

ADAPTATION CASE STUDY

Summary &
lessons learnt

Lessons learnt from an ongoing adaptation and learning process

Adaptation with a human face

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This case study reflects insights about the beautiful and unique people of the Suid Bokkeveld, their lives and their evolving strategies to remain at the centre of their own universe in the wild places of the Bokkeveld plateau.



Introduction

This publication is based on a case study by the same title that reflects the endeavours of small-scale rooibos farmers in arid western South Africa to enhance their anticipatory capacity in response to climatic variability and change. It also describes the circumstances that have led farmers in the Suid Bokkeveld area to adapt their farming practices, the processes that they have followed, some of their achievements and how these reflect increased adaptive capacity. Whereas the full text is not included in this edition, we have nevertheless reproduced some highlights from the study, lessons learned and the conclusions drawn from the study. For access to the full text, please visit www.emg.org.za.

Climate change and adaptation in western South Africa

In a rugged and seldom-visited part of the arid west of South Africa known as the Suid Bokkeveld lives a community of small-scale rooibos tea farmers. Whilst situated within or adjoining landscapes of more typical extensive South African commercial farms, this case study focuses on the circumstances, lives and strategies of people who have long lived at the margins of the larger society, and who have come to value their independence despite the hardships they endure.

We live in a warming world. At the time that the 4th Report of the IPCC was published, average temperatures for South Africa had risen by between 0.2 and 1.0 degrees, and this trend is continuing. The Report notes that 'There is very high confidence, based on more evidence from a wider range of species, that recent warming is strongly affecting terrestrial biological systems ...', and that 'more than 90% of the global climate models predict that the western part of South Africa is likely to experience a reduction in rainfall of more than 20% by 2090 – 2099, relative to 1980 – 1999'. Because 'the resilience of many ecosystems is likely to be exceeded this century', the IPCC noted that 'additional adaptation measures will be required at regional and local levels to reduce the adverse impacts of projected climate change and variability, regardless of the scale of mitigation undertaken over the next two to three decades'.

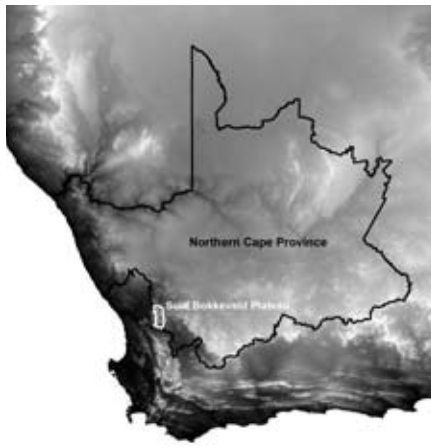
The authors of the report 4th IPCC Report understood that 'adaptive capacity is intimately connected to social and economic development, but it is not evenly distributed across and within societies'. Efforts by South African civil society, and of EMG and Indigo in particular, to support members of affected communities to enhance their adaptive capacity have been focused on vulnerable resource users with more

limited access to the resources needed for social and economic development.

The climate projections for the Western part of South Africa forecast a possible later onset of the rainy season, earlier cessation and an overall reduction in the winter rains upon which the local ecology is primarily dependent. This reduction may be mitigated to some extent by an increase in summer rainfall. In their analysis of recent historical change and future projected changes for the Namaqualand area (bordered to the south by this study area), MacKellar et al. (2007) similarly observe a projected pole-ward retreat of rain-bearing mid-latitude cyclones (with reasonable agreement across the models) by the late twenty-first century. In particular, this retreat of mid-latitude cyclones and reduction in rainfall is most consistently projected during early winter, with indications of reduced rainfall later in the winter season. Together, these projected changes suggest a shift in the timing of seasonal rainfall, with late summer rainfall heavier than present and extending to later months, and reduced winter rainfall arriving later'. (Archer et al. 2008).

The IPCC predicts that climatic change and variability will result in critical negative yield impacts in areas where food security is already challenged and the natural resource base is already poor. Under these circumstances, adaptation to changing climatic circumstances will be essential for human well-being. In this context we understand adaptation in the context defined by Adger et al. (2005): 'adaptation is understood to be an adjustment in the ecological, social or economic systems in response to observed or expected changes and their effects and impacts in order to alleviate adverse impacts or take advantage of new opportunities'.

Adaptation can be seen as a process of deliberate change in anticipation of, or in reaction to, external stimuli and stress (Nelson et al. 2007). As adaptation involves responding to external stimuli it can be either reactive (i.e. take place after an impact has been felt) or anticipatory (i.e. take place before the impacts caused by the stressor) (Tschakert and Dietrich 2010). Effective anticipatory capacity can be seen as a desirable attribute for people and institutions that depend on natural resources that are affected by climatic change and variability.



Map 1: The Suid Bokkeveld is situated in the Northern Cape Province, South Africa

Adaptation to climatic variability and change in the Suid Bokkeveld

The people of the Suid Bokkeveld live and work in multi-stressor environments, and climatic stress is only one of the many factors that shape livelihoods. Adaptation therefore has to factor in the need to respond to multiple stressors, including climatic, social, political and economic stress. This explains why adaptation is so complex, and why it has to be considered within a broader context.

