

# Community Based Adaptation to Climate Change in Africa (CBAA)

July 2010



## FARMERS MOVING TOWARDS RESILIENCE SUID BOKKEVELD CASE STUDY ON CLIMATE CHANGE ADAPTATION, SOUTH AFRICA

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*Hendrik Hesselman with his weather station on the farm Dobbelaarskop  
(Photo: B Koelle)*

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## Introduction

This case study describes some aspects of development processes underway in the Suid Bokkeveld in recent years, and focuses on the adaptive aspects. For the past three years these processes were enriched and strengthened by support from a CCAA project known as Community Based Adaptation to Climate Change in Africa (CBAA), co-ordinated by the African Centre for Technology Studies (ACTS) in Nairobi, Kenya. Under the leadership of Indigo, the Suid Bokkeveld was a pilot site for this project, and the on-going adaptation processes within this unique community provided rich opportunities for reflecting upon and gaining insight into what it is that enables communities to adapt to climatic variability and change, and what challenges must be addressed if these processes are to succeed.

Humanity faces unprecedented environmental, economic and social challenges that demand innovative and effective solutions. The natural systems upon which we depend for ecosystem services are of infinite complexity, yet have been crudely manipulated by agricultural interventions for survival or material gain. Globally, most are in decline, some to the point of collapse. At the local level, global change is impacting negatively on these systems and the services they provide. Under these circumstances, farmers must develop a deeper understanding of natural systems to manage them sustainably in a changing world. If they do not understand how ecological systems are likely to be impacted on by global change, or what mitigatory actions they can take, farmers will inevitably exacerbate global environmental problems.

The process described in this case study is informed by the belief that if natural and human scientists intend to help farmers improve their management of the natural resources that they control, and to derive greater or sustained benefit from the ecosystem services that they provide, partnerships based on mutual respect and shared concerns are vitally important. The research paradigm described in this case study incorporates these elements and has contributed to creating a “community of practice” between land users and scientists in the Suid Bokkeveld. This provides valuable opportunities for learning about community based adaptation.

We would like to thank WWF, GEF Small Grants Programme, CCAA and the Volkswagen

Foundation for supporting the adaptation process in the Suid Bokkeveld over the years.

## The Suid Bokkeveld development process

As with many other post-colonial societies, the descendants of the KhoiSan “first people” of South Africa have experienced systematic and profound disempowerment by colonial settlers and their descendants. What is perhaps more unique is the length of time that they have been subjected to domination, the extent to which their original culture has been obliterated and the unique tools of domination applied to ensure that the privileged classes could exploit their labour at little cost. In the rural areas of the Western and Northern Cape Provinces of South Africa, the modern descendants of the KhoiSan speak a language derived from that of the first colonial masters (Dutch), and remain on the economic fringes of society. Apartheid was officially abolished in 1994, but its legacy lives on in the inequitable social and economic relations in these communities where more than 90 per cent of agricultural land is still owned by white land owners and so-called “Coloured” farmers are confined to the most marginal areas.

One of the many legacies of the KhoiSan is their knowledge of rooibos (*Aspalathus linearis*), an indigenous plant used since pre-historic times to produce a health giving and refreshing beverage. This knowledge was shared with white settlers, who in the 20th Century were able to benefit from the commercial opportunities offered by the growth of an increasingly export-oriented industry. The labour to establish the huge plantations of rooibos upon which the industry is based was provided by “Coloured” people, who were prevented from participating in the other benefits of the industry by racially discriminating policies, legislation and other means of exclusion. Those few “Coloureds” who had access to land on which rooibos could be produced (usually only on a small scale) were excluded from markets and state support.

The rooibos plant (*Aspalathus linearis*) is native to the harsh environment of the mountainous winter rainfall areas of the west of South Africa, and has evolved a number of unique adaptations to thrive in its drought-prone, low nutrient habitat. This is a fire-driven eco-system dominated by “fynbos<sup>1</sup>” species that are adapted to summer drought. The leaves and young shoots of rooibos (Figure 1) have been used by South Africans since pre-history to produce a health-giving beverage known as rooibos tea (Figure 2).





**Figure 1: Rooibos (*Aspalathus linearis*). Photo: B.Koelle**



**Figure 2: Rooibos tea is becoming increasingly popular worldwide and can only be produced in the western part of South Africa. Photo: B. Koelle**

Originally collected in the wild, it was only from the early 1900s that the species was cultivated on a commercial basis. This cultivation destroyed many of the endemic plant communities in which wild rooibos grew.

