THE VIABILITY OF CONSERVATION AND SOCIAL FORESTRY

OUTREACH NURSERIES IN SOUTH AFRICA

Jennifer Botha

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DECLARATION

I declare that this thesis is my own, unaided work. It is being submitted for the Degree of Doctor of Philosophy in the University of the Witwatersrand. It has not been submitted to any degree of examination to any other university.

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ABSTRACT

Over 75 nurseries have been implemented by South African state and non-governmental organisations (NGOs) in conjunction with local stakeholders over the past two decades in attempts to achieve a range of natural resource management (NRM) and social responsibility objectives. Despite occasional successes, numerous projects have failed or struggled to achieve their objectives for prolonged periods. This study aims to identify critical factors influencing the viability of outreach nurseries in South Africa through an evaluation of existing and past projects, and to assess the impact of the projects on the lives of community participants. The central questions of the study are: (i) What factors influence the survival of outreach nurseries? (ii) How did these projects affect the different stakeholders, in particular, community participants? (iii) Are outreach nurseries the best means of achieving conservation and socioeconomic goals? (iv) If so, how can project implementation be improved? Outreach nurseries are defined as decentralised nurseries that are established and managed by one or more community participants with varying degrees of support from implementing organisations. The nurseries included in this study are limited to those with NRM objectives.

The key issues affecting the development of outreach projects are reviewed, starting with a brief overview of the evolution of people-centred approaches to NRM. Disentangling the complex inter-related political, socioeconomic and environmental factors influencing the development of even small-scale projects such as outreach nurseries is challenging at both research and implementation levels. A model adapted from Choucri (1999) is presented to facilitate the assessment of projects and the assumptions on which they are based by deconstructing the key dimensions of sustainability: ecology, economic activity, political behaviour, governance and institutional performance.

An evaluation of 65 South African outreach nurseries was initially conducted. Biophysical problems such as a lack of water, inadequate infrastructure, poor soils, insufficient space and steep slopes were commonly experienced. Unlike small-scale nurseries in India and other parts of Africa, which are often implemented to meet subsistence needs, South African projects frequently include financial objectives to enable the enterprise to become independent of external funding and generate incomes for community participants. Protracted business difficulties were experienced by 68% of the nurseries. Apart from struggling to develop steady markets, nurseries were often located far from markets and were hampered by inadequate transport, pricing difficulties and limited marketing communications. They were also situated in low-income areas where residents have limited spending power. Few thorough viability studies had been carried out and business management skills were restricted, both amongst community participants and practitioners.

Ten outreach nurseries with differing profiles and conservation objectives were then assessed in depth. The achievement of financial and NRM objectives was largely sector dependent. These objectives were usually compatible in greening and conservation rehabilitation programmes, facilitating their attainment. Six nurseries aimed to implement greening activities either through their own efforts at local level or by supplying trees to implementing organisations responsible for regional or national greening

programmes. Local level greening initiatives included the planting of trees and ornamentals into school grounds and/or and the surrounding community, the establishment and maintenance of a park, the conservation of remnant patches of indigenous vegetation and encouraging local residents to plant indigenous species. At national level, urban municipalities involved in greening initiatives report an 80% survival rates of transplanted seedlings but high mortalities are frequently experienced in rural areas, mainly due to lack of aftercare and seedlings being eaten by livestock. However, the rate of transplanting of distributed seedlings is frequently unknown. A monitoring plan needs to be designed and implemented in conjunction with recipient organisations, to ascertain whether resources are being effectively used and identify shortcomings.

Two nurseries supplied seedlings to gold mining rehabilitation programmes. In total, 580 000 seedlings were transplanted onto 437 ha. of gold mining tailings dams and polluted land between 2002 and 2004. One nursery sold just under 35 000 seedlings to this sector in 2005/6. Initial restoration results have been encouraging, with vegetation on some gold tailings dams establishing so well that a new challenge has arisen: viz. encouraging the neighbouring community to harvest at sustainable levels.

A nursery established to supply seedlings to alien plant and wetland rehabilitation programmes closed, but this sector has a similar potential to the gold mining rehabilitation programmes to contribute to biodiversity conservation and enhance ecosystem services whilst contributing to local livelihoods. Both require high volumes of inexpensive, fast growing and resilient seedlings.

An endangered species nursery had not yet achieved anticipated conservation returns eight years after its inception, mainly due to an extremely difficult sociopolitical local terrain. Incidents of illegal harvesting of a wild population growing near the project site had declined, but conservation officials were concerned that a general increase in the illegal wildlife trade in South Africa would further pressurize this and other species, for example, those valued for their medicinal properties.

Medicinal plant nurseries struggled to simultaneously achieve conservation and socioeconomic objectives. Despite concerted efforts for 6-10 years, none achieved their primary goal at even the scale of the participating group viz. to reduce harvesting levels of wild plant populations. Community participants from two nurseries cultivated medicinal plants at the project site and in their home gardens. Approximately 235 medicinal species were cultivated by 31 participants from one nursery (6-64 species per garden; mean$\pm$SE=36.5$\pm$2.9), but most people continued to use the same volumes of wild collected material as they had prior to the start of the project. However, six years after the last consistent inputs to the project, several influential traditional healers reported that they still cultivated sufficient volumes to meet their needs, no longer harvested from the wild and seldom purchased plant products from markets. Although this is a promising start, efforts need to be considerably scaled up if regional harvesting levels are to be substantially reduced. Harvesting levels in the other project increased due to beneficiating activities, although practitioners urged the group to harvest leaves rather

than bark. A third nursery attained financial viability by marketing its products to the horticultural sector. Traditional healers could not afford the prices asked for plants.

The impacts of outreach nurseries on community participants depended largely on whether objectives were achieved, whether costs disproportionately outweighed benefits and the nature of relations between participants and staff from implementing organisations. Although non-monetary benefits were important, almost all community participants aspired to earn financial benefits. However, it took 5-10 years for three nurseries to start generating regular financial returns and only two had generated enough to pay participants consistently. Only 9% of the participants who had been involved in projects from the start derived an income. Costs such as time, money and labour substantially outweighed material benefits. Despite high drop out rates, many people persisted as they strongly wanted the project to succeed and feared forfeiting the effort and resources that they had already invested. Participants from projects that had attained their goals gained self confidence, personal satisfaction and respect within the community. Increased knowledge was highly valued, as was local access to seedlings and, in some projects, enhanced food security. However, many participants felt that they had derived no benefits. Material, social and emotional costs were high, particularly where promised funding and support had not materialised. A rapid-results approach was suggested to boost benefits within a reasonable time frame.

There was a distinct differentiation in the nature of social relations between community participants and implementing organisations from different sectors. The forestry sector succeeded in balancing task, group maintenance (sound working relationships) and individual needs in most projects, with community participants actively managing or participating in all but one. A regional conservation agency experienced difficulties in achieving individual and group maintenance needs, but had accomplished task needs. Steps had been taken to address the former. Community participants were actively involved in decision making at the time of the interviews. The national conservation agency had not provided support to outreach nurseries in two different provinces, despite being the primary supporting agency in one instance. A practitioner from an NGO displayed group maintenance attributes such as caring and consideration towards community participants, but neither task nor individual needs were met. Problems here appeared to be due to a lack of development experience. Prolonged restructuring of state organisations negatively affected some projects through high staff turnovers, fluctuating policy environments, and low morale and job uncertainty of staff. The operational styles of individuals and supporting organisations strongly influenced the process, as did the socioeconomic and political environment. Authoritarian personalities or organisations exacerbated conflicts while those that operated in a spirit of cooperation managed to resolve differences.

Common causes of conflicts between community participants included scarce resources, perceived distributive injustices, jealousies and lack of, or confusion over, accountability. Conflicts spiraled into violence in two projects, and practitioners were threatened with violence in two. Fostering cooperative relationships and operational environments requires a substantial effort from the outset. Ongoing

education for both staff and community participants in effectively managing conflict is vital to improve the productivity and longevity of projects, and can sometimes contribute to improved relations in the wider community.

This study has highlighted the constraints of outreach nurseries in contributing to the well-being of local stakeholders, particularly when basic development and business fundamentals are not adhered to. Alternate NRM and income generating strategies need to be evaluated during planning as a nursery may not be the best means of achieving either of these. Although small scale and relatively straightforward compared with many ICDPs, outreach nurseries usually require substantial support, including a range of technical, business, and development services. Implementing organisations need to realistically evaluate potential costs and risks to community participants at the outset and determine whether they have the resources and commitment to provide the levels of support that are likely to be required in a project of this nature. Short-term benefits need to be incorporated into planning, and costs mitigated where possible. Project time frames need to be reconsidered, as practitioners estimate that it takes 5–10 years for nurseries to start meeting objectives, and donors and implementing agencies frequently operate on 2–3-year project cycles. Progress needs to be continuously monitored to enable institutions and community participants to adapt to changing conditions and ensure that the spectrum of objectives are being achieved. Cooperative working environments need to be actively fostered and conflict management skills developed, particularly in difficult sociopolitical terrains.