The anticipated yield impacts are likely to most severely affect the more vulnerable groups in the Suid Bokkeveld, which depend on agricultural incomes. The small-scale farmers of the area have experienced climatic extremes that have had catastrophic impacts on their enterprises, which has stimulated their on-going efforts to 'adjust' their farming systems to anticipated climatic extremes. Of particular significance have been enhanced in-situ conservation and promotion of agricultural biodiversity, as well as soil and water conservation using existing (and often long-used) practices. In this context local knowledge has evolved from traditional practices, with stimulus from local innovation and experimentation, and from knowledge holders and sources outside the community (Archer et al. 2008).

Being aware of risk or even impending catastrophic events is usually insufficient to spur individuals or groups of people to timely and effective action. The creation of platforms for information sharing and reflection has served to establish a basis for Community Based Adaptation, in the context of which information and practices have been shared, and local institutional responses have been developed and implemented via the Heiveld Co-operative and in collaboration with local NGOs. The value of a local, farmer owned institution like the Heiveld Co-operative to the farmers is that it not only has resources and capacities that can be used to support the local community, but it is likely to remain engaged in the long term, is legitimate in the eyes of farmers and external agencies alike, and is able to be responsive to opportunities and challenges.

Small-scale farmers of the Suid Bokkeveld have been able to achieve greater resilience in the face of climatic variability and improve their livelihoods despite natural disasters and market fluctuations. Despite their physical isolation, farmers have evinced real enthusiasm to gain more understanding of global climatic patterns, and how these affect their livelihoods and their lifestyles. A learning process that has supported the sharing of information and experiences at both global and local scales has helped to diminish

people's sense of isolation and helplessness, and has created new capacities for positive action to mitigate the effects of climate change. Because adaptations have been developed on a base of existing knowledge they have been effective. Nevertheless, formal and informal institutions at a range of scales have been critical in supporting effective adaptation. Perhaps most significant in the global context, positive synergies have been found between rural livelihoods, conservation of biodiversity and successful adaptation to climate change.

The learning approach adopted has enhanced local knowledge and broadened farmers' capacities to respond in a proactive manner. Indigenous adaptive capacity has been the starting point, and farmers have been able to combine their knowledge and perspectives with relevant external knowledge and other resources. This allowed the development of adaptation strategies to current and future climate change in a more participatory and sustainable manner. Within a learning approach, these aspects have been combined to enhance what may be described as the adaptive capacity of the farming community, including its 'anticipatory capacity'. We use the term 'anticipatory capacity' to describe the ability of people to anticipate and cope with climate-related stresses. In the words of Tschakert & Dietrich, this is 'the ability to shift from envisioning possible futures (as explored through scenario planning) to the ability to develop a dynamic plan for how to deal with potential uncertainties (Tschakert and Dietrich 2010).

Inequities of power and wealth are stark in South Africa, especially in the western parts of the country, where early colonialists usurped nearly all of the valuable land-based resources centuries ago, and imposed virtual slavery on the indigenous peoples and their descendants (Penn 2005). Apartheid subsequently further deepened these inequities, and since the advent of democracy there has been little change in ownership of the means of production.

The primary sources of livelihoods in the Suid Bokkeveld are rooibos production and livestock, with additional cash incomes derived from part-time employment by other members of the community and large-scale farmers in the district and further afield. Social grants are also significant income sources for some households. Land tenure amongst small-scale farmers in the Suid Bokkeveld remains highly variable (Oettlé 2005), despite government land redistribution policies. A system of social arrangements between land owners, managers and harvesters governs access and control of wild rooibos harvesting, fuel wood and thatch collection, and farm land for rooibos cultivation and livestock grazing. Many livelihood transactions are cashless, and are negotiated by bartering within social networks amongst family members and neighbours.

'Coloured'-owned farms are concentrated in the southern and eastern parts of the Suid Bokkeveld, where the landscape is particularly arid. The area has limited arable land and small-scale farmers have very few alternatives to low-input subsistence and crop farming. Over the course of the 20th century, livelihood strategies of small-scale farmers shifted from agricultural-based subsistence to more market-linked, cash-based economies. Malgas et al (Malgas et al. 2007) observe that 'most small-scale farmers work for between one and six months tending their own crops and livestock on land that they own... The rest of their time is spent as seasonal labourers on neighbouring farms or further afield'. Heiveld members are typical of such varied livelihood bundles per family and farm. As rooibos is collectively their most important income source (either from production or labour on the farmers of others) this case study has a focus rooibos, but will also refer to climate impacts on stock and other livelihood strategies.

Much as the Suid-Bokkeveld community is typical of the inequalities of South African society, it also reflects the efforts of the marginalised to restore





By mutual agreement, the interaction between development facilitators, academics and members of the local community has taken place in this framework of participatory action research. The foundations were initially laid in the course of the first community meeting held on 7th March 1999. Community members and representatives of EMG and Indigo agreed to work together in a spirit of mutual respect in a transparent process that would enable people's vision, enthusiasm and contribution to lead to collective action to benefit the local community. This broad agreement was subsequently elaborated in the course of discussions and interactions, and it was agreed that processes of learning and more formal research would respect all participants as knowledge owners and knowledge generators.