Rooibos is endemic to the arid regions of the Western and Northern Cape Provinces of South Africa, and grows nowhere else in the world. Because of its unique soil and climatic requirement and its associations with other biotic components of the ecosystem (bacteria, fungi, pollinators, etc.) rooibos has not been successfully cultivated in other parts of the world, and all demand is supplied from a single production area that is approximately 200 x 100 kilometres in extent (Figure 3).

Once considered a poor man's drink, in recent years rooibos tea has become a highly valued

and much sought-after tea in the health-conscious European and North American markets. Exports in 2008 amounted to 6,886 tons, of which 840 tons was organic rooibos. In the same year the domestic consumption of rooibos was in the region of 3,200 tons. The growth of market demand has placed ever-greater pressure on the remaining areas where wild rooibos grows.



**Figure 3: The Suid Bokkeveld is situated in the Northern Cape Province of South Africa. Map: M. Engbers**

Due to its aridity, low fertility and inhospitable nature, the region where rooibos naturally occurs is sparsely populated (Figure 4). It is primarily inhabited by “Coloured” people, few of whom have access to, let alone ownership of agricultural land. Most work as labourers for “white” landowners who claim descent from European settlers, and who were the beneficiaries of policies and laws promulgated by the colonial and Apartheid governments. However, on the north-eastern fringes of the production area some “Coloured” land owners and users have succeeded in retaining or regaining access to land. Widespread cultivation is not possible in these rocky areas, but slow-growing wild rooibos populations are common. Using their traditional knowledge, these small-scale farmers produce rooibos tea (both wild and cultivated) and subsistence crops, and practice pastoralism with small livestock.



**Figure 4: Rooibos tea is harvested during the hot summer months (January - March).  
Photo: B. Koelle**

The Suid Bokkeveld community comprises about 1,000 people scattered across the Suid Bokkeveld, a remote rural area situated in the Northern Cape Province that covers an area of approximately 1,600 km<sup>2</sup>. This area lies within the transition zone of the Fynbos and Succulent Karroo biomes. Coarse-grained, nutrient poor soils support Fynbos plant species, and soils derived from the fine grained Karroo shales sustain drought resilient plants of the Succulent Karroo vegetation type. High species richness and endemism have earned the Bokkeveld Plateau recognition as a global biodiversity hotspot with high levels of endemism of geophytes in particular (Manning and Goldblatt 1997). The Suid (literally “Southern”) Bokkeveld lies within the semi-arid winter rainfall region (receiving between 150 and 300 mm per annum), and periodic droughts impact severely, particularly on the lower rainfall areas. Direct impacts of prolonged drought conditions from 2003 to 2006 resulted in dramatic declines in agricultural production, mortality of crops and livestock and the drying up of most water sources.

The small-scale farmers of the region generally work for between one and six months tending their own crops and livestock on land that they own, lease or have customary use of. The rest of their working time is typically spent as seasonal labourers on neighbouring farms or further afield. The area has limited arable land and small-scale farmers have very few alternatives to low-input subsistence and crop farming.

In the late 1990s, the farmers began to organize in an attempt to combat the extreme poverty they were facing. The community had remarkably limited experience of collective organisation, no doubt due both to physical isolation and the long history of social and political oppression

that actively discouraged collective action. The community lives scattered throughout the rocky terrain, without the benefit of a community centre. Members of the community requested assistance from two Cape Town based NGOs, the Environmental Monitoring Group (EMG) and Indigo Development & Change. An initial meeting with community representatives was held in the course of which a number of principles were agreed to, which subsequently served as the basis for all further actions:

- Involvement in any project activity should include contribution and benefit.
- People’s vision, enthusiasm and contribution should be mobilised before benefits are achieved.
- The least advantaged should benefit the most.
- The project should benefit the local community, and the wider community.
- Everybody undertakes to work together in the spirit of mutual respect.
- There should be transparency regarding all project documentation.

On the basis of agreements reached in the initial meeting, a two-day community workshop was convened in 1999 to enable the members of the community to share their common histories, develop a vision for development, analyse their constraints and develop common objectives. Participatory Learning and Action methods were applied, and a vision was generated on the basis of drawings done by the members of homogeneous sub-groups. It was clear that rooibos was a resource that community members understood profoundly and could produce with excellence, but for which they received little benefit as a result of being excluded from direct participation in markets. In subsequent meetings rooibos producers in the community expressed interest in becoming more engaged in collective marketing, but felt that they lacked the knowledge and related confidence to take any action.