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INTRODUCTION

Ex-situ or outreach conservation initiatives are being widely implemented with local stakeholders globally in efforts to (i) improve their relations with organisations responsible for the management of natural resources; (ii) enhance the livelihoods of often impoverished resource users and (iii) achieve a range of natural resource management objectives (e.g. Venter 1998; Veeman *et al*. 2001). Outreach nurseries have been favoured by state line departments and non-governmental organisations attempting to achieve a range of natural resource management objectives for decades (e.g. Reyneke and Dickson 1994; Castro 1996; Shanks and Carter 1998). In this study, the term 'outreach nurseries' is used to distinguish these initiatives from those managed centrally by organisations or established within the private sector.

South African outreach nurseries frequently aim to generate incomes to contribute to the livelihoods of local participants. The development of financially viable micro-enterprises poses additional challenges, particularly when partners are drawn from the subsistence sector. Balancing conservation objectives with the attainment of socioeconomic goals is difficult to achieve under favorable socioeconomic conditions. Establishing projects and attaining business viability within economically deprived and often complex and contested sociopolitical environments is often severely underestimated.

Despite the theoretical emphasis on the importance of monitoring in project implementation (e.g. Salafsky *et al*. 2001), it is still seldom carried out and, if it is, is often ineffective. This is often due to a lack of expertise in selecting appropriate methodologies to assess the projects. Furthermore, the results of monitoring do not always contribute to an improvement in project management, sometimes because of the difficulties involved in selecting appropriate indicators to evaluate the effectiveness and limitations of projects. The focus is frequently placed on tangible outputs, for example, the number of seedlings planted or improvement in livelihoods. Although these are obviously crucial if projects are to be viable in the long-term, a measure of outputs alone does not usually reflect the overall costs and benefits of a project to individuals, or capture issues such as improved well-being of individuals, equity, representivity or conflict. Food security, improvement in physical assets or capacity, access to resources, the influence of policies and institutions on individuals, social position and general vulnerability of marginalized sectors also need to be considered (Ashley and Hussein 2000). Furthermore, the assumption in many development programmes that economic empowerment leads to personal empowerment does not always hold true. It is also important that indicators also encompass the communities' visions of 'success' and 'failure'.

The study aims to identify and explore critical factors influencing the viability of outreach nurseries in South Africa through an evaluation of existing and past projects, and to assess the impact of these projects on the well-being of community participants.

The central questions of this component of the study are:

- What factors influence the survival of outreach nurseries?
- How did the projects affect the different stakeholders, particularly, community participants, but also implementing organisations and the broader community?
- Are outreach nurseries the best means of achieving conservation and socioeconomic goals?
- If so, how can project implementation be improved?

Disentangling the multiple and often inter-linked factors influencing even small-scale transdisciplinary projects is challenging. Although a plethora of methodologies have been developed to evaluate the impacts of poverty and the efficacy of development interventions on people's livelihoods, all have their particular strengths and weaknesses. Quantitative methodologies analyse causal relationships between measurable variables, and employ mathematical models and statistics to produce extrapolative findings about the subject under study, but are often criticised for missing crucial processes such as social dynamics. The very nature of their utility in analysis can also be detrimental in that some researchers rely overly on computer software to construct their interpretations of the data or tend to focus on those aspects of the research that can be reduced to codable data (Denzin and Lincoln 2003). On the other hand, the highly descriptive nature of qualitative research lends itself to capturing processes but is usually situation specific and quantitative researchers frequently regarded it as value laden, imprecise and anecdotal (Denzin and Lincoln 2000; Seeley and Khan 2006). Overcoming these differences can be particularly challenging when operating at the interface of environmental and social sciences, where the former usually emphasises quantitative, replicable analyses while a substantial school within the social sciences prefer qualitative research. Even within the social sciences, though, there remains considerable debate over the pros and cons of qualitative and quantitative research.

Participatory methodologies have been criticised for not being sufficiently rigorous as well as for sometimes failing to live up to their primary objective viz. including or even identifying the marginalised. Even when using these approaches, researchers sometimes do not recognise the subtle social dynamics that reinforce the *status quo* within a community resulting in marginalised individuals or groups being denied rights to resources and decision making (Mompati and Prinsen 2000). Participatory methodologies are discussed in more detail in the following section (Review of dominant paradigms influencing the implementation of outreach projects).

To compensate for the limitations of previous research methodologies, a range of asset-based analyses have been developed to explore the effects of poverty and development interventions on peoples' livelihoods. However, these have also come under criticism. For example, Warner (2000) believes that, although tools such as the Sustainable Livelihoods Analysis framework (DFID 1999) aim to systematically examine the various elements of socio-environmental systems through deconstruction, the operating environments of Integrated Conservation and Development

Programmes (ICDPs) are too complex to predict specific outcomes from particular interventions. He suggests interest-based negotiation as an alternative to either asset-based or reductionist research approaches in which projects are assessed and ‘rules’ deduced from successes and failures.

A further challenge of transdisciplinary research lies in the integration of the findings of the strands from the different disciplines into a meaningful and useful end-product, enabling broader lessons to be formulated whilst recognising that the development of universal blue prints for projects is almost meaningless as project environments differ substantially even within the same region.

To combine the breadth of quantitative research with the depth of qualitative research, this study was conducted in two phases. Firstly, the experiences of 65 South African outreach nurseries are examined. The focus then narrows to ten projects from six provinces (Free State, Mpumalanga, Limpopo Province, North West, Gauteng and the Western Cape) with differing participant profiles and natural resource management objectives. Community participants included entrepreneurs, volunteers, traditional healers and schools, who received varying levels of support from the staff of state line departments, NGOs and, in one instance, a private consulting firm. The selection incorporated projects at different stages of evolution viz. several ‘successful’ projects (e.g. prize winners in environmental competitions), a project that had closed, several that were struggling to survive and one in the initial stages of development. The study is restricted to outreach nurseries that include the dual aims of trying to improve natural resource management whilst enhancing local livelihoods.

The study draws on inductive approaches similar to those used in common property resource management, as well as participatory techniques, structured and semi-structured interviews and focus group discussions. Story telling and conflict analysis mapping were used to unravel the often complex social dynamics of the ten case studies, and a financial ratio analysis was conducted to assess and compare the commercial viability of the nurseries. The effectiveness of the application and integration of diverse research methodologies and conceptual frameworks as evaluation tools are examined in Chapter 8.

Despite the emphasis on dissemination of results back to those who participated in the research, particularly in developing countries, this aspect of research is often not considered an integral aspect of academia. For example, research reports and manuals are considered by-products and seldom included in a thesis or dissertation. Even in ‘real life’ situations, results are not effectively disseminated or used in management. A major aspect of this study was the dissemination of results to organisations and communities who had participated in the study, or involved in similar projects. Different tools were used to cater for different audiences, with an emphasis on meeting people at their level and focussing on their needs, whether practitioners from state line agencies or NGOs, community participants or academics.

The objectives of the study are to assess:

i. to what extent outreach nurseries achieved their objectives;
ii. the congruency of objectives with conservation and socioeconomic exigencies;
iii. the impacts of projects on community participant's well-being (both intended and unintended consequences);
iv. the business viability of the nurseries;
v. the nature social relations between implementing organisations and community participants during the establishment of projects;
vi. how conflict management impacted on projects;
vii. project implementation at the sometimes challenging interface between western and indigenous knowledge systems;
viii. the effectiveness of the research tools (methodologies and conceptual frameworks) employed to assess the projects, and integrate the findings from the disparate fields.

The remainder of the chapter is structured as follows. A review of predominant theoretical paradigms influencing outreach projects such as nurseries is presented in the next section. An explanation of the structure of the thesis is then provided, after which the backgrounds of the project areas of the ten case studies are summarised.

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LITERATURE REVIEW:

PREDOMINANT PARADIGMS INFLUENCING THE IMPLEMENTATION OF CONTEMPORARY OUTREACH PROJECTS

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ABSTRACT

Conservation and social forestry outreach nurseries have been implemented extensively with local stakeholders internationally to achieve a variety of conservation and social forestry objectives. In this paper, key issues affecting the development of these projects are reviewed, starting with a brief overview of the development of people-centred approaches to natural resource management, followed by an examination of the concept of ‘sustainability’, which underpins most of these initiatives. A complex web of inter-related political, socio-economic and environmental factors influence the development of outreach projects, with the transdisciplinary nature of these initiatives posing substantial challenges at both research and implementation levels. A model is presented to facilitate the assessment of projects and the assumptions on which they are based. Management approaches such as adaptive management, participatory methodologies and asset based approaches are also discussed, as are group processes, which are seen to be a hitherto neglected but critical part of project development. Although not all outreach nurseries aim to become commercially viable, many do, increasing challenges in implementation as the project has to generate sufficient income in the long-term to ensure its survival and to distribute satisfactory benefits to participants. The business attributes of outreach nurseries are compared with commercial sector enterprises.