In our work in the Suid Bokkeveld, our interpretation of the ethical aspect of co-responsibility for outcomes has been that the PAR approach to co-learning and change should be:

Participatory: it actively involves all relevant and willing players (especially those who are usually disregarded) as active researchers and change agents, does not relegate some parties to the role of objects of the research of others and does not impose external views of what change is desirable or not.

Action: it is about acting to improve the situation (and not just observing it)

Research: it is research process in which knowledge is developed, abilities to solve problems are enhanced and theory is critically reviewed in an on-going process of action and reflection.

This approach is seen by some to be at odds with the paradigms of formal research applied by academic institutions. Following some interactions that were perceived by locals as being inappropriate or even abusive, a joint research protocol was established by the Heiveld-Co-operative, Indigo development & change and the Environmental Monitoring Group. The protocol and the decision making processes associated with it ensure that research and development initiatives supported by the three partner institutions are organised in a manner that will create maximum opportunities for synergic learning and knowledge sharing and that local people are treated with respect and appreciation for their contributions. These processes also create settings in which researchers are able to work productively in the field. The research protocol also prevents inappropriate or repetitive research, and has been effective at avoiding feelings on the part of farm families that they are being exploited as research objects.

Moving from a state of discomfort or distress to a more desired state requires more than physical resources and a desire to avoid the unpleasant. Vision and enthusiasm are somewhat elusive but essential elements of positive change processes. At the first participatory workshop in the Suid Bokkeveld in late March 1999, participants were able to share their visions of a better future using visualisation via pictures collectively drawn on large sheets of paper. This process surfaced complex and precise wishes, created a lively medium that enabled effective sharing with others, and enabled illiterate members of the community to contribute on an equal footing with the usually-dominant literate. The collective vision articulated in 1999 has been revisited on a number of occasions by various actors, all of whom have confirmed that it is still valid and relevant to them today. Indeed, many of the dreams have been partially or fully achieved in the interim.

Experience in the Suid Bokkeveld has confirmed that direct participation in telling and creating stories through interviews, drama, Participatory Video (PV) and role plays has contributed to engendering enthusiasm and deepening people's sense of their own identity. Armson and Ison (Armson and Ison 2001) of the Open University in the UK argue that when we tell our own narratives our enthusiasm is released. In media there is an element of portraying our realities, our stories, emotions and perspectives in creative ways. In the Suid Bokkeveld Indigo has used PV techniques and methodology to complement other aspects of the PAR process with notable success both in terms of process (engendering enthusiasm through participation in storytelling and production of material) and outputs, producing a number of videos that have been shown extensively within the community and around the globe to share these stories and perspectives. PV enables people to share their experiences with their peers, and the enthusiasm generated is palpable. The material relates on a personal level to who we are, how we understand things and what we want to achieve. In terms of Human Scale Development, this relates to meeting the needs for understanding, identity, participation, affection, freedom, creation,

greater equity. In 2001, members of the community established the Heiveld Co-operative to cut production costs and collectively access markets, and thereby to improve their livelihoods. This initiative was underpinned by clear values and principles that were translated into the mission and objectives of the co-operative, and into policies and actions. Starting small, and with very limited capital, the Co-operative made steady gains in production and profits in its early years. The Co-operative currently has over 60 members. Organic certification and engagement in the fair trade system provided access to more lucrative markets, and also exposed the farmers to global networks of other farmers, traders, service NGOs and consumers.

In 2003 the Suid-Bokkeveld region was hit by a particularly severe drought which devastated production, but also stimulated the interest of the small-scale farmers in the dynamics of climatic variability. Since then community members have met regularly to share their experiences of the weather and its impacts, to discuss the quarterly weather forecast and to plan individual and collective actions to respond appropriately to extreme climatic events. In the course of the past decade, a number of interwoven processes have contributed to the farmers and others in the community being able to improve the resilience of their community, livelihoods and farming systems. The successes and disappointments of this process have arguably been equally important stimuli for learning and change.

Participatory Action Research in the Suid Bokkeveld

From our first meetings with members of the Suid Bokkeveld community, the small team of 'outsider' development professionals drawn from the staff of EMG and Indigo was struck by people's curiosity to learn more about the wider world and what it could potentially offer to help them meet their aspirations, and by their impatience to 'get on with the job'. We thus agreed to use Participatory Action Research (PAR) as our fundamental methodology and approach, and have since had the privilege of being co-learners and co-researchers with the farmers and their families.

Kemmis and McTaggart (2000) observe that there is no unitary approach to PAR, and that the evolution of PAR owes most to the 'press of contexts' in which it practiced. The PAR approach allows the practitioner to be a researcher, and argues that research conducted within, and not just on practice can yield evidence and insights that assist in the critical transformation of practice. They note that 'the process of participatory action research is only poorly described as a mechanical sequence of steps, it is generally thought to involve a spiral of self-reflective cycles. We conceptualise this cycle as a number of parallel or sequential cycles, which are followed by teams of 'co-researchers'. The main sequential elements in our practice are:

- observe and reflect (on the current situation, its challenges and opportunities and options for improving it)
- plan a change (to achieve improvement)
- act, and observe the process and consequences of the change,
- reflect on these processes and consequences, and then
- replan (in the light of what has been observed and learned),
- act and observe,
- reflect, and so on.....

protection and idleness in a synergic process that also either reflects or contributes to meeting the need for subsistence.