With support from Indigo and EMG the fourteen founder members organised themselves into a business in 2001, and registered the Heiveld Co-operative Limited as a processing and trading organisation. The Heiveld provides cultivated and wild harvested rooibos tea for niche fair trade and organic markets in Europe, North America, Australasia and South Africa. In keeping with international standards, the Heiveld has established internal mechanisms to ensure organic production of cultivated rooibos tea, sustainable harvesting



**Figure 5: Fermented rooibos tea is dried on the tea court. Photo: B. Koelle**

of wild growing rooibos and the adoption of farming practices that contribute to the conservation of biodiversity, soil and water.

Accurate spatial information is increasingly required by organic certifying agencies for the purpose of audit verification, and the Heiveld enlisted the support of Indigo to develop a comprehensive Geographic Information System (GIS) for the production areas of its members. Understanding spatial aspects of land also emerged as important in securing land rights. Participatory GIS was developed and members acquired skills in generating maps and in using the subsequent products.

### **First action on climate change issues**

Climate variability has had major economic impacts on the inhabitants of the Suid Bokkeveld, and thus on the members of the Heiveld Co-operative. The drought of 2003 – 2006 resulted in some Heiveld producers losing all of their rooibos tea plants. This contributed to the enthusiastic participation of members in a series of quarterly climate change workshops convened by EMG in collaboration with the University of Cape Town and Indigo. The workshop participants shared their experiences

of the weather in the previous three months, reflected on its impacts on their farming enterprises, reviewed predicted weather for the coming quarter and devised plans to respond to it. This process led the Heiveld to raise funds from the GEF Small Grants Programme to enable its members to undertake initiatives to address land degradation and to adapt to expected climatic change, as well as installing solar power at the Heiveld tea court. Small projects undertaken with GEF funding have included erection of wind barriers in rooibos lands, removal of invasive alien tree species and control of soil erosion from roads and fields.

In addition to the provision of solar power at its tea court the Heiveld has also implemented other measures to enhance environmental sustainability. Rain water is collected from roofs and stored for use in the tea making process, as well as being harvested to water shelter belts of indigenous trees on the windward side of the tea court.

As the Suid Bokkeveld experiences high summer temperatures and is part of the winter rainfall area in South Africa (see maps below), the livelihoods of marginalised groups are vulnerable to the regularly occurring droughts in the area