INTRODUCTION

There is little debate about the importance of wild plants to the livelihoods of the subsistence sector, both by meeting a wide range of household needs and, through increasing commercialisation, generating incomes (Braedt and Standa-Gunda, 2000; Dovie et al., 2002; Letsela et al., 2002; Botha et al., in press). With the now well established recognition that local stakeholders cannot be excluded from natural resource management, collaborative programmes have been extensively implemented globally to reduce the impact of high levels of harvesting and loss of habitat on wild plant populations, and concurrently improve local livelihoods. There is a substantial literature on *ex-situ* initiatives, including the involvement of communities in rehabilitating degraded lands (Blaikie, 1985; Maikhuri, et al. 1997; Mekonnen, 2000; Saxena et al., 2001) and the cultivation and commercialisation of plants in the subsistence and forestry sectors (e.g. Saxena et al., 1993; Dewees, 1995; Leakey, 2001a, 2001b; Veeman et al., 2001; Weber et al., 2001).

Nurseries have been a favoured approach. For example, small-scale tree nurseries are said to be among the fastest growing small businesses in East Africa (Simons, 2003), while women in Central Andhra Pradesh, India, raised 5000 seedlings each in backyard nurseries to replenish local forests in 1989/90 (http://www.rcfa-cfan.org/english/issues.7.html). In South Africa, 75 nurseries were started to contribute to tree planting and related agroforestry endeavours during the 1990's, as part of a national effort to alleviate a perceived critical energy shortage facing the country (Reyneke and Dickson, 1994). This strategy has also been employed by conservation agencies to address a range of objectives, including endangered species conservation and improving the management of plants used in traditional medicine. While some nurseries have achieved their objectives, many are struggling to survive or are no longer in existence. Yet there is limited material available in the formal literature on factors influencing their long-term viability, benefits and costs to stakeholders, lessons learned, or their efficacy as a conservation tool (although see Kerkhof, 1992; Böhringer and Ayuk 2003; Böhringer et al., 2003), although experiences have been documented on the internet and in the grey or informal literature (unpublished reports, etc) (Desmond, 1989; Guggenberger, et al. 1989; Jagawat and Verma, 1989; Kerkhof, 1989; Robinson and Thompson, 1989; Reyneke and Dickson, 1994). This paper provides a review of key issues affecting the development of these projects, starting with a brief overview of the development of people-centred approaches to natural resource management, followed by an examination of the concept of 'sustainability', which underlies many of these initiatives. A model is presented, through which projects and the assumptions on which they are based may be assessed. The complex web of factors affecting project management is then discussed, including the effects of political ecology and histories of stakeholders, management approaches and commercial viability.

There are a plethora of definitions and acronyms for natural resource management initiatives that involve local 'communities', who are defined in this paper as people participating in social forestry, agroforestry or Integrated Conservation and Development (ICD) programmes, who usually depend extensively on the harvesting of local natural resources to meet their daily needs, and who may or may not live in close proximity to these resources (for example, forests or

protected areas). Barrow (1996) distinguishes ‘outreach’ programmes from ‘community based natural resource management’ in which a community is allocated ownership or appropriate authority for local natural resources, and ‘collaborative management’ initiatives in which an implementing agency and community jointly manage a resource. In outreach programmes, projects are developed with local stakeholders in an attempt to (i) establish a positive working relationship between them and staff from the agency responsible for managing the natural resources, and (ii) improve the livelihoods of community members through the development and use of resources represented by the protected area (Barrow, 1996). Although nurseries may be developed as part of broader natural resource management programmes with varying degrees of collaborative management, the term ‘outreach’ is used to distinguish these initiatives from nurseries that are centrally managed by an implementing agency.

The development of conservation-based micro-enterprises within the subsistence sector provides its own set of challenges. Not only does the enterprise need to generate enough revenue to survive (often situated in low-income areas), but conservation objectives need to be achieved and tangible benefits need to be distributed amongst varying numbers of community participants.

Due to the limited material available on nurseries and the fact that many of these projects form one component of a broader conservation or natural resource management programme, this review incorporates literature relating to ICDP, social forestry and agroforestry development. Following Salafsky and Margoluis (1999), the term ‘programme’ refers to a collection of projects implemented by an organisation, while ‘project’ refers to any set of actions undertaken by stakeholders interested in achieving certain defined goals and objectives.

THE DEVELOPMENT OF PEOPLE-CENTRED APPROACHES TO NATURAL RESOURCE MANAGEMENT

The previous exclusionary protectionist systems established to preserve protected areas and wildlife resources during colonialism and South Africa’s apartheid era were often founded on misconceptions of wildlife and local communities’ interactions with these resources, as well as a denial of community needs (Carruthers, 1993; Fairhead and Leach, 1995; Adams and McShane, 1996; Cock and Fig, 2000). Relying heavily on law enforcement, this system was not only difficult to implement but also alienated key resource users from their traditional resource bases and staff from the organisations responsible for managing these resources, at times resulting in violence and even death (Infield, 1988; Cunningham, 1992; Peluso, 1992; Cock and Fig, 2000; Ho, 2000; Young et al., 2001). The impacts of the social injustices carried out in the name of conservation and natural resource management are well documented (e.g. Peluso, 1992; Zerner, 2000; Brechin et al., 2003).

Based on the hypothesis that socio-economic development in communities who are dependent on resources in biodiversity-rich areas can reduce exploitation and encourage local stakeholders to actively participate in biodiversity conservation, ICD and social forestry programmes evolved as important resource management tools during the 1980s. As with most social forestry and ICD programmes (Kiss, 1990; Brown and Wyckoff-Baird, 1992; Peluso, 1992;

Venter, 1998; Cock and Fig, 2000; Maikhuri et al., 2000; Leakey, 2001a, b), outreach nurseries aim to solve mutual problems and reduce conflict between communities and the staff from agencies responsible for the management of wildlife, and usually include the dual objectives of improving natural resource management and channeling benefits from wildlife resources to often impoverished local communities. Unfortunately, there has been limited success in attaining both conservation and socio-economic goals in many ICDPs and outreach nurseries (Blaikie, 1985; Desmond, 1989; Guggenberger, et al., 1989; Jagawat and Verma, 1989; Robinson and Thompson, 1989; Wells and Brandon, 1992; Reyneke and Dickson, 1994; Saxena et al., 1993; Newmark and Hough, 2000).

The failure of ICD and affiliated programmes to deliver as anticipated has been ascribed to a variety of factors including: (i) inadequate involvement of local stakeholders; (ii) the complexity of factors influencing the internal process; (iii) external and global forces; (iv) the national and regional political ecology, including a lack of effective redress of land and resource tenure; (v) a poorly defined local stakeholder 'community' and/or a lack of appreciation of the heterogeneity of both the local stakeholder and institutional 'communities'; (vi) lack of recognition of the divergent goals and aspirations of different actors; (vii) inadequate project time frames; (viii) insufficient benefits being generated to adequately compensate stakeholders for their efforts; (ix) limited financial and human resources and (x) insufficient capacity to implement these complex programmes (Barrett and Arcese, 1995; Gibson and Marks, 1995; Newmark and Hough, 2000; Saxena, et al. 2001). There are also difficulties in balancing the ecological with socio-economic components of programmes (Barrett and Arcese, 1995; Logan and Moseley, 2002) with poor linkages or even conflict between development and conservation objectives being common problems (Newmark and Hough, 2000). Many resource management incentives are introduced without adequate evaluation of the net costs and benefits to community participants (Hoben, 1995; Mekonnen, 2000; Shiferaw and Holden, 2001). Furthermore, a perceptible improvement of livelihoods in impoverished communities often requires the implementation of a comprehensive development programme, which is beyond the scope and mandate of most agencies implementing ICDPs. Challenges particular to nurseries include (i) difficulties in accessing sufficient propagation material; (ii) balancing the prices of seedlings consumers can afford with the price levels required to ensure long-term commercial viability in those projects aiming to generate incomes; (iii) a lack of water in arid areas and, in some instances, (iv) a lack of motivation of staff delegated to implement programmes (Desmond, 1989; Guggenberger, et al. 1989). Despite the considerable challenges, community involvement is still regarded as essential, particularly when there are significant human pressures on resources (Hannah, 1992; Oates, 1995; Alpert, 1996; Noss, 1997; Larson et al., 1998).

There is also increasing recognition of the unanticipated impacts of development initiatives on the lives of 'beneficiaries'. Although some may be positive (Klitgaard, 1997), many have negative ramifications both at national policy (Economist March 2, 2002) and grassroots level (Nattrass, 1984; Rocheleau et al., 1995; Horn, 2000). Many well-intentioned interventions have left people having to restructure their lives and livelihoods when projects failed to deliver anticipated

benefits, often resulting in increased marginalisation and disempowerment of vulnerable sectors of society, particularly affecting women and the already desperately impoverished (Nattrass, 1984; Escobar, 1995; Rocheleau, et al. 1995; Horn, 2000). The complex systems of science, agriculture, environmental management, language, medicine and trade that already existed in so-called 'under-developed' communities have also sometimes been eroded (Horn, 2000).