People tend to vividly remember drama that they have participated in as either an actor or a member of the audience. It will also tend to feed their dreams, in other words stimulate the subconscious work that the mind does when we are asleep by posing questions and presenting the rich and nuance contradictions of reality (as opposed to a documentary film based on "getting the message across").

The PAR approach has had a number of tangible and attitudinal outcomes. The work on sustainable production of wild rooibos undertaken by Rhoda Malgas (né Louw 2006) with local farmers resulted in the scientific verification of local "best practice" for the sustainable harvesting and management of populations of wild rooibos (*Aspalathus linearis*). These findings not only provide the basis for the Heiveld Co-operative's policy for the management and use of wild rooibos, but have also contributed to the industry-wide "Right Rooibos" code of conduct for sustainable production of rooibos (<http://www.sarooibos.co.za/right-rooibos>). These findings have strengthened the Heiveld's market-facing claims to sustainability, and enabled the Co-operative to provide its producers of wild rooibos with the highest returns per kilogram in the world for rooibos tea (www.heiveld.co.za).

However, it should be borne in mind that these are sub-processes within a larger and more complex on-going process that requires constant negotiation between all of the actors, and frequent moments or processes of reflection to surface meaning, critique, affirmation and enthusiasm.

The concept of farmers as co-researchers and co-owners of data and knowledge is widely accepted as the norm in the Suid Bokkeveld community. The processes of co-generation and verification of knowledge has been well documented in print and on film, and is reflected in practice at quarterly Climate Change Preparedness Workshops, where farmer-data gatherers share their knowledge with one another and with other researchers from outside the community.

Human Scale Development

Within the overall framework of the Suid Bokkeveld PAR process, the human scale development framework developed by Manfred Max Neef and colleagues has been applied in practice by EMG and Indigo in supporting the development and adaptation efforts of the local community. Human scale development (Max-Neef 1991) provides a robust and empirically sound alternative framework for understanding human society and behaviour by identifying and analysing universal human needs, and the successful (and less successful) ways in which people seek to satisfy these needs.

In our analysis and practice we have embraced the notion that human needs should be understood as a system, and that all human needs are interrelated and interactive. In this understanding the need for subsistence is unique in that if it is not satisfied, the human being will not be able to remain alive, but beyond this exception no hierarchies are understood to exist within the system. What Max Neef describes as "simultaneities, complementarities and trade-offs" characterise the ways in which people satisfy their needs. The most elementary human acts and interactions invariably reflect the

simultaneous satisfaction of multiple needs.

The ways in which we satisfy our common needs for Subsistence, Protection, Affection, Understanding, Participation, Idleness, Creation, Identity and Freedom are individually, culturally, historically and socially unique. Our approach has been to create situations in which people are more able to satisfy a range of needs simultaneously, in a synergic process. Our conceptualisation of poverty is broader than material poverty, and embraces the multiple poverties experienced by people when they find themselves unable to satisfy any of their basic needs. This reinterpretation of the concept of poverty goes beyond the strictly economic. The crux of human scale development theory is that individual poverties are likely to generate pathologies, which create dynamics which result in dysfunctional humans and societies. As such, poverties of this nature are likely to inhibit the ability of people and their communities to adapt effectively to climatic variability and change.

In our practice in Suid Bokkeveld the key elements of the Human Scale Development framework that we have sought to integrate into the conceptualisation of processes that we facilitate are the typology of needs, the interrelated notions of multiple poverties and pathologies and an understanding of the five different types of satisfiers.

When EMG and Indigo first engaged with members of the Suid Bokkeveld community in a formal workshop in 1999, members of the community identified 'poverty' as the central challenge that they sought to address, one which derived from a number of different root causes, and which gave rise to a number of other challenges. At this point poverty was implicitly understood to be of a material nature, which we may describe as inadequate access to the resources needed for subsistence.

As development practitioners, we reflected upon the nature of the poverty (or poverties) that the workshop participants had expressed, and which subsequently became more apparent and understandable to us in the course of interactions, conversations, observation and shared reflection over the succeeding years. We came to understand that a number of poverties were experienced by people in the Suid Bokkeveld, relating to each of the basic human needs defined by Max-Neef (1991).

A crucial element of adaptation to climate change in the Suid Bokkeveld has been that people have found ways of overcoming some of the pathologies that have previously prevented them from taking the sorts of action that can be expected to result in greater resilience in the face of climatic variability and change, as well as other environmental, social and economic challenges.

Empowerment for enhanced management of the environment and sustainable livelihoods

Empowerment is a state of mind and reflects the ability to take action to change physical, economic and social realities. As such, it is an essential precondition for effective and sustainable adaptation, including adaptation to climate variability and change.