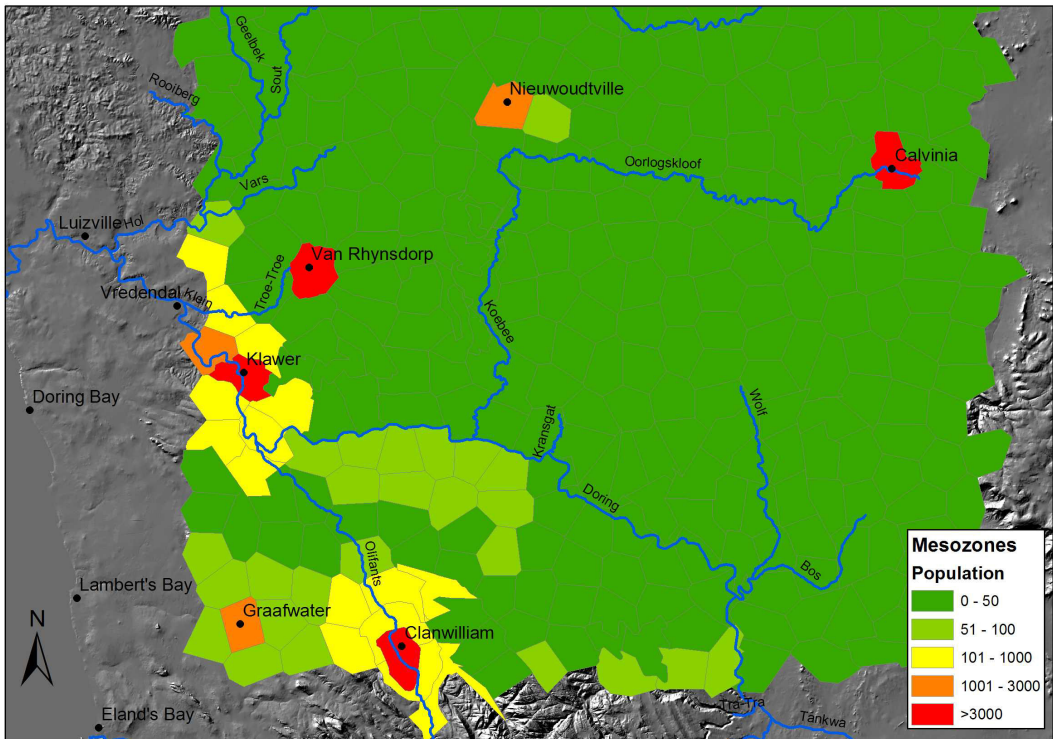


Figure 6: Map of population – the Suid Bokkeveld (south of Nieuwoudtville and north of the Doring River) has a low population density. All services for inhabitants are provided in Nieuwoudtville, Calvinia or Vredendal. (Map: Daleen Lotter, CSIR)

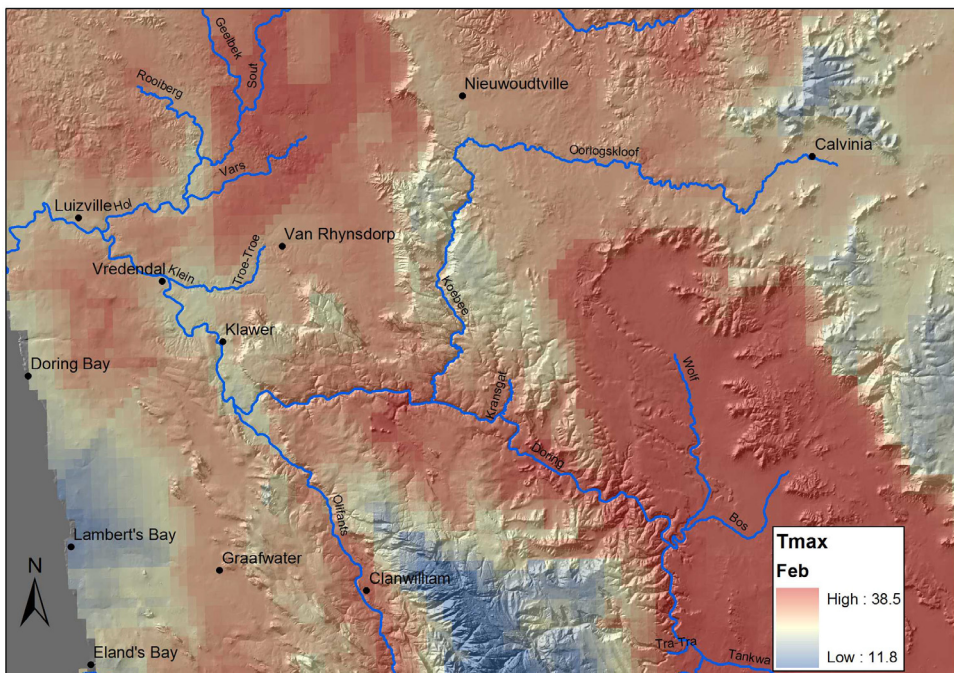
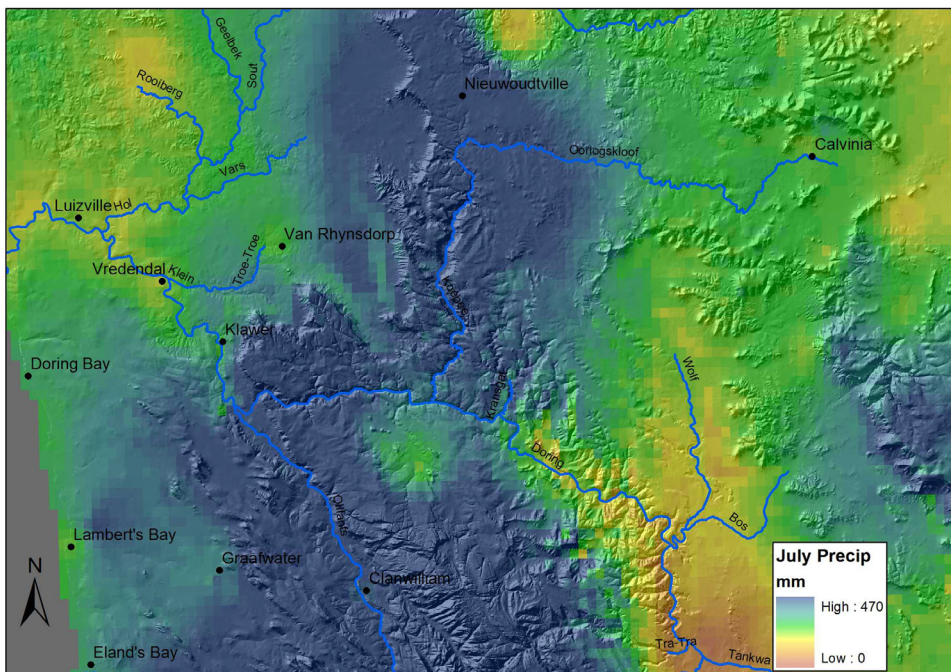