SUSTAINABILITY

The concept of 'sustainability' underpins the majority of ICD and affiliated programmes. Originating in the context of renewable resources such as fisheries and forests, sustainability initially focused on the ecological conditions necessary to support human requirements (Lélé, 1991; Costanza and Patten, 1995). The confusing interpretations of sustainability gave rise to different paradigms termed 'weak' and 'strong' sustainability (Hediger, 2000). Very weak sustainability is defined with respect to economic capital and is grounded within neoclassical theory, requiring a suitably defined value of aggregate capital – including human-made capital and social assets - to be maintained intact over time (Hediger, 2000). Very weak sustainability, or 'Solow sustainability', requires that the generalized production capacity of an economy is maintained intact to enable constant consumption per capital through time (Solow, 1986, cited in Hediger, 2000). Strong sustainability is defined in relation to ecological capital which, according to the World Commission on Environment and Development (WCED) (1987) requires that '…the adverse impacts on the quality of air, water and other natural elements are minimised to sustain the ecosystem's natural integrity' (Hediger, 2000). Total capital is an aggregate of overlapping economic and natural capital (viz. the aggregate value of human-made capital, non-renewable resources and ecological capital) as well as immaterial assets of social capital (Hediger, 2000).

The social dimensions of sustainability are now well accepted, notwithstanding the considerable difficulties of transforming theory into practice (Wollenberg and Colfer, 1997). However, the term 'social sustainability' is also often loosely applied, for example, having been used to refer to social preconditions for sustainable development as well as the need to sustain specific social structures and cultures (Sachs, 1999; Hediger, 2000). Absence of war, major violence and social anomie as well as non-totalitarian political regimes are seen as the main ingredients of a weak definition of social sustainability (Sachs, 1999). A strong definition rests on the basic values of equity and democracy (the latter regarded as the effective appropriation of all human rights, including political, civil, economic, social and cultural) by all the people (Sachs, 1999).

The term 'sustainable development' came into prominence in 1980, when the International Union for the Conservation of Nature and Natural Resources presented the World Conservation Strategy (IUCN, 1980) with 'the overall aim of achieving sustainable development through the conservation of living resources' (Lélé, 1991). Two decades later, definitions are still the subject of considerable debate (Redclift, 1999). There is also a lack of consensus on the concept of 'development'. Some associate it with economic growth, while others include socially desirable phenomena in their conceptualisation (Rist, 1999; Lélé, 1991). Post-developmentalists perceive

development to be a continuation of colonial domination of people in developing countries (e.g. Esteva, 1992; Escobar, 1995). Space precludes a review of the 'post-development and beyond' debate (Escobar, 2000; Nederveen Pieterse, 2000; Robins, 2003); this discussion focuses on 'sustainable development' within the context of natural resource management.

Sustainable development is sometimes interpreted as 'development that can be sustained' i.e. a process of change that can be continued indefinitely (referred to as 'long-term viability' in this paper) and is often equated with the success of a programme or with the sustaining of a growth in material consumption (Lélé, 1991). The first two key objectives of the WCED (1987) were to (i) revive growth and (ii) change the quality of growth. This view was brought into question through a recognition of the ultimate limits of usable resources and doubts regarding the correlation between ecologic sustainability and economic growth. The 'trickle-down' theory of development in which the benefits of economic growth were believed to filter to the impoverished was also challenged through an improved understanding of the complex dimensions of poverty (Chambers, 1983; Bakhit et al., 1996). Despite this, economic growth continues to feature in the sustainable development debate as a means of alleviating poverty to halt or reverse the associated environmental degradation (e.g. DFID, 2002).

The multiplicity of meanings associated with sustainable development may be due to the complex nature of the concept, which includes three dimensions: social, environmental and economic (Paehlke 1999). Furthermore, the needs and visions of sustainable development differ from one community and culture to the next (Wollenberg and Colfer, 1997; Redclift, 1999). Both 'development' and 'sustainable development' are processes of directed change, and definitions need to include the objectives of this process, the means of achieving these objectives (Lélé, 1991) and the types of systems that can be attained (Hediger, 2000). According to the WCED (1987), 'sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. This is generally considered to be too vague to be of practical value (Lélé, 1991; Tiwari, 2000). A more precise definition is: 'a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and have both the current and future potential to meet human needs and aspirations' (WCED, 1987). Sustainable development is defined in the South African National Environmental Management Act (NEMA) (107 of 1998) as 'the integration of social, economic and environmental factors into planning, implementation and decision making so as to ensure that development serves present and future generations'.

Choucri (1999) envisaged sustainability as a process incorporating the key dimensions of ecology, economic activity, political behaviour and governance and institutional performance, with the process depending on the robustness of its constituent parts (Fig. 1). Several adaptations were made to the model for the purposes of this paper. 'Balance' was replaced with 'diversity' under the ecological dimension, and 'regeneration rates' included. 'Well-being', which incorporates attributes such as health, identity, cultural values, networks, attitudes, kinship and safety, was included under the socio-economic dimension. Policy and legislation were also added, as conservation legislation

and issues such as land and resource tenure are integral components of any natural resource management programme.

The model presents a useful starting point from which to analyse the viability and effectiveness of projects, as well as the assumptions on which they are based. For example, an improvement in the socio-economic conditions of community participants combined with a strengthening of institutions, more appropriate legislation and effective governance should theoretically result in a decline in pressure on natural resources. However, this does not always hold true. In certain cases an improvement of livelihoods has led to an increase rather than a decline in pressure on biodiversity due to changes in consumption patterns through a rise in demand for the resource (Gibson and Marks, 1995). The assumption that a nursery developed with local traditional medical practitioners should alleviate pressure on local wild plant populations may not prove valid as resource users continue to harvest from the wild, for a variety of reasons including the higher costs of cultivated plants and/or the cost of transport to the nursery. Similarly, assumptions that increased participation and equity in resource access and management enhance ecological sustainability and reduce poverty do not always apply (Lélé, 1991; Kumar, 2002).

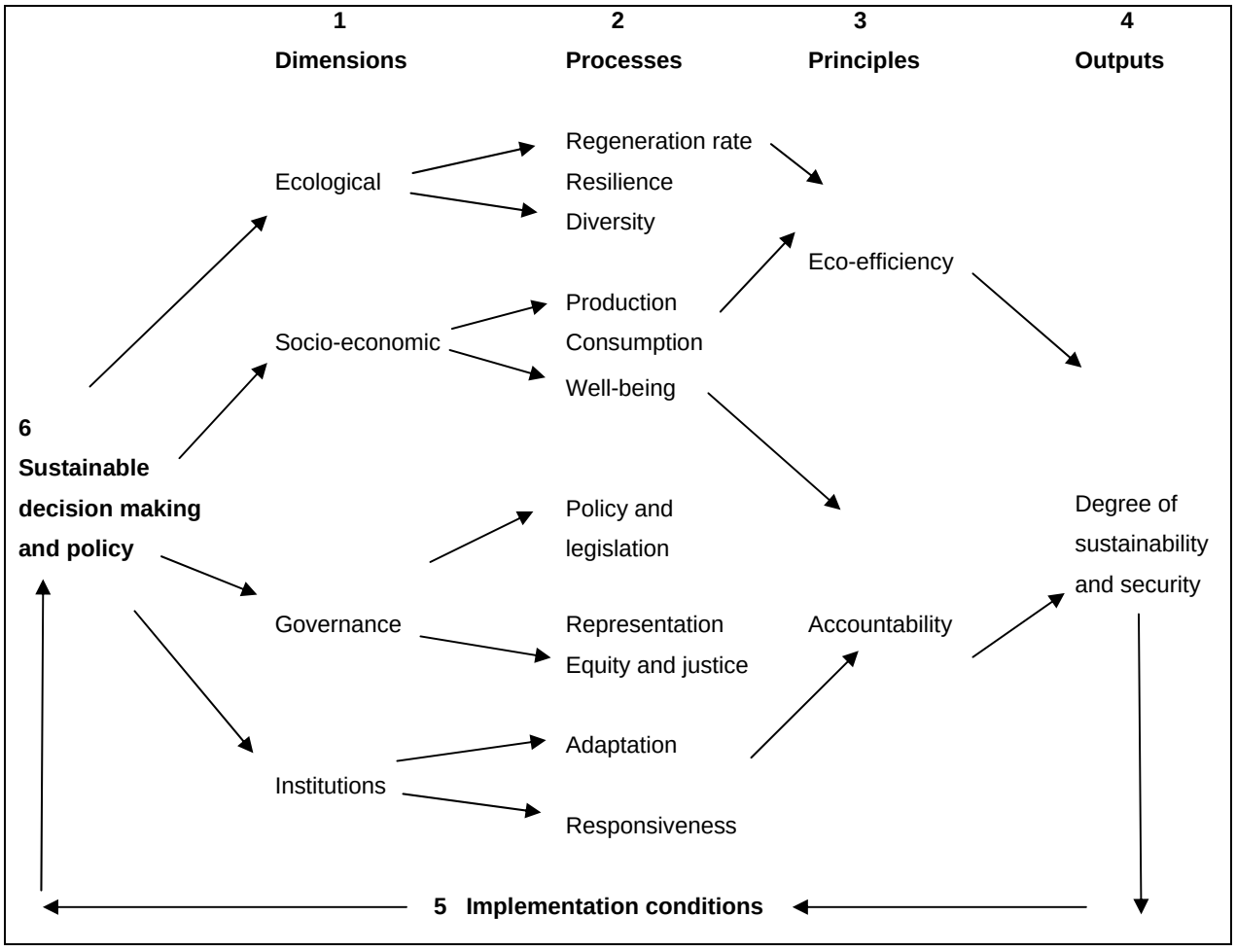

Figure 1. Sustainable development as an integrated dynamic process (adapted from Choucri 1999).