The World Bank Empowerment and Poverty Reduction Source Book (World Bank 2002) notes that "empowerment refers broadly to the expansion of freedom of choice and action." It further notes that "for poor people, that



freedom is severely curtailed by their voicelessness and powerlessness”, and argues “powerlessness is embedded in the nature of institutional relations.”

Norbert Herriger (2006) proposes that empowering processes encourage people to discover their own strengths and to enhance self-determination and autonomy. He emphasises that it is important to strengthen people’s abilities to organize and direct their own lives, and to provide resources for self-determination and independence.

In a country and local context in which systematic disempowerment and concomitant racism were prime mechanisms that enabled the colonialists to control resources and exploit the labour of the disinherited, it is understandable that empowerment was greatly desired by the Suid Bokkeveld community.

Our understanding has been that whereas it is entirely possible for one person to disempower another (be this physically or psychologically), it is not conversely possible for one person to empower another. At best a process that may lead towards a person becoming more empowered may be facilitated by removing obvious obstacles, providing opportunities for education and other forms of learning, and creating the ‘space’ within which people are able to grow, change and stretch their wings.

South Africa’s current democratic state, guided by a constitution that enshrines human rights and dignity has created some of the necessary frame conditions for individual empowerment. However, many of the external constraints to empowerment remain (such as economic hardship, poor access to education and racism).

The first participatory planning workshop in the Suid Bokkeveld took place on 27th & 28th March 1999 and was attended by 69 members of the Suid Bokkeveld community. Following an extensive and highly participatory process that established a common vision, analysed challenges and desired future outcomes, assessed local resources and inspired people to collective action, the workshop participants established the following overall objective for the community: ‘The people of Suid Bokkeveld are empowered to manage their natural environment productively and sustainably and to establish sustainable livelihoods which satisfy the needs of all.’

Although the question of climatic change had not been raised as a crucial issue by members of the community at this stage, the larger question of sustainability was of great concern to people, and as can be seen by the above statement, there was clear recognition that livelihoods and the environment are inextricably linked. As a goal, the concept of sustainability offers a positive outcome that suits the human predisposition to optimism, while not denying the key insight that change is constant and inevitable.

Labelling people and their communities as ‘impoverished’ and ‘underdeveloped’ promotes a relationship of provider and recipient. Neediness and helplessness thus emerge as defining characteristics of individuals and communities that are worthy of receiving assistance. Intelligent people who appreciate the assistance made available by development agencies quickly learn the language and behaviour of poverty and need so as to stimulate the provision of help. However, such behaviour does not generally contribute to enhanced resilience, and instead embeds unhealthy dependencies.

The proud recognition by members of the Suid Bokkeveld community of their local resources, including their own skills, knowledge and abilities provided the building blocks for the subsequent development process. Following their engagement in an on-going process of learning and development, people often express a profound sense of achievement. Indeed, one of the Heiveld Co-operative’s marketing slogans is “Produced with Pride”. The Heiveld has been built upon the knowledge, skills and heritage of the Suid Bokkeveld community.

The community has retained and evolved a vibrant culture and a remarkable resilience in the face of all of the hardships that its members have to face. Many gains have been achieved by community members and their institutions, and relationships have evolved and matured. Nevertheless, the Suid Bokkeveld remains a harsh environment in which most small-scale farmers still lack adequate access to land and subsist on as little as one hectare of rooibos tea land.

Even when in full production in a year of good rainfall, one hectare is unlikely to produce more than one dry ton of organic rooibos tea. At fair trade prices



(R17.50/kg was paid to Heiveld members in 2012) this provides a gross income of only R17,500, which is inadequate for household subsistence, let alone investment and accumulation of reserves. The government has undertaken to transform land ownership in rural South Africa, and the small-scale farmers aspire to have adequate land access so as to be able to earn sufficient in the good seasons to carry them through the inevitable droughts. However, these goals will not be achieved without far greater resources and efforts to reform land ownership and land access.

Fair trade and its impacts

Fair trade is a global movement aimed at promoting social and economic justice for producers of agricultural and other products, primarily those in less developed countries. The fair trade umbrella body FINE defines fair trade as follows:

“Fair Trade is a trade partnership, based on dialogue, transparency and respect. It aims for more equality in the international trade market. Fair Trade stands for sustainable development through better trade conditions and social justice for marginalized groups- especially in countries of the south.”

The Heiveld is certified by the Fairtrade Labelling Organisation (FLO) as a producer of fairly traded rooibos tea. The core objectives of FLO are to improve producers’ livelihoods, to build the capacity of their organizations and to put in practice sustainable production in order to drive and strengthen wider changes towards sustainable development.’ The Heiveld has taken these ideals to heart, and has applied fairer practice in all aspects of the business, including agreeing that the Co-op and its members would all pay ‘fair’ wages at levels that are considerably higher than those on surrounding farms.

This explicit focus on empowerment and a development model that intends to enable people to take more control over their future and advance sustainability is consistent with the conditions needed for successful adaptation to climate change. Transparency of prices and margins is also promoted by fair trade, although in many cases this remains an ideal that is not achieved in reality.

