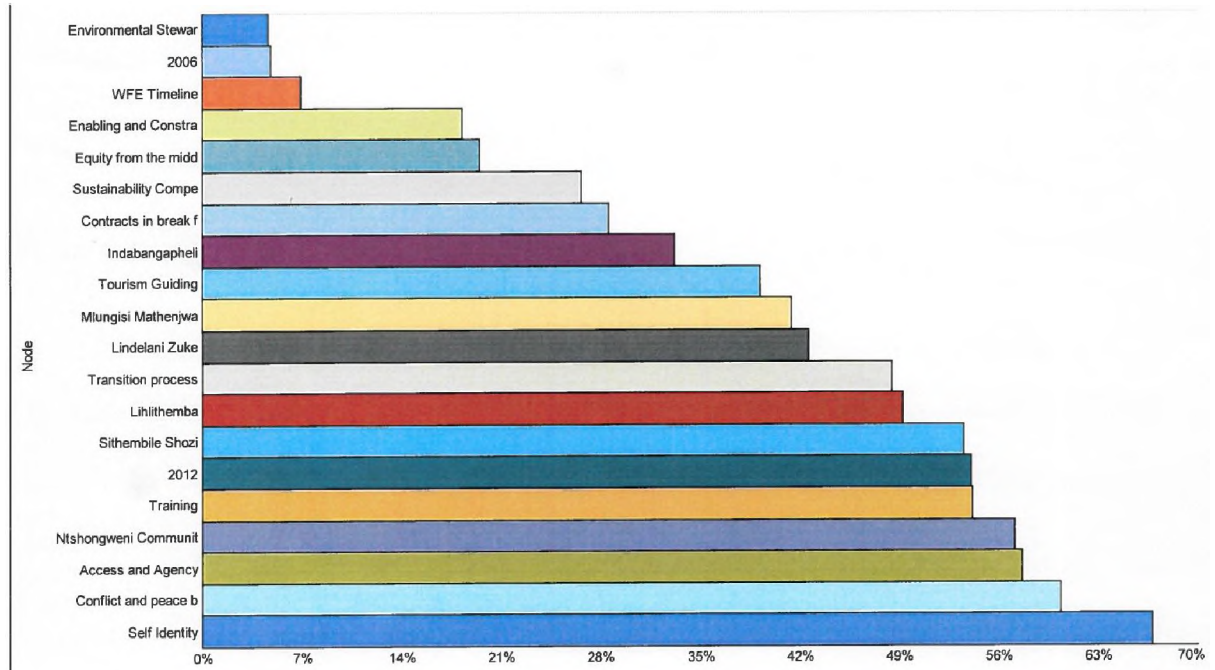


Chart 2 Ki-2

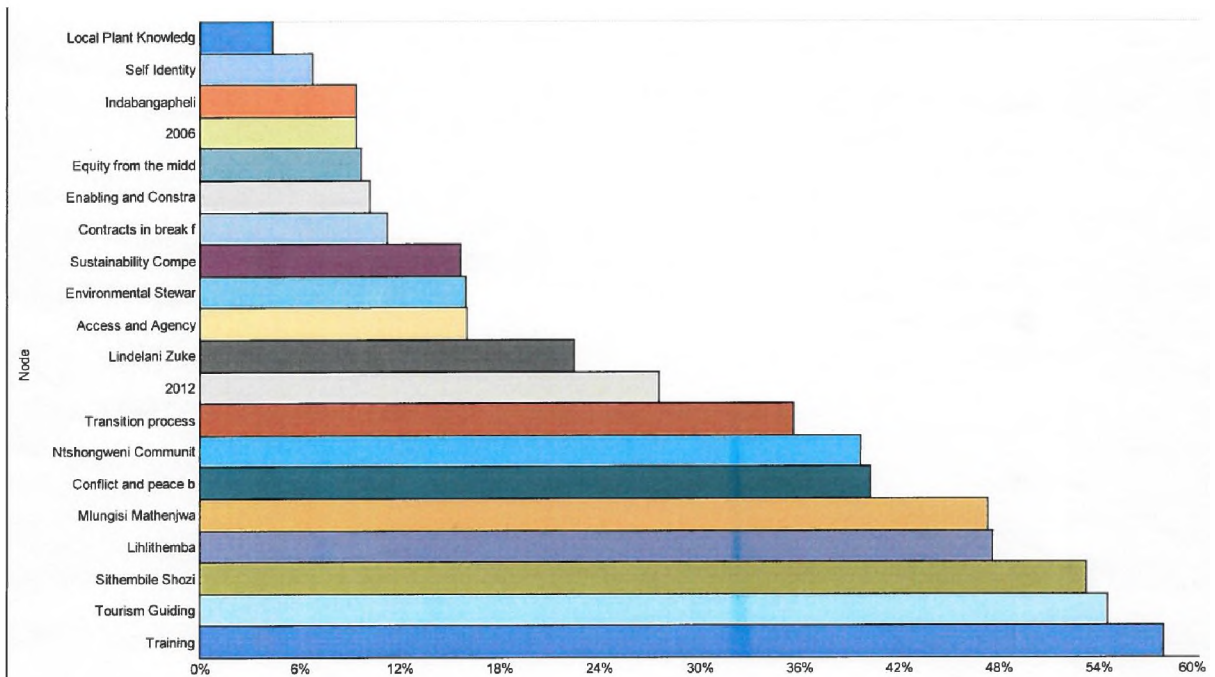