THE COMPLEX WEB OF FACTORS AFFECTING PROJECT IMPLEMENTATION

Choucri's model highlights the complex web of inter-related political, socio-economic and environmental factors influencing the development of projects such as outreach nurseries. Apart from the difficulties in accurately forecasting the impacts of changes in one or more dimensions on the process, the transdisciplinary nature of these projects poses substantial challenges at both research and implementation levels. There is frequently a lack of appropriate methodologies to effectively analyze a concept that belongs to more than one discipline (Reboratti, 1999), while a lack of funding often limits the establishment of multi-disciplinary teams in developing countries, both for the initial programme design (which should include both environmental and social impact assessments) and for implementation and subsequent monitoring.

Political ecology

Natural resource management is a social process in which different interest groups consisting of differing social identities, attitudes, kinship, networks and relations, and with diverse and often competing interests confront each other at local, regional, national and/or international levels (Neumann 1995; Malhotra 1999; Nygren, 2000; Brechin et al., 2003). Both resource degradation and management are strongly influenced by a myriad of global forces and regional and local processes, as well as the effects of past and present skewed power relations between the implementing agency(ies) and communities, their shared history, and dynamics between other local, regional and national groups (Blaikie, 1985; Peluso, 1992; Utting, 1993; Alexander and McGregor, 2000; Gauld, 2000; Nesbitt and Weiner, 2001; Brechin et al., 2003). There is, for example, a considerable literature on the impacts of changes in natural resource management caused by state, market and development interventions on the lives and livelihoods of communities (e.g. Peluso, 1992; Hoben, 1995; Ribot, 1995; Rocheleau et al., 1995; Neumann, 1995; Malhotra, 1999; Nygren, 2000; Sato, 2000) as well as on communities affected by the establishment of protected areas (e.g. Wells and Brandon, 1992; Carruthers, 1993; IIED, 1994; Heinen and Mehta, 2000; Young et al., 2001).

Resource utilisation and management interactions are thus socially and historically constructed, and an understanding of the changing social relations of different stakeholders and their perceptions of the local landscape, nature as well as resource struggles is paramount (Peluso, 1992; Gandy, 1996; Butler and Hallowes, 1998; Alexander and McGregor, 2000; Nygren, 2000; Mazzucato et al., 2001). This understanding is not restricted to community participants. The value systems of disciplines such as conservation and forestry have changed considerably within a relatively short period, with the meanings of concepts such as 'conservation', 'sustainability', 'development', 'participation' and 'resource management' varying over time and between different social and cultural actors (Peluso 1992). This has often resulted in agencies implementing contradictory natural resource management programmes with communities within relatively short time frames (Peluso, 1992; Fairhead and Leach, 1995; Nygren, 2000; Gezon, 2003). Community managed nurseries and other community-based *ex-situ* natural resource management initiatives are a relatively new - and in the case of nurseries, western - means of trying to simultaneously

integrate conservation and development goals. Furthermore, community stakeholders may bear fresh memories of relatively recent conflicts between staff from conservation or forestry agencies and members of their community.

Natural resource management does not occur within a political and legislative vacuum. Policies of different sectors (e.g. agricultural or land use incentives, tax, development of local infrastructure) impacting at local and regional levels may affect project development. Those ICD and CBNRM programmes located in developing countries with a colonial history may still be affected by these past policies, as current government agencies continue the same or similar land and resource management practices as their colonial predecessors (Guggenberger, et al., 1989; Gadgil, 1992; Peluso, 1992; Fairhead and Leach, 1995; Robins, 1998; Alexander and McGregor, 2000; Heinen and Mehta, 2000; Nesbitt and Weiner, 2001; Young et al., 2001; Schmidt-Soltau, 2003). Numerous communities throughout Africa are still losing access to critical wildlife resources as lands once falling under traditional common property regimes are privatised (Sullivan et al., 1995; Letsela et al., 2002) or state authority is expanded over lands not previously under control of wildlife departments (Heinen and Mehta, 2000). This, combined with a continued erosion of local institutions and resource management systems, has negatively impacted resource management sometimes leading to active or passive resistance of programmes by local communities (Guggenberger et al., 1989; Cunningham, 1992; Peluso, 1992; Campbell et al., 1997; Saxena et al., 2001; Schmidt-Soltau, 2003; Wynberg et al., 2003). Issues such as land use, tenure and reform and the decentralization of decision-making powers are critical to community participants involved in the majority of ICDPs throughout southern Africa, yet these issues are seldom adequately addressed. Even if the problems are acknowledged, tackling national legislative and policy is beyond the scope of most ICDPs (Kievelitz, 1999; Logan and Moseley, 2002). Although the development of outreach nurseries does not require a change of land policy in itself, many projects are being implemented within communities who have been affected by these policies. At the least, an understanding of the political ecology of the area is required; it is quite conceivable that the project itself could be perceived as a perpetuation of these practices.

Struggles over colonization and globalization have not only been waged over land and resources, but have also affected knowledge, values and culture. Interpretations of land use and environmental degradation on which policy is based are often based on a western science paradigm, ignoring or poorly integrating the knowledge systems and management practices of local residents (Peluso, 1992; Fairhead and Leach, 1995; Robins, 1998; Klooster, 2000; Sivaramakrishnan, 2000). A criticism often levelled at outreach nurseries is that they are western interventions that are not appropriate to the needs of resource users. While this may be true in certain instances (e.g. Gezon and Freed, 2003), people have been cultivating plants on their homesteads for food, medicine, shade, protection from wind and aesthetic purposes for time immemorial. Cultures are also dynamic, and societies throughout the world have incorporated modern production methods into their existing lifestyles to improve living standards, for example, commercial cultivation techniques (including nurseries), fishing, cultural tourism, wage labour, information technology and the accessing of state and donor grants (Alexander and McGregor,

2000; Klooster, 2000; Mazzucato et al., 2001; Robins, 2003). Each project and situation needs to be evaluated on its own merits.

Although the incorporation of local knowledge is now acknowledged as being critical to project development (e.g. Geithner, 1998), the views of community stakeholders are still often undermined (Alexander and McGregor, 2000; Young et al., 2001). Science is still frequently regarded as a specialised domain outside the realm and mandate of local people (Murphree, 1998). Furthermore, local communities do not always have access to all the information relevant to a particular decision making process, and may lack the formal education, experience, appropriate language skills and confidence to effectively negotiate with staff, management and representatives from high-technology bureaucracies or cultures.

Management approaches

A challenge in developing natural resource management strategies lies in effectively bridging the gap between western science and indigenous knowledge and management systems. The following management approaches have dominated recent natural resource management discourse: (i) integrated and adaptive management, (ii) participatory methodologies and, more recently, (iii) asset based approaches.

Integrated and adaptive management

Integrated natural resource approaches encompass ecological and socio-economic research and development, and include both traditional and western science as well as a range of actors and stakeholders (Saxena et al., 2001). Again, while there has been progress in acquiring knowledge about the principles and advantages of this approach, implementation remains a challenge due to scientific, technological and institutional limitations (Saxena et al., 2001).

Adaptive management strategies have been advocated as a preferred approach in the face of the uncertainties facing the implementation of most conservation and community-based programmes (Chambers, 1983; Agrawal, 2000; Redford and Tayber, 2000; Salafsky et al., 2001). This involves the adoption of a self critical, adaptive approach that includes innovation, experimentation, evaluation, experiential learning and adaptation in a non-threatening climate (Chambers, 1983; Redford and Tayber, 2000; Salafsky et al., 2001). Programmes need to be flexibly designed, to enable the growth of both individual stakeholders and processes. Adaptive management requires considerable support, flexibility and a clear understanding of local conditions by funders and implementing agencies. The culture of participating institutions strongly influences the management style followed in programme implementation, with organisations having hierarchical, top-down management systems often being unwilling or unable to apply adaptive management or participatory approaches.