The engagement of the Heiveld and its members with traders and other members of the fair trade movement has generally been a very positive one. It has been the means by which the Co-operative has been able to provide better returns to its members, and by which the Heiveld has also been able to strengthen its financial position, capitalisation and capacities.

Negotiations between the Heiveld and its trading partners have not always been straightforward, and some less scrupulous traders and service providers have been dishonest and even perpetrated fraud despite their professed adherence to fair trade principles. Nevertheless, all of these experiences have provided learning opportunities that have been used positively in the process..

Monitoring the local weather and its impacts

In the past, small-scale farmers of the Suid Bokkeveld lacked the means to keep detailed records of the weather. Because the nearest fully equipped weather station was at Calvinia (over 100 kms distant) no comprehensive records of weather events were available. In addition, the Suid Bokkeveld is climatically quite different from Calvinia, and within the area many different

micro-climates are found. Farmers evinced an interest in recording the weather on their farms and comparing these records to those kept by others in adjacent areas.

Indigo initiated provision of maximum and minimum thermometers and rain gauges to farmers, and assisting them in collating this data so as to build up a more comprehensive picture of the local climate. For each year since 2009 Indigo has provided participating farmers with 'climate diaries' designed to facilitate not only the recording of measured data, but also other observations, including the impacts of extreme events. The keepers of the climate diaries take great pride in their role, and this is expressed in the care that they take in recording data and observations in their books. In recognition of these contributions to building up a record of the local weather, in 2012 Indigo organised a competition for the 'best climate diary'. The winners and runners-up were suitably proud of their achievements.

In order to triangulate the recording of farmers, and also to gather a more detailed data set that would also reflect intensity of rainfall events and temperature variations between the manually recorded extremes, Indigo and EMG raised funding to install four semi-automated weather stations at locations in different parts of the Suid Bokkeveld known to experience significantly different weather (Dobbelaarskop, Kortkloof, Blomfontein and Melkkraal). One of these, at Dobbelaarskop, is a full weather station that also measures wind direction and velocity and humidity. The weather stations have been in operation since 2010, providing a more detailed picture of local weather events.

The golden thread of interaction: Quarterly Climate Change Preparedness workshops

Each quarter since 2004, members of the small-scale farming community of the Suid Bokkeveld have gathered to attend a Climate Change Preparedness workshop. Initiated by the local NGOs in partnership with the Climate Systems Analysis Group (CSAG) of the University of Cape Town, the spur was the onset of the worst drought in living memory. Farmers believed that access to long-term forecasts could enable them to plan their farming operations better.

The methodology used for the workshops was adapted from methodology developed in Zimbabwe by Anthony Patt et al. (Patt, Suarez et al. 2005) and centres on providing farmers with the opportunity to share their experiences of the weather events of the previous quarter, and to reflect on what took place in their farming enterprises. The quarterly forecast is also presented and debated, and time is taken to discuss what implications the forecast might have for farming operations. Provision of transport for participants and food and refreshments make it more possible for all members of the community to attend.

Over time the workshop process has evolved, and the NGOs have introduced innovations to deepen the experience, enhance the content and make participation more enjoyable. Important influences in this on-going process of innovation and redesign have been the evaluative feedback given by participants at the close of every workshop, and the attention given by the facilitation team members to ensuring that the workshops serve to meet as many basic needs as possible in a synergic manner. Significant innovations have included the introduction of parallel workshops for children (thus enabling mothers to engage fully), the use of drama and participatory video, and interactive learning processes such as simulation of the erosive power of water under different land management scenarios.

Members of the community have come to appreciate the workshops as 'safe spaces' where they can engage in creative learning processes with all members of the community (on-going disagreements or conflicts notwithstanding). The workshops are the only place of regular contact for community members from the further-flung corners of the community, especially those who do not have easy access to transport. They also serve as a forum for discussion of political issues, often leading to the planning of actions that do not necessarily have any direct link to the agenda topics for the workshop. For example, in the course of one of the 2010 workshops members of the Melkkraal and Kortkloof communities shared information that the solar powered water pumps that supplied each of the communities with water were out of order, and that they faced financial and technical challenges in getting them fixed. This resulted in an approach to the Heiveld

Co-operative to request financial support from the Heiveld's Fairtrade Premium Fund, and for technical support from EMG. Members of each community agreed to contribute a portion of the cost, and to assist with the work involved. As a result, not only were the pumps repaired, but the sense of pride and competence of community members was enhanced.

Farmer participatory research about the sustainable management of wild rooibos

Perhaps the easiest way to understand PAR in action is to follow the actual research process and its application. One of the first research questions identified by farmers in the Suid Bokkeveld was how to manage wild rooibos populations in a sustainable way. This led to the research undertaken by Rhoda Malgas (né Louw) (Louw 2006) of the University of Cape Town to ascertain the optimal harvest height and volume of wild rooibos, as well as the optimal frequency and season of harvest. This work was undertaken on two farms in the Suid Bokkeveld, in close collaboration with co-researcher and local farmer Koos Koopman. The Heiveld Co-operative markets wild rooibos as a truly sustainable product that is only harvested in accordance with guidelines developed on the basis of the research led by Rhoda, and farmers obtain a premium price for their wild tea.