Figure 7: High summer temperatures are challenging for farming. As heat stress can affect rooibos and livestock, farmers in the Suid Bokkeveld decided to monitor maximum and minimum temperatures and to record these weekly in climate diaries. (Map: Daleen Lotter, CSIR)



**Figure 8: Main rainfall is in winter (June/July). Climate forecasts predict more extreme event, and severe droughts and floods have been recorded in recent years. (Map: Daleen Lotter, CSIR)**

### The Adaptation - Capacity Development interface

In the light of the extreme vulnerability of small-scale farmers to extreme climatic events, and their aspirations and strong motivation to achieve a better life, development processes and adaptation to climate change have been evolving hand in hand in the Suid Bokkeveld. The Heiveld developed its objectives based upon the outcomes of the initial 1999 community workshops, and Indigo and EMG have been guided by these in framing their interventions. Both NGOs have applied a Participatory Action Research approach, in terms of which the initial research questions are defined by members of the local community, and the research processes are undertaken with full support of and ownership by the local problem holders.

The Participatory Action Research approach seeks to foster true empowerment within the local community to ensure increased resilience to external shocks and challenges (which may or may not be climate related). Given that the environment is dynamic and the future unpredictable, a key element of empowerment is enhanced problem solving capacity, both individual and collective.

Some of the solutions to local challenges lie well beyond the bounds of the local community, and might include aspects such as knowledge, technologies, markets or access to finance. The developmental and adaptive processes in the Suid Bokkeveld have not only strengthened local social and economic institutions, but have also provided greater access to knowledge and exponentially increased people's access to networks. We anticipate that local livelihood strategies will become ever more robust and able to address challenges that might be encountered.

In the face of uncertain long-term climate predictions, it is important to not just look for technical solutions that will enable people to adapt to climate change, but to rather increase the capacity in problem solving. In the Suid Bokkeveld this process has been inclusive and has been guided by the farmers themselves, and has thus addressed all aspects of the farmers' livelihoods.

It is our experience that addressing deep rooted and complex problems and facilitating the evolution of sustainable solutions at a local level should be understood as a long-term process that is able to address multiple issues over time, and is able to support a consistent process of capacity development that fosters problem solving capacity while strengthening networks.

### *Facilitation of the adaptation process*

It is our experience that successful facilitation of community-based adaptation processes requires a consistent and participatory process. Only once the process is sound and driven by its members to a significant degree will a level of sustainability be achieved. In this context the level of participation should be of the type described by Pretty<sup>2</sup> as “interactive participation” or “self mobilisation”, in which local people participate in joint analysis, determine how resources are used, strengthen their institutions and are able to change the systems that operate locally.

Within Participatory Action Research processes the research agenda is open and is developed collaboratively with all role players. The values that underpin and inform the process, interactions and transactions that take place are explicit and not just assumed, so as to ensure that role players are able to participate fully and without suspicion of manipulation or hidden agendas. The research process is not an extractive one: instead, data is gathered and analysed in ways that are inclusive. Responsibility for the process and outcomes is shared by all participants, and the research process is open to influence and (if necessary) re-design by all participants. The application of these principles in the Suid Bokkeveld has led to an open and creative process that has been enthusiastically embraced by the local community.