Chart 3 Ki-3

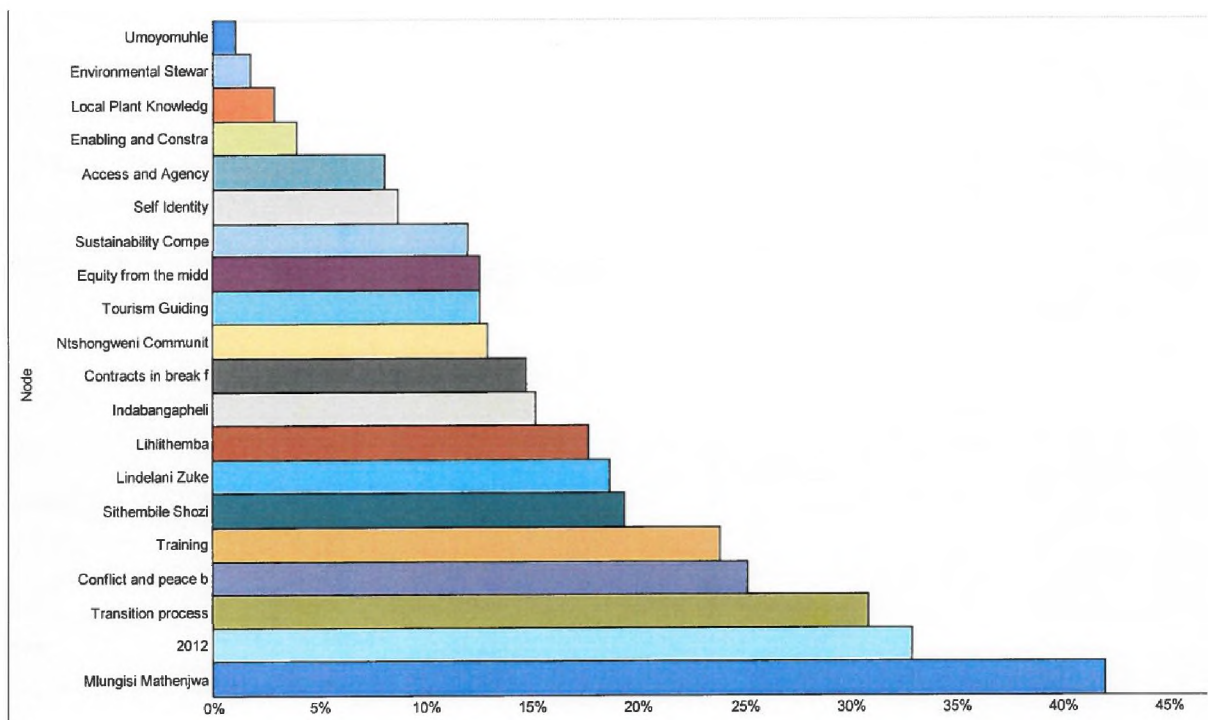
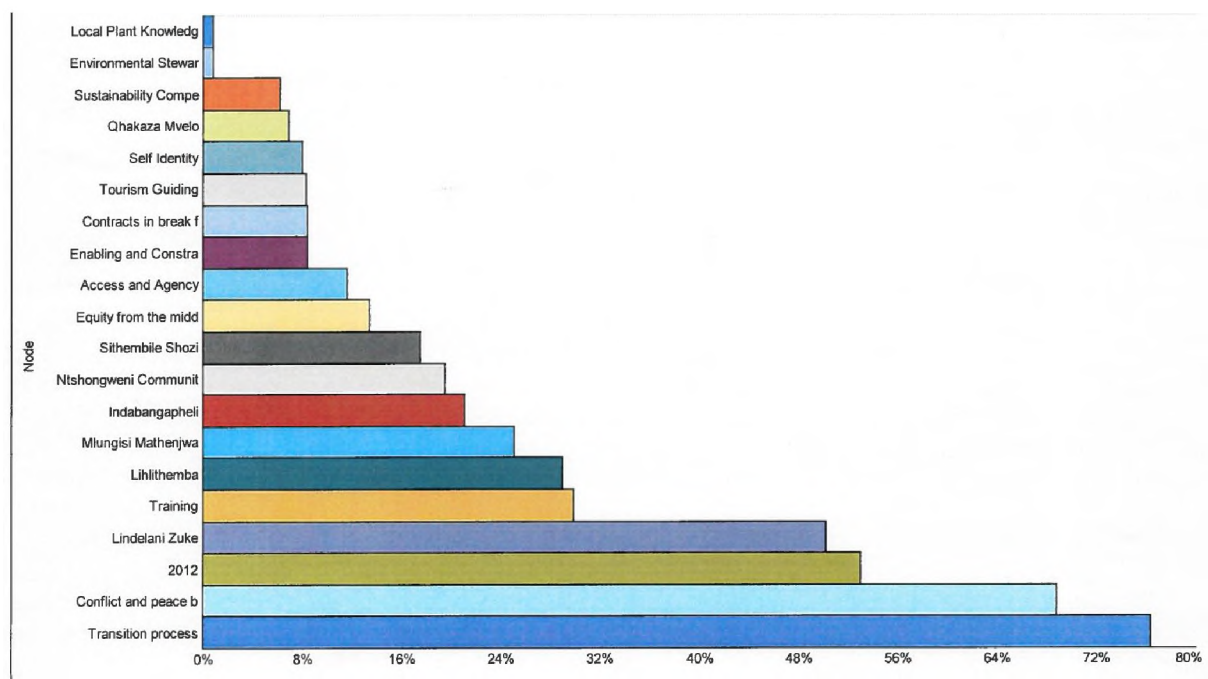