Participatory methodologies

Participatory approaches have flourished in development and natural resource management programmes since the 1980s, in response to the time-consuming, sometimes biased and extractive

nature of social science and the limited results of centrally planned development interventions of previous decades (Chambers, 1994; Western and Wright, 1994; Paul, 1987; Carpenter, 1998; Pijnenburg and Nhantumbo, 2002). A plethora of participatory approaches have evolved, feeding into each other and being adapted through changing needs and circumstances. For example, agro-ecosystems analysis contributed to Rapid Rural Appraisal (RRA) and later, Participatory Rural Appraisal (PRA) (Chambers, 1994). RRA was initially developed to obtain a more efficient, people-centred approach to research, but was more extractive in nature than PRA, which aimed to involve communities in the planning process and facilitate their development in natural resource management, agriculture, poverty and social sectors, including health and food security (Chambers, 1994). Participatory and Participatory Action Research (PAR) aimed to enhance people's awareness and confidence, and empower their actions, while in Participatory Learning and Action (PLA), communities were encouraged to take the lead in the implementation and evaluation of their development. Numerous methodologies subsequently evolved to cater for different needs, for example, Participatory Monitoring and Evaluation (PM&E), Participatory Technology Development (PTD) and Farmer Participatory Research (FPR).

Yet despite the widely promulgated participatory orientation of funding and implementing agencies, external values and goals still commonly drive ICDPs (Carpenter, 1998). Most programmes are interventionist, where local stakeholders are approached by an implementing agency or individuals (e.g. researchers) to achieve particular outcomes. Management style is also a function of the culture of the implementing agency, which extends to project implementation. The imbalance of power between stakeholders and the top-down approach of some institutions may result in community participants' views being ignored and people being manipulated or bullied into complying with decisions that they do not agree with (Heinen and Mehta, 2000; Young et al., 2001; J. Botha, unpublished data).

Even if sincere attempts are made to develop a participative process, 'participation' is fraught with conceptual and practical difficulties (Emmett, 2000). Although studies have proliferated in the formal literature as well as donor and development agency documents (e.g. Chambers, 1983; Paul, 1987; Srinivasan, 1990; Carabale and Zazueta, 1992; Bijasson and Glattbach, 1995; Pijnenburg and Nhantumbo, 2002), interpretations of participation and associated concepts such as 'empowerment' vary substantially. 'Participation' is sometimes classified along a continuum ranging, for example, from the community's provision of free labour, to the development of capacity and active, meaningful involvement of people throughout the process (Srinivasan, 1990). Debates and writing are frequently characterized by utopianism and idealism, and participation has remained a concept of practice rather than social theory, with the focus on techniques and practical experience rather than on conceptual clarity (Emmett, 2000).

Participatory approaches have also been criticised for a lack of clear goals, objectives and methodologies, as well as being an *ad hoc* unsystematic process that cannot be taught or transferred (Cernea, 1992, cited in Emmett, 2000). Proponents of the methodologies counter that the approach is based on a recognition that blueprint strategies cannot be imposed across diverse social and environmental settings of different programmes and that processes are customized to

suit local conditions (Emmett, 2000), whilst encouraging a climate of shared lessons learned through the widespread dissemination of experiences through newletters and organisations who invest considerable resources in capacity building. Despite this, participatory tools are frequently implemented mechanistically resulting in loss of quality of data ('shopping lists') through inadequate analysis (pers. obs. 1997-9; Pijnenburg and Nhantumbo, 2002), and 'participation' is often regarded as a collection of techniques rather than an empowering process.

A major assumption is the notion that there is a 'community' to participate (Emmett, 2000). The recognition of a 'community' as a heterogeneous entity comprising numerous individuals and groups with differing and sometimes competing values, perspectives and interests (Agrawal and Gibson, 1999; Hentschel and Waters, 2002; Logan and Moseley, 2002) has not diminished the practical and conceptual difficulties associated with this assumption, which continue to plague programme implementation. Many practitioners resort to a geographical definition. For example, in Zimbabwe's CAMPFIRE programme a 'community' was considered a unit of production and decision making (village, ward and district), that should be self-defined, at a contiguous geographical and a cohesive social scale to facilitate sound decision making (Logan and Moseley, 2002). However, not all geographically contiguous units are necessarily socially homogenous entities that also represent resource ownership units (Emmett 2000; Logan and Moseley, 2002). For example, a resource may be harvested by both locals and people from outside the area (McLain and Jones, 1997; Ho, 2000). In southern Africa and elsewhere, migrant labourers maintain claims on communal resources and decision making even though they are not always physically part of the community. Outside interest groups can also derail a process by making demands on resources on which they believe they have a claim (J. Botha, unpublished data). The definition of community is thus transient, and physical borders shift in response to different criteria. Furthermore, communities may contain multiple overlapping identities and exist as 'communities within communities' (Cousins, 1993, cited in Logan and Moseley, 2002), while those who may be considered part of a community in one context may be considered outsiders in another. The notion of community is thus both time dependent and resource specific (McLain and Jones, 1997; Logan and Moseley, 2002).

Additional difficulties in implementing participatory methodologies lie in meeting individual expectations (Emmett, 2000). The personal costs and benefits associated with projects differ between individuals, and projects that started with high levels of enthusiasm often falter when expectations are not met, sometimes resulting in community participants withdrawing from the project, the bending of rules to achieve personal benefits, increased pressure on the implementing agency and/or conflict (Emmett, 2000) – all of which were common problems in the implementation of outreach nurseries (e.g. Reyneke and Dickson, 1994; J. Botha, unpublished data). Leeuwis (2000) suggests that many participatory methods are inadequate to deal with conflict situations and proposes that negotiation skills should also be incorporated. Although conflict resolution skills are included in the training of staff and managers from many conservation, agricultural and forestry agencies throughout Africa, little is known about the effectiveness of this training in the field.

Although participatory approaches place great emphasis on the 'empowerment' of participants, this is seldom readily achieved and is often limited by a lack of capacity and funding within implementing agencies. Scaling up projects from local level to include a wider range of participants also presents problems due to the intensive nature of the process (Pijnenburg and Nhantumbo, 2002). Some believe that the emphasis on the reversal of learning with the 'experts' learning from communities has resulted in a devaluation of theory and a lack of application of the broader knowledge base to the circumstances and advantage of the community (Emmett, 2000). External socio-economic and political forces are also seldom addressed (Emmett, 2000).

Despite the problems and continued debate on the appropriate level of participation in conservation and development programmes, people-centred approaches remain crucial to natural resource management globally (Pretty and Ward, 2001; Weber et al., 2001; Leakey et al., 2002). Many ICDPs now attempt to include communities within a structured framework that are neither completely top-down nor bottom-up (Twyman, 2000). Emmett (2000) argues that the PLA view of empowerment is too limited as it focuses on the dynamics between the practitioners and community stakeholders rather than addressing power relations at a broader socio-political level. He suggests that the incorporation of social capital combined with an asset-based approach to development and state intervention might present a way forward.

Asset based approaches

Social capital developed through attempts to move beyond the dominating economic viewpoint that excluded the role of social relations in economic activity. According to neoclassical theory, economic growth was shaped by land, labour and physical capital (i.e. tools and technology) (Woolcock, 2002). Human capital, comprising different forms of job-related experience and skills and, later, social capital, were subsequently incorporated (Woolcock, 2002). Social capital is defined as 'those features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating co-ordinated actions' (Putnam, 1993). Social capital is believed to grow when used positively, as people develop the confidence to invest in collective activities knowing that others will also contribute (Emmett, 2000; Pretty and Ward, 2001). Conversely, it becomes depleted when not used, while strong social ties can incur costs as well as benefits (Woolcock, 2002). Four central aspects have been identified: (i) relations of trust, (ii) reciprocity and exchanges, (iii) common rules, norms and sanction and (iv) connectedness, networks and groups (Pretty and Ward, 2001). High investment in developing strong social networks in natural resource management often yields more flexible access to resources, enabling people to spread their risks and diversify their livelihood strategies (Mazzucato et al., 2001). The concept may also help explain why some projects fail and others succeed (Emmett, 2000). For example, if individuals do not derive a personal return on their investment in a project (time, money, labour), their enthusiasm wanes and the project falters. Similarly, being aware of 'anti-social capital (Streeten, 2002) could help to mitigate against potential negative impacts on processes and projects.

The needs-based focus of participatory practice helped highlight peoples' priorities, but sometimes led to community participants regarding themselves as deficient, powerless victims of their circumstances (Kretzmann and McKnight, 1993). People also often became discouraged when their expectations were not met, particularly where needs analyses were conducted by agencies such as conservation and NGOs that were not equipped to deliver the services highlighted during problem analyses. An alternative is to focus on the capacities, skills and social resources of people and their communities (Kretzman and McKnight, 1993; Moser, 1998; Pretty and Ward, 2001). This is not to neglect problems and deficiencies, or to infer that communities should be expected to develop basic services and infrastructure on their own. Service delivery by the state is paramount (Emmett, 2000). Nor should the broader socio-economic and political framework be ignored. Rather, the community's assets (including human and social capital) should be more fully integrated into development processes. For example, nurseries are often initiated in communities who have developed agricultural or natural resource management systems that are well adapted to local conditions. The integration of these practices into nursery management could substantially enhance the survival of plants.