Armson & Ison (2001) argue that enthusiasm is a phenomenon at the core of social life. The emotion or driving force of enthusiasm has long been recognized as central in psychology. Motivation is understood as a “drive from within” that then is satisfied by whatever action a person is taking. Armson & Ison (2001) have shown that providing people with the experience of being actively listened to while recounting stories of their past, present and anticipated future was a route to triggering enthusiasm. The action research process in the Suid Bokkeveld has drawn on this notion of the telling of histories and envisaging the future as ways of eliciting the necessary enthusiasm and energy to drive the processes of adaptation. By

taking the initiative and initiating measures and actions to enhance resilience, people are able to take ownership of the adaptation process.

### *The Action Research process*

#### *Climate change preparedness workshops*

##### *Some possible tools*

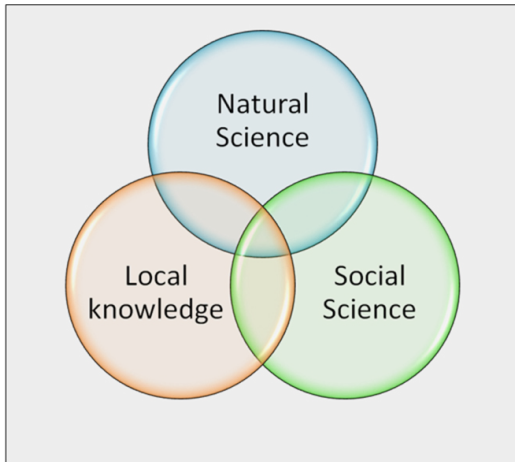
- Roleplays
- Participatory Video
- Story telling
- PLA/ PRA (Group work, energizers, mapping, etc)
- Seasonal calendars

The core of the climate change adaptation process is climate change preparedness workshops, conducted every 3 months and providing a platform for sharing experiences, reporting back to the larger community, sharing new ideas with fellow farmers and scientists, and planning new initiatives and practical steps. Importantly, the workshops fulfil a host of needs<sup>3</sup> and are also social events to exchange personal and farming news and experiences outside the formal programme. Designing the workshops in a way that they become events that enable participants to satisfy their basic needs, including those for understanding (learning), subsistence, participation, understanding, idleness, protection and identity is crucial to maintain the momentum of the entire process.

Parallel to the climate change preparedness workshop for adults, workshops are held for children. The children’s workshops were instituted after the idea emerged during the evaluation of a previous workshop. The innovation has been taken up with a lot of enthusiasm by the children and provides a platform for them to learn about climate change actively, while the adults can focus on their workshop process. The sharing of lessons learnt between the participants of both workshops is important as it provides rich opportunities for learning and focuses the attention on different perceptions of the generations.







**Figure 9. It is crucial to increase trans-disciplinary synergies to support farmers in the development of their problem solving capacity. Livelihood strategies are always cross-cutting and should thus be addressed by the research process**

### *Exploring adaptation opportunities in the Suid Bokkeveld – Wild Rooibos Case Study*

Farmers in the Suid Bokkeveld decided at a community workshop to explore local weather patterns and to engage with and test seasonal forecasts. Especially seeing that the livelihood strategies are often complex, and local micro-climate can vary strongly from farm to farm, it was decided to embark on an integrated process including monitoring of local weather patterns, engaging with seasonal forecasts and long-range forecasts, exploring existing and new adaptation strategies in an action research approach and to steer this process with quarterly report back and reflection workshops. It is crucial to emphasise that this process did not take place in isolation but was rather integrated in a larger development process in the Suid Bokkeveld, taking cognizance of the multiple stress factors farmers are facing in devising their most robust livelihood strategy. It is vital to integrate adaptation with development.

#### *Seasonal forecasts and climate monitoring*

Four different farmers volunteered to monitor the local weather with a simple digital max/min thermometer and a rain gauge at their homes. It was agreed that the monitoring would take place every Monday morning for the maximum and minimum temperatures of the week, as well as precipitation on a daily basis. This data

was recorded in “Climate Diaries” detailing the following information for each month:

- weekly minimum and maximum temperatures
- rainfall events and mm
- observation
- farming activities of the month
- planning for the next month.

The actual weather data collected was then compared to the seasonal forecast prediction for the respective timeframe. This allowed for a better understanding of the seasonal forecast and an increased awareness of how particular weather patterns would impact on farming approaches, disaster management and livelihood strategies.

More recently this monitoring process has also been supported by automated weather stations, managed and maintained by the farmers. As this allows hourly recordings of temperature and rainfall it allows for the analysis of the finer patterns across the Suid Bokkeveld and a better understanding of the local micro climate. This data is also presented and discussed at the quarterly climate change workshops.