Chart 4 Ki-4



## Appendix G: Personal contractual obligation to WESSA to act as an implementing agent for the Working for Ecosystems Programme

Scope of work WfE, description of appointment brief set by WESSA (email November 2011)

- The scope of work expected for the fulfilment of this contract is as follows:
  - You will undertake an Honours or Master's Degree that will have as part of its focus:
    - The social impact (individual and community) of the WFE Invasive Alien Clearing Programme be they negative or positive.
    - Lessons learnt from the project and how the project could be improved.
    - SMME development through EPWP programmes and how the clearing of Invasive Aliens could be made sustainable.
    - How a better understanding of environmental challenges can be achieved through the project.
    - How the WFE projects can be utilised to ensure new communities can better integrate into D'MOSS areas.
  - Identify and mentor 2 or 3 people who are currently working in the WFE project in a greater environmental understanding for the purpose of growing in the Green Economy.
- You will be expected to report monthly on your work and provide 2 articles per month on issues of interest that arise from the communities involved in the project; these do not have to be specific to your studies but could focus on the richness of the project as a whole.

**Appendix H: eThekweni Municipality selection of pages of tender documents 2015 - 2018  
Invasive Alien Species control programme (eThekweni Municipality, 2014, p.15-18)**

**2.6. Training**

Training should be provided to staff within the Invasive Alien Species Control programme, as well as other relevant municipal programmes as determined by the client. Training fees should be included in the Tender price.