Policy reform and scaling up co-operative efforts to regional and national level to lobby for improved economic and environmental benefits could also assist in ensuring the long-term resilience of groups (Pretty and Ward, 2001). The efficacy and viability of many outreach nurseries would be improved by developing cross-linkages at different scales.

Implementing agencies and funders need to be realistic about what can be achieved, the time frames required and their roles in the process. While the time required to develop capacity is usually considered at the theoretical level at least, the time required to deal with the social and group processes associated with project implementation is often severely underestimated.

Group processes

Outreach nurseries are often implemented with groups although, in South Africa, the current trend is to support individual or smaller groups (6-8 members) due to difficulties experienced in producing sufficient benefits to distribute amongst larger ones. Group effectiveness depends strongly on the relationships that have been developed between members (Bettenhausen, 1991; Keyton, 2000). These relationships are the consequences of the status, power and influence of individuals and how they interact with others within these constructs (Keyton, 2000). Although much attention has been paid in participatory methodology manuals to improving communication and social learning, there has been little emphasis on group dynamics during ICDP and rural development (Venter, 1998; Leeuwis, 2000; Pretty and Ward, 2001). Even relatively straightforward projects such as outreach nurseries operate in highly complex socio-political environments and an understanding of why some groups are more effective than others is important.

However, even at a broader level, data are limited. The majority of the small group research studies to date have been conducted under controlled laboratory conditions, with relatively limited research on group effectiveness being conducted through case studies (Hirokawa

et al., 2000). Case studies are a useful means of evaluating group effectiveness (Hirokawa et al., 2000), and have been used to analyse the interactions between implementing organisations and communities in natural resource management programmes (e.g. Peluso 1992; Gibson and Marks 1995), with some focusing on the different aspirations and subsequent dynamics within community stakeholder groups (e.g. Alexander and McGregor, 2000). Unequal power relations between stakeholders, lack of trust and the effects of unrealized expectations of personal gains from a programme are just some of the factors affecting the implementation of ICDPs (Peluso, 1992; Venter, 1998; Emmett, 2000). Stakeholder groups also differ according to their livelihood strategies or needs, for example, gender or age-class inequalities in accessing power and resources, socio-economic status or location relative to the projects. While there is widespread recognition of the importance of developing effective communication channels and conflict resolution mechanisms (Leeuwis, 2000), little is known about how the above and additional social attributes such as intimacy and humour are developed and maintained in groups in general (Keyton, 2000), and how these contribute to processes and productivity.

Functional groups of people usually pass through a series of phases in the evolution towards group maturity. Numerous conceptual frameworks have been developed to describe this process, for example: (i) Tuckman's (1965) phases of group maturity: forming, storming, norming and performing; (ii) Röling's (1988) classification of extension into four stages: persuasive, informative, formative and emancipatory extension; (iii) The World Neighbours (1999) four stages to identify the nature of the wider development process: initiation, co-management, accompaniment and autonomy; and (iv) Pretty and Ward's (2001) three-stage process: reactive-dependence; realization-independence and awareness-interdependence. These frameworks provide a useful conceptual basis to analyse the dynamic group processes associated with the implementation of ICDPs, although they have seldom been used for this purpose (although see Venter, 1998). Space precludes a detailed analysis of these phases on processes in this paper, but the possible stage of group maturity needs to be borne in mind during project implementation and monitoring, as this will impact on a variety of key variables such as effective conflict resolution mechanisms, benefit sharing, costs and the time frame required.

Most outreach nurseries are managed or influenced by a combination of governmental agencies, community-based organisations and/or non-governmental organisations (NGOs). Efforts and resources need to be efficiently co-ordinated for effective processes and outputs to occur (Kievelitz, 1999). An understanding of how groups simultaneously develop and manage multiple inter-group relationships (for example, between the group and external groups such as implementing agencies, or between the group and the broader community), some of whom may have conflicting interests, would also contribute to more effective project implementation.

Groups formed around ICDPs are heterogeneous, with participants often drawn from diverse cultural backgrounds with differing levels of formal education and life experiences. The importance of social and cultural attributes in small group dynamics cannot be overestimated (Barker et al., 2000). Multi-cultural groups are likely to face more difficulties than homogeneous

groups in group development, for example in the development of norms, particularly when dealing with conflict and leadership issues (Hofstede, 1980).

Commercial viability

While not all outreach nurseries aim to achieve commercial viability, many do, often increasing implementation challenges as the project needs to develop the capacity to generate enough income to continue operating in the long-term, as well as cope with the additional pressure of having to distribute sufficient benefits (often including monetary) to participants. A lack of business skills is not limited to community stakeholders. Institutional staff responsible for the implementation of outreach nurseries often lack both business experience and development expertise, resulting in poor viability studies, planning and business management. Nurseries are particularly risky ventures, with the seasonal nature of the sector often a major cause of cash flow problems during establishment.

Outreach nurseries and other ICDP initiatives that aim to improve local livelihoods share some of the characteristics of micro-enterprises, but also differ in important respects. The objectives of small businesses include a combination of the following: (i) the provision of a useful service for society by producing and/or distributing goods or services to the public; (ii) production of profits in return for the risks and work involved through satisfying the demand for a good or service; (iii) social objectives such as a conducive working environment and the protection of the interests of employees, customers, suppliers and the general public and (iv) growth objectives, which depend on the goals of the owner, for example, to maximize profits and expand the business, or to provide a comfortable income with limited personal stress (Tate et al., 1978). There is also sometimes an environmental goal. The objectives of outreach nurseries may incorporate these, but there is often a greater emphasis on the social and environmental goals, which may impact negatively on commercial viability.

Sources of initial funding also usually differ. Micro-enterprises usually access start-up capital through (i) the owner's own contribution; (ii) risk share capital contributed by other members of the start-up team or people who can be persuaded that the venture is a viable one and/or (iii) loan capital, which has to be repaid (Macleod, 1995). In contrast, start-up funding for ICDPs is usually acquired from one or more donor agencies. A similar injection of start up capital would be of substantial benefit to any micro-enterprise, as a shortage of working capital contributes to many failures (Tate et al., 1978; Clark and Louw, 1991). Additional financial advantages of ICDPs, including nurseries, often include the use of land at no cost or at nominal rates, as well as the provision of 'free' labour by community participants. Despite this, many nurseries are unable to achieve commercial viability, which often prevents them from being able to continue indefinitely in the absence of external funding.

Mitlin (2000) cautions against viewing financial viability in development initiatives as purely income generated through the project, pointing out that, historically, there are three main sources of development funding for the poor: market investment funds (formal and informal trading), state financed interventions and charitable contributions. If too much focus is placed on market related

activities, the poorest and most marginalised may be excluded from participating. This has been experienced in numerous outreach nurseries and other ICDPs (J. Botha, unpublished data). Mitlin (2000) further suggests that the strong community is the one that is able to access funding that they can manage within their own capacities, using this to address their needs. While this may be true of certain types of development interventions, in practice, most ICDPs have a funded project cycle of 2-5 years, although these may be extended (Newmark and Hough, 2000), while nurseries in South Africa often only receive start up funding or funding for a 2-3 year period. Funders usually expect the achievement of financial independence to be built into the project, often rating this as an important selection criterion. However, this criterion is based on often unrealistic expectations about the ability of people to transcend the gap from the informal or subsistence to the micro-enterprise sector (Nattrass, 1984; Rogerson, 1996; Botha et al., in press), with the levels of funding, time and human resources required to develop capacity being severely underestimated.

There are also differences between the organisations linked to ICDPs and those affiliated to micro-enterprises. While a bank, parent company or other affiliated organisation may have a vested interest in the latter, micro-enterprises are usually independently managed by their owners. Multiple interested parties are frequently directly or indirectly involved in the management of the ICDP, for example, government agencies, NGOs, funders and community-based organisations, with varying degrees of control. Although multiple organisations can provide access to a wide range of skills and resources, factors such as excessive bureaucracy, competing politics and individual or organisational interests may impede and sometimes derail the process.

The success rate of micro-enterprises is low, with nurseries being particularly risky ventures. Numerous factors contribute to the failure of small businesses, including (Tate et al., 1978; Clark and Louw, 1991; Macleod, 1995):

- the business being situated in the wrong location;
- financial difficulties arising through: over-capitalization, particularly of fixed assets; taking out too much credit; lack of finances; poor credit control and inadequate inventory management leading to insufficient stock or poor control, resulting in lost sales or high stock losses;
- lack of experience and poor management skills, leading to: uncontrollable expenses often caused by inadequate record keeping; poor staff relations; loss of motivation of staff and management; poor planning; diversifying too quickly, or too rapid and unplanned expansion leading to increased complexity of internal management as the organisation grows in size; failure to use professional management services;
- problems relating to sales, often due to inadequate market research, lack of promotion or poor marketing strategies such as insufficient turnover; a lack of understanding of customer needs; inventory shrinkage; inappropriate markups and poor margins; poor sales practices or forecasts.