#### *Lifeworlds of farmers and responses to drought*

Qualitative narrative interviews were conducted with farmers from the Suid Bokkeveld to explore farmers’ life worlds, their perception of climate and possible climate change and the possible response strategies of farmers under different climate scenarios. These interviews were transcribed and analysed with NVIVO software. In the interviews many farmers stressed that they considered climate change as a serious challenge for the future, but noted that it was by no means the only one or necessarily the most important one. Other challenges cited were market access, economic climate, infrastructure, access to healthcare facilities and schools etc. This matches observations made in other communities in the regions, e.g. Lesotho (Ziervogel & Calder 2003). The sharing of these narratives engendered engagement and even enthusiasm for active adaptation on the part of the respondents.

#### *Propagation of wild rooibos as an adaptation strategy*

Wild rooibos tea has been recorded to be more resilient to pests and droughts and to be longer



**Figure 10: Weather station on Dobbelaarskop, with Koos and Hendrik Hesselman after installation. Photo: B Koelle**

lived than the cultivated rooibos tea. As the Heiveld Co-operative provides a marketing channel for the wild and sustainably harvested rooibos tea, which currently earns producers premium process. This has probably contributed to an increased interest in the propagation of wild rooibos (Louw 2006). This was further fostered through the high mortality of cultivated tea in the intense drought of 2003-2006, which was in stark contrast to the survival of wild populations.



**Figure 11: Wild rooibos tea cuttings for propagation. Photo: B Koelle**

In an action research approach farmers decided in a climate preparedness workshop that:

1. Wild rooibos seed should be collected in four different areas

2. The seed would be scarified with different methods and tested.
3. Some of this seed would be planted under controlled nursery conditions in a greenhouse of the University of Cape Town.
4. It would be compared to seed planted in an open air nursery on a farm in the Suid Bokkeveld.

The participating researcher and farmers used the same methods to record the survival rate of the seedlings, and actively compared and analysed the data while monitoring. This led to other approaches suggested by the farmers being tested as a part of the learning process: low temperature burning of plant material on the soil surface under old wild rooibos bushes, as well as under nursery conditions. The suggestions were implemented and scientifically documented in partnership between scientists and farmers. The farmers and scientists discussed the results, possible analysis and decided on next steps in the quarterly climate preparedness workshops.

### **Water monitoring**

The farmers decided in one of the climate change workshops to initiate a water monitoring process in the Suid Bokkeveld to gain a better

understanding of the groundwater situation and how to manage this precious resource. As all farms rely on fountains or boreholes for water supply for people and livestock, this is a crucial component. Water monitoring

includes at this stage: Water Resource Mapping, Participatory GIS of water resources, Borehole level monitoring, monitoring of water quality and Participatory Video.



**Figure 12: Water resource mapping - an important first step in analysing the water resources of the farm. (Photo: A. Lissel)**

## Meet the farmers



**Barry Koopman**

### *Rooibos Tea farmer and Heiveld board member*

Barry Koopman is a keen advocate of climate change adaptation processes and actively supports finding innovative approaches to adaptation. He supports the quarterly climate change workshops as a platform for learning and sharing. Being a farmer for many years he is knowledgeable and keen to share this with fellow farmers to prepare for changes lying ahead.



**Ragel Hesselman**

### *Climate Monitor and farmer in the Suid Bokkeveld*

*“Fair trade is about self respect and human dignity. The Apartheid times gave my self-confidence a huge set-back. I now have confidence in myself; I know that I can rely on myself without fear or shame. Fair trade has helped to give me a place in the sun as a woman who can express her own views and take positions. In the past we, as women, never had the privilege to express ourselves, but now we are able to stand our ground. We no longer need to stand back for the men, and can take up our places in the business world.”*

*Ragel is also monitoring the climate in the Suid Bokkeveld and supports various adaptation-related action research processes.*



***Drieka Kotze***

### **Monitoring and Evaluation**

Participatory Monitoring and Evaluation (PM&E) are both tools that are key components in an adaptation project management which help to have a better understanding of the dynamics of the program planning and progress. PM&E enable the farmers/participants to review processes, identify problems in planning and/or implementation. It can help to increase the capacity and confidence of local community members to analyse their own needs.