Wild rooibos occupies a special place in the hearts and minds of the people of the Suid Bokkeveld. Like them, its forebears have long lived in the landscape and have adapted to its extremes. It is lean and humble in its growth form, and co-exists with its neighbours in a symbiotic fashion. Countless generations of people in the area have harvested it and used it as a valued local resource. The main-stream industry was built upon wild harvesting, but turned to cultivation when demand grew and came to look upon wild rooibos as a "poor cousin" that lacked uniformity. This did not stop the industry from using wild harvested rooibos to enhance the flavour and quality of poor grade cultivated rooibos. No doubt this main-stream view of a resource that is exploited without adequately valuing it has led people to identify more strongly with "their" wild rooibos.

In response to concerns that wild rooibos populations might have been reduced in the past due to poor management, Indigo development and change, the Heiveld and EMG initiated a research project to assess the viability of approaches to propagation of wild rooibos. Seed was collected on a number of farms in the Suid Bokkeveld. This was an arduous task, because the wild populations produce only small amounts of seed each season and rely on their ability to re-sprout after fire to ensure survival. Seed predation by birds and insects is far greater than in cultivated rooibos plantations, and only very few seeds can be found under each plant. Nevertheless, sufficient seed was collected for seedling trials to be successfully conducted by Dr Heidi Hawkins of the University of Cape Town (Hawkins 2008). However, subsequent transplanting of the seedlings in the wild was unsuccessful.

The most successful attempts at establishing wild rooibos in the wild were undertaken by Drieka Kotze of Melkkraal, who stimulated germination of the seeds by simulating a natural fire event (she made a small fire on top of a few seeds at different sites at the end of the summer, before the onset of the rains. This method has been emulated by others. As Drieka explains, "wild rooibos is a shy and natural plant. It does not like to grow where it can be seen" (Personal communication: D Kotze).

Farmer experimentation on establishment of cultivated rooibos

The Heiveld farmers have a long history of innovation and experimentation regarding propagation of rooibos plants and establishment of healthy stands of cultivated rooibos in their fields.

In 2005 farmer the Heiveld Co-operative concluded that its members were not able to purchase organic rooibos seedlings of acceptable quality in the market, and appointed Jacobus "Koos" Koopman to produce seedlings for members at a nursery established on hired land at Welgemoed. He was supported by Dr Marianna Smith of Natural Botanicals, and their successful trials resulted not only in a good crop of healthy rooibos seedlings, but also the production of the first manual on production of organic rooibos seedlings (Koopman and Smith 2005). Subsequently these methods were also applied successfully by Jan Fryer at Melkkraal.



After the initial success at Welgemoed, the death of the land owner made use of this site unviable. Unreliable water supply in the drought-prone and arid Suid Bokkeveld forced the Heiveld and Jan Fryer to curtail their seedling production activities. Faced with water shortages, Koos Koopman has only been able to produce seedlings on a limited scale.

Seedling establishment from plants raised in nurseries is not without problems. Plants are very vulnerable to drought after planting, and the damage caused to the tap root during transplanting tends to result in root diseases and a shorter life span of the plants. This reality, and the other limitations described above, caused the Heiveld to reconsider seedling production as the most appropriate strategy for propagating cultivated rooibos. The successes that some members had achieved by seeding direct persuaded the Heiveld to provide members with scarified organic rooibos seed for direct seeding in their lands.

Many of the Heiveld members have achieved notable success with direct seeding. Pieter Koopman of the farm Matarachope has applied "best practice" in terms of shelter belts and has actively experimented with direct seeding.



The experiments have been photographically documented, and the results are very impressive, particularly as Matarachope is one of the most arid farms in the Suid Bokkeveld, with an annual average of 150 mm of rainfall. On an exposed plateau, it is also very vulnerable to the desiccating winds that sweep over the area. As Pieter describes it, when one sows the seed into prepared land 'the seed knows when it should germinate'. Germination is triggered by optimal growing conditions, and the resultant seedlings have a high survival rate. Furthermore, some of the seed is able to remain viable for a year or more, and germinate in a subsequent rainy season, thus filling any gaps in the fields.

Important lessons learnt

Sound methodology can guide the practitioner at all stages of planning, implementing and evaluating an adaptation intervention. However, regular reflection on the applicability and interpretation of the methodology (or methodologies) in the course of the process is important. A sound methodological framework can support any number of add-ons that may be called for in response to challenges or new insights.