The training should encompass 3 elements, namely a:

- Theoretical session,
- Practical Session, and
- Assessment session

The training needs to be done in a way in which it is:

- Continuous over the number of days
- Repetitive,
- Verbal/visual, and
- In English or Zulu

The training should cover the following topics:

- Invasive alien plant recognition,
- Invasive alien plant control methods (including use of herbicides),
- Invasive alien plant Impacts,
- Biodiversity conservation and ecological principles,
- Strategic planning,
- Management and decision making,
- Monitoring, assessment and reporting,
- Communication, outreach and education,
- Health and Safety, and
- Basic invasion ecology

Train employees in **current, relevant** IAP control methodologies including:

- Manual control methods, and
- Herbicide application

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Ensure that there are different levels of experience including:

- Basic,
- Intermediate, and
- Advanced

Provide additional training to employees in the following:

- Basic first aid
- Fire fighting
- HIV/Aids awareness
- Life Skills
- Basic banking
- Basic ecological principles
- Health and fitness awareness

## 2.10. Business Support & Development

Be committed to ensuring both development and support of employees and assist them with the establishment of SMME's. This will include all necessary training, administrative support and mentoring. Such SMMEs should, by the end of the three year period, be able to operate independently. This will thus involve mentoring each of the SMME's from inception to independency, during the contract period. Therefore a separate model for achieving this, will need to be made available.

## 2.11. Value-add Industries

Up to 2% of the total contract value will need to be used towards value-add industries (i.e. maximising on opportunities that can be derived from invasive alien species biomass).

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## 2.12. Community Resilience to Climate Change

- Up to 3% of total contract value to be focused on improving societal adaptation or community resilience to climate change.
- A minimum of 10% of the total contract is to be given to other contractors that are at least 76% black owned. If this requirement is not adhered to, a pro rata fine of up to 2.5% of the total contract value will be issued.

## 2.13. Research

2% of the total contract value to be allocated to research on IAP control initiatives, within relevant project sites and to be undertaken by a bona fide local tertiary institution.

Provide the following data electronically, updated on a monthly basis, within a template provided by the eThekweni Municipality.

- Relevant GIS shapefiles to be submitted monthly and must align with internal municipal GIS database.
- All relevant monthly EPWP reporting data including number of people employed. All other relevant key performance indicators (KPIs), including statistics for procurement/employment and training, as required by the client.

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## Appendix I: Alphabetical list of 2014-2015 SMME contractors in Working for Ecosystems

SMME	WFE proposal	CIPC Official status Compliance Admin	Reason for inclusion
<b>Inapla Environmental Solutions (Pty) Ltd</b> INAPLA abbreviation for Invasive Alien Plants - owner Wiseman Mhlongo - DUCT supervisor for 3 years, 2010 - 2013 - requirement from Lotto funding to establish business and take over vehicle - now multi contractor and in WFE an outsider, recent insider. Has a B Tech in Nature Conservation. Working for Ecosystems proposal submitted to WESSA. Sound proposal; does not state his qualifications.	yes	2012/220277/07 Wiseman Mhlongo	Potential inclusion for next round of research of established functioning SMMEs since Wiseman is finding alternative contracts (Working for Ecosystems, SANBI and DUCT)
<b>Indabengapheli Trading (Pty) Ltd</b> SMME Contractor to WFE in 2013 - 2014; trainer prior to contractor; access own initiative; well-connected politically, HR practitioner for City as past work experience for 8 years, has moved about and knows people in Chesterville (close to Rosefontain Nature Reserve), now lives in Ntshongweni	Yes (no proposal evident)	2010/171914/23 Moses Mkhize	Older generation single director contractor. Access through own volition, trainer – interested in theory; then contractor as well. Examples of HR in practice
<b>Intobeka Yesizwe Contractors (Pty) Ltd</b> Described as 'general contracting'. He is a military veteran and established his company through government initiatives around the work of invasive plant clearing at the Bluff Military base, Durban.	Yes (limited enthusiasm)	2010/124187/23 Sakhi Gumede	Military veteran – example of someone who gave his education for the struggle. Many attempts at finding his new place in society.
<b>KBT Creations and Constructions (Pty) Ltd</b> Established her company as sewing creations, and then through a chance opportunity (refer to her interview) became the conduit for wages for invasive alien plant control work. She is passionate about her work, her people, and her family; forward thinker; displays refreshing environmental awareness and solutions to issues.	Yes (big effort)	2006/078919/23 Thuli Mathaba	Interesting narrative of how she started her company. Good explanation of work methodology with team