However, Monitoring and Evaluation are not the same thing. Monitoring is seen as an internal activity in any project or organisation that reflects on the action. In the participatory monitoring process, everybody observes aspects and events that are important to them and if necessary decides how to change the course of action so that further errors are not continued or multiplied. Evaluation is an assessment of the relevance and performance of the project or process where we look at efficiency, effectiveness and impact. It provides feedback, strategies of what can be done differently and whether the planned objectives have been achieved.

The involvement of the community and the program stakeholders in PM&E procedures can articulate their priorities and criticisms of the development program and can contribute to sustainability and increasing resilience.

For establishing a baseline study, critical indicators that can be monitored to establish

### ***Action Researcher and farmer in the Suid Bokkeveld***

Drieka Kotze lives on the farm Melkkraal. Since the Climate Preparedness workshops were initiated she has been actively engaged in action research processes in collaboration with scientists. Her passion for wild rooibos combines with an intense curiosity and a sound understanding of natural processes. She is an important member of our research team and has contributed considerably towards research design and implementation, especially in the field of wild rooibos propagation.

any positive (or negative) change and to adjust the implementation progress are necessary. It can be challenging to document all relevant aspects of a baseline study. Indigo is testing Participatory Video as a method to contribute towards a baseline study to support Monitoring and Evaluation processes in the Suid Bokkeveld.

### **Using participatory video for establishing a baseline**

Participatory Video (PV) is a very effective way of doing Monitoring and Evaluation because it is the most transparent way of communicating project work. PV serves as a tool that empowers individual and communities. It encourages them to reveal their own practices which they have been using for as long as they have been living in a specific area and even before they were aware of the existence of climate change. The PV is an effective tool for exchanging knowledge between the local community and scientists. The method allows the participants to direct and film from their own perspectives. They are also more relaxed when they work in a familiar environment and with people they know.

On-camera reporting and directing of filming of certain climate change matters, by the locals constitutes Participatory Video. Local viewing of the material immediately after filming is one of the heart processes when it comes to PV. Video is verbal and visual and it attracts different audiences. People usually



**Figure 13: Participatory monitoring recording practices in harvesting rooibos tea on the Blomfontein tea court, Suid Bokkeveld. (Photo: B. Koelle)**

find it very enjoyable to work with the PV and it can be a fantastic icebreaker. After all it creates a great spirit in team building.

In the course of this project, participatory video was used to compare today's situation with video footage recorded 10 years ago. The comparison is of a qualitative nature but is valuable also for sparking reflection processes amongst community members and the implementation team (scientists, farmers and NGO staff in our case).

While establishing a baseline using participatory video it is important:

- To choose sites and identify the sites on the footage (so you can find them again later)
- To develop indicators and measure while filming to record the current situation
- To ensure that the video footage is stored in a safe place and will be available for review

in 5 or 10 years time (it is important to create back-ups).

### Concluding reflections

Adaptation is place based and requires specific strategies. In order to create an enabling environment for adaptation it is important to firstly stimulate the determination to adapt, and secondly create co-operation and networks to foster adaptation processes (Leary 2008). The participatory action research process and the development of local and national networks have contributed towards creating a more enabling environment for adaptation in the Suid Bokkeveld.

The experiences of sharing life stories, experiences, insights and visions for the future within the participatory action research process are a significant driver in the process of proactive adaptation, which has been described



**Figure 14: Participatory video for establishing a baseline for monitoring: Hendrik Hesselman showing one of his main fountains on the farm. (Photo: B. Koelle)**

as the “stitch in time” approach. These responses are characterised by enthusiasm on the part of the participants. On the other hand, reactive adaptation that is driven by outside service providers requires far greater effort (the “nine” stitches) and is far less likely to be sustained because ownership of the process and its outcomes will be diminished.

In the Suid Bokkeveld, the monitoring processes will continue and the development process will retain a strong climate change adaptation component. In this process we need to be just and supportive partners, with formidable skills in sharing, collaborating and listening alike.

## Notes

1. Literally “fine bush”, this generic term refers to the fine leaves of most fynbos species, which are adapted to withstand hot, dry summers
2. Pretty, J. N. 1995. “Participatory Learning for Sustainable Agriculture”. *World Development* Volume 23, Number 8, August. Pages 11 - 17
3. Max-Neef, Manfred A, *Human Scale Development: Conception, Application and Further Reflections*, The Apex Press, 1991.



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