- **Creating opportunities for regular individual and collective reflection** on practice enables people to learn collectively from successes and from difficulties or failures.
- **Celebrate successes** and what may be called 'positive moments' both formally and in lighter hearted ways. In the hard-working life of a farmer occasions for celebration all too often slip past without recognition.
- **Provide opportunities for recognition** to support the development of a more appreciative sense of self; target-specific praise that recognises the individual achievements and contributions of people and focuses on specific actions, gestures or results can open the way to a more positive and empowered way of interacting and being.
- **Value the uniqueness of each person** and their knowledge and identity. Valuing the history and uniqueness of each individual and family engenders a sense of pride that can sustain people and their communities through hard times.
- **Engender enthusiasm:** create opportunities for people to share and record their history and perceptions in well-facilitated and empowering processes such as Participatory Video. They will feel more valued and appreciated, and be enthused to act positively.
- **Live your commitment:** setting a sound example of committed solidarity can strengthen the societal web, and encourage people to persevere despite hardships.
- **Be flexible** in the face of the unexpected: every situation presents new opportunities for learning and for taking action, and that often the serendipitous is ushered in by the inconvenient.
- **Promote an ethical approach** that is aligned with the values of the community and is understood and supported by its members. Initiatives to support adaption will usually involve provision of resources from sources outside the community: work with legitimate structures to ensure that these resources are applied in transparent and acceptable ways
- **Express empathy,** and avoid charity, which not empowering and promotes dependency.
- **Recognise that everyone's skills, capacities, perceptions and analytic powers differ:** rich insights may be gained from different individuals because of their diverse perspectives and experiences differ. This can enabled mutual learning to take place amongst members of the community.
- **Balance innovation with trusted approaches:** the 'new' is not always the 'better', and its side-effects and externalities may still be unknown; on the other hand the familiar is always more accessible and easier to relate to.
- **To achieve collective goals, people need to create and sustain institutions that can support them.** The Heiveld Co-operative has provided market access and improved incomes for its members, and has also been the vehicle for providing a range of other services and linkages that have been of value in the adaptation processes of the Suid Bokkeveld community.
- **Include younger people and women** in management and governance structures this provides new skills and diverse perspectives.

Conclusions

The circumstances faced by every human community are as unique as our fingerprints, whereas all share some common aspects. Any understanding of the responses of land users to the climate challenge must take this into consideration. We have explored some elements of approaches that could be followed in climate-impacted farming communities, but do not have a 'recipe' for successful adaptation. The chemistry of each situation will differ, as will the tastes of the 'chefs' who are responsible for putting the specific ingredients together and the temperature at which the 'cooking' takes place.

Tschakert and Dietrich (Tschakert and Dietrich 2010) point out that a key question arising from current research is 'how to facilitate learning, information exchange, reflection, innovation, and anticipation, all of which

are key elements in the practical reality of the adaptation process.' Consistent application of a learning methodology can enhance the ability of farmers to adapt to anticipated change, and can also contribute to achieving other goals such as enhanced governance and stewardship regarding the management of biodiversity. Learning processes of producers and scientists led to enhanced awareness of the importance of the conservation of wild rooibos populations and habitats for long-term livelihood strategies in an uncertain world of rapid environmental and market changes (Arendse 2010b).

An analytical framework such as Human Scale Development that enables 'outsiders' to understand common human needs and gain insight into the choices that people make to satisfy them will enable facilitators to design interventions and processes to enhance adaptive and anticipatory capacity that are likely to be embraced by people, and lead to further positive outcomes.

Access to assets and power relations play a key role in determining the ability of individuals and households to respond to risks, opportunities and disasters. In the normal course of events, interventions by the state or development agencies are unlikely to fundamentally change either the asset base or power relations. However, in our experience incremental changes relating to risk sharing, gender relations and institution building can have a significant impact, and help people to avoid 'traps' that would otherwise prevent them from successfully adapting to climate risk. Explicit values, transparency, common goals and open channels of communication all contribute to creating and building trust, without which no shared undertaking is likely to achieve what the participants desire.

The experience of the Heiveld Co-operative points to 'the crucial role that iterative reflection and learning plays in nurturing a learning, flexible and adaptive organisation that is so much needed to withstand the shocks and stresses that exposure to markets, environmental stress, and a host of others' (Arendse 2010a). Effective local institutions that are owned and governed by people at risk from climatic variability have a vital role to play in enhancing anticipatory capacity, mediating with other role-players on behalf of the affected community, mobilising resources, accessing markets, providing services and creating platforms for reflection and learning.

Our entire experience points to the essential role of agency on the part of persons and communities affected by climatic variability and change. All too often good intentions undermine the ability and the will of affected parties to take action to address the situation. Politicians like to give largesse, even if, or because this creates dependencies. Officials are comfortable in the role of providers of goods services, despite the complaints that their interventions frequently give rise to. Donors provide much-needed resources, but are on occasion not sufficiently aware that the most important things cannot be bought. As the impact of global warming is felt more widely, resources will flow more freely to support poor and affected communities. It will be a tragedy if the impact of these resources is to create dependencies and undermine the agency of individuals and communities to adapt effectively.

We live in a global community, in which global agreements tie together an ever more homogenous economic system that predates on the earth's resources. Global environmental governance must be grounded in local realities such as those experienced in the Suid Bokkeveld. By the same token, the actions taken by affected farmers in local communities should be informed by our emerging understanding of the global environment and its vulnerabilities. The small-scale farmers of the Suid Bokkeveld have shown their willingness and ability to be good global citizens and custodians of their natural heritage, and have provided the opportunity to others to learn from their experiences. Learning our way into a better future implies that we should find ways to satisfy our needs pro-actively and in ways that do not cost the earth. We must urgently acquire the necessary wisdom to do so.

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