<b>Lihlithemba Multi Service Consultants (Pty) Ltd</b> She is well spoken, educated and holds a diploma in agriculture. She lives in the Ngonweni area and her company works in this region for WFE. She is well connected and is able to liaise with the Cllr on behalf of WESSA and WFE. Her initial contract was with Working for Water in removal of aquatic weeds. Zanele won the best award for WFE in 2013 and was assigned a container which she uses as a tuck shop at a local school.	Yes (well written proposal)	2004/019652/23 Zanele Ndlovu, (up to date with CIPC)	Highly thought of in Working for Ecosystems; more than one contract. Degree in Agriculture; Community orientated worldview
<b>Macabzela Co-op</b> was established Ntshongweni as a mainly Mlotshwa community upliftment group, mostly youth and two older family members. Some of the directors of Thinking Imvelo are also members of the Macabzela Co-op.	Yes (hand written – long – like an exam)	2012/021986/24 Up to date with CIPC	Londiwe Mlotshwa as main member – through conflict of interest overlap of directors – elected to work through Thinking Imvelo
<b>Msenge Landscapes</b> is a multi-contracts business, starting with WFE for the first time in 2014 member of Kloof Conservancy and WESSA KZN; example of self-motivation – from gardener to landscaper; studied landscaping	Yes (well written and own product)	2003/037695/23	Simon Maphumulo Potential inclusion for next round of research of established functioning SMMEs
<b>Mthini Environmental Projects (Pty) Ltd</b> opted to work under Lihlithemba initially to gain confidence. Requested in 2014 to start with his own team	Non evident	2013/133509/07	Mthoko Majola
<b>Qhakaza Mvelo Co-operative Limited</b> - Only co-op directly associated with WFE/WESSA currently. In 2012 the co-op started with 5 directors associated with the Rosefontain NR and all from Chesterville. This community is closest to Westville prison. The Cllr is aware that released prisoners use Chesterville as a first stop over back in to society	Yes (assisted proposal)	2012/006754/24	5 directos initially – now 2 remaining who have stopped working as Qhakaza; started within Working for Ecosystems
<b>Makhanye Environmental Services (Pty) Ltd</b> – MM resigned as director from Qhakaza Mvelo Co-op and has started his own company with a partner.	Yes	Name reserved with CIPC	Makhosonke Makhanye
<b>Songa Umnotho Manje Trading (Pty) Ltd</b> NN is qualified teacher. She is extremely well spoken and fluent in English, which she taught.	yes	2008/029726/23	Nomsa Ngwane She regards WFE work as a community upliftment programme and is involved for that reason.

<b>Thinking Imvelo (Pty) Ltd</b> Company owned by very young directors. They started off volunteering to remove invasive plants in the Ntshongweni Community. As part of the extended Mlotshwa family 2 directors have access to their uncle Linda, who is the WESSA WFE field manager. A disciplined ambitious group who regard community upliftment as a big part of what they wish to achieve.	yes	2013/130289/07	5 directors initially – one resigned Wandile M Londiwe M ZiphozonkeManyaka Zandile Shange
<b>Umhlakuva Enterprises (Pty) Ltd</b> in 2012 as one of the first SMME's to emerge from WFE. They live in Ntshongweni and Ntombifikile was a worker at the start of WFE. Ntombifikile has opened a separate company, Vikelimvelo recently and has left Umhlakuva to Lindiwe	yes	2012/067178/07	started by Lindiwe Chonco and Ntombifikile Mkhize; NN resigned to start own company Vikelimvelo
<b>Vikelelimvelo Environmental Services (Pty) Ltd</b> Vikelelimvelo enterprise is owned by Ntombifikile Mkhize of Ntshongweni. She is regarded as an example of how a rural women has managed to create a strong team of workers, who works alongside her team as well, and shows strong leadership and sustainability.	yes	2014/083940/07	Ntombifikile Mkhize
<b>Umoyomuhle Environmental Services (Pty) Ltd</b> emerged from the Hulett's Bush team. Each of the 5 directors have a clear function as part of the team. The proposal submitted for the current (2014-2015) contract for WFE was heralded as the best proposal. A dynamic group with a variety of skills.	yes	2013/128577/07	Sindiswa Ncane Dumisani Kweyama Xolani Luthuli Ntombifuthi Phumzile