CONCLUSIONS

The political, social and economic dimensions of biodiversity conservation, particularly within the sphere of natural resource management, are becoming increasingly recognised at policy, research and management levels, but the challenges in translating theory into effective practice remain formidable. Even the implementation of relatively straightforward, small-scale projects such as outreach nurseries are often fraught with difficulties, partly due to the complex socio-economic environment in which these projects are situated and partly through the challenges in achieving the often conflicting objectives of attaining business viability, providing meaningful returns for local stakeholders and simultaneously striving to achieve natural resource management goals.

Feasibility studies and ongoing monitoring throughout the project are thus crucial. A business viability study and livelihoods assessment needs to be conducted prior to the commencement of the project and the different potential impacts of the project on stakeholders (including the broader community) evaluated. Underlying assumptions regarding the project and its outcomes also need to be critically assessed in the light of experiences gained by similar initiatives.

An understanding of the heterogeneous nature of the intended beneficiaries within the context of the broader 'community' is essential, including the social relations underlying resource management and utilisation, as well as the historic relationships between stakeholders. The management philosophy and culture of the implementing agency(ies) needs to be considered, as this usually extends to programme implementation and management. Where institutions are top-down and inflexible internally, the views of outside stakeholders are unlikely to be welcomed.

Identifying and incorporating the existing social capital and other assets within communities is vital to project outputs as well as processes. The appropriate implementation model then needs to be carefully selected, with the level of participation varying according to local circumstances. For example, a nursery developed in a setting with a variety of different, competing community stakeholder groups may generate possibly insurmountable conflict if management is handed over to one or more of the groups. In certain instances it may be preferable for an institution to develop a central nursery, and implement satellite projects with the different groups. Another alternative may be for a nursery to outsource some or all of its growing activities, by enabling individuals to grow seedlings at home which could then be sold to the nursery for subsequent distribution. Where an individual or small, relatively homogenous group with similar aspirations and goals has identified the need for a nursery, full management by community participants may be the most appropriate strategy.

While not always readily achieved, intra- and inter-group dynamics on project processes need to be understood. The implementation of tasks and achievement of objectives need to be balanced with the development of sound relationships and process. This becomes even more critical in situations in which there have been historically poor relations between different stakeholder groups.

To cope with the wide ranging demands of ICDP implementation, a pool of skills is required viz. business, sociology or anthropology and environmental skills complemented by local expertise and Indigenous Knowledge Systems. In large projects, multi-task teams are often established to

deal with the complex range of proficiencies required. With projects of the size and nature of nurseries, this is not always possible, particularly in conjunction with the downscaling of resources being channelled towards agencies responsible for natural resource management in many developing countries. The tendency is to allocate resources to provide support for 2-3 years, and then expect communities to be able to manage the project. This time frame is clearly insufficient in most cases. Before approaching communities, implementing agencies thus need to carefully assess whether they have the resources, capacity and commitment to develop projects of this nature over the realistic time frame that is required, to minimise the potential of contributing to the cycle of failure and the loss of credibility, broken dreams and other negative impacts that accompany it.

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STRUCTURE OF THE THESIS

The thesis has been structured in a format to facilitate the dissemination of results to diverse sectors, including academics, management and staff of implementing organisations and community participants. The report back instruments include a series of academic papers, a community report and a business manual. Rather than duplicating material, papers and reports have been woven into the thesis under the relevant sections, with a brief explanation of their intended audience.

Choucri's model is used as an over-arching analytical framework (Table 1), with additional frameworks being introduced into most chapters to facilitate the analysis and presentation of often very disparate or even anecdotal data. A synopsis of the South African experience during the implementation of 65 outreach nurseries is provided in chapter 2. This is followed by an in-depth analysis of ten case studies.

Table 1 The structure of the thesis in relation to Chourcri's (1999) conceptual model and the objectives of the study.

Chapter		**Dimensions of sustainable development (Choucri 1999)** (page 1-13)	**Study objective** (page 1-5)
2	The South African experience of conservation and social forestry outreach nurseries.	All	i, ii, vi
3	Commercial viability of outreach nurseries.	Socioeconomic	i, ii, iv
4	How effective are outreach nurseries in achieving natural resource management objectives?	Ecological/environmental	i, ii
5	Is 'something better than nothing?' The impacts of outreach nurseries on community participants.	Socioeconomic	i, ii, iii,
6	Social relations between implementing organisations and community participants during the development of ten outreach nurseries.	Policy, legislation, governance and institution building	v
7	Conflict management in the development of ten South African outreach nurseries.	Institution building	v
8	A Sustainable Livelihoods Assessment of South African conservation and social forestry outreach nurseries.	All	i, ii, iii, iv, v
9	General discussion	All	i-vii

METHODS

The literature survey covered two main themes. Firstly, an overview of predominant paradigms influencing the establishment of outreach programmes is provided in this chapter. Secondly, the experience of international outreach nurseries forms a backdrop to chapter 2: 'The South African experience of conservation and social forestry outreach nurseries'.

Practitioners from the implementing agencies were invited to participate in the study telephonically. If they agreed, they were asked to obtain permission from the community participants for the researcher to contact them. Where community participants did not have telephones, practitioners from the implementing agencies arranged the initial appointments. Permission for the study was also obtained from local leadership.

The purposes of the study were again explained before each interview. Participants were requested to decline to answer any questions that they were not comfortable with, and were provided opportunities to ask questions of their own throughout. Anonymity has been provided as far as possible to projects and participants, to avoid potential negative repercussions through their candid sharing of experiences.

A series of structured and semi-structured interviews were conducted with practitioners from implementing organisations, community participants and key community informants over a 3-5 day period to assess the viability and efficacy of the ten outreach nurseries (Appendix 1). Care was taken not to overload people during one sitting and to avoid compromising their workload. Follow up queries were conducted telephonically or during report backs, when results were also verified. Further details on the methods used are provided under each paper. Data were also extracted from reports and other project documents.

Community profiles were compiled through census data and reports obtained from local town councils or other state line departments. Key informant interviews were conducted with residents and officials responsible for local development (e.g. staff from local town councils, the Dept of Agriculture and the Dept of Health and Social Welfare).

Results have been disseminated to academic peers and practitioners through papers, reports, a business manual, presentations and conference papers (South African Association of Botanists conference, Bloemfontein, 2005; seminars presented at three short courses hosted or co-hosted by the University of the Witwatersrand (November 2005; February 2006; March 2006). In addition to the community feedback report, discussion groups and slide presentations were held with community participants. A video featuring the highlights of each nursery was also presented.

A disadvantage of writing a thesis by paper is that repetition, particularly of background data, is often unavoidable. Where possible, I have tried to present different data under overlapping sections. There may also appear to be a lack of consistency in the number of interviews across certain sections. This is due to the numbers of respondents for different sections of the project sometimes varying, either because different people were responsible for different aspects of the project or because participants were no longer available for interviews.

BACKGROUNDS TO THE TEN CASE STUDIES

The nurseries were located in communities experiencing deprived socio-economic circumstances in urban, rural and peri-urban areas (Table 2). Project and community profiles are presented in the relevant papers (Chapters 3-8), and are also summarised in the community feedback report (Appendix 2).

Table 2 Description of project areas.

Nursery	Urban, Peri-Urban or Rural	Population size	Main regional economic activities
A	Urban to peri-urban settlement, approx. 50 kms from provincial capital.	>200 000	Commercial and subsistence agriculture, mining.
B	Urban, adjacent to affluent suburban area	2500-3000	Tourism, forestry, fishing.
C	Urban, within major metropolitan area	9 500	Tourism, urban centre, agriculture outside of urban areas, business, fishing.
D	Urban to peri-urban settlement.	170 000	Subsistence and commercial agriciulture, including game farms, forestry, tourism.
E	Rural, approximately 20 kms from nearest town.	12 600	Commercial and subsistence agriculture, including game farms, tourism, forestry.
F	Urban, approx. 50 kms from major metropolitan area.	100 000	Mining, commercial centre.
G	Rural, approximately 50 kms from nearest town	15 826	Subsistence and commercial agriculture, tourism. Increased development though, as resident professionals commute daily or weekly to nearby towns.
H	Rural, 80-90 kms from nearest town	10 838	Subsistence and commercial agriculture, tourism.
I	Small urban community, approximately 10 kms outside nearest town	450	Commercial agriculture, small-scale mining.
J	Rural, approximately 20 kms from nearest town	13 598	Commercial agriculture, small-scale mining.