# SNOEK EN PATAT

## A case study about the relationship between EMG and Goedverwacht, as we learnt about climate change together.

By Stephen Law and Taryn Pereira, EMG

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Acknowledgements: Deep thanks to Merle Dietrich, Ian Schaeffers and everyone else from Goedverwacht who hosted us, participated so enthusiastically in the climate change workshops, and always made us feel at home in their beautiful village. Thank you also to Mary Galvin from Umphilo waManzi and the rest of the WRC K5/2152 project team, entitled Planning for adaptation: applying scientific climate change projections to local social realities. It was a hugely enjoyable and stimulating research project to be a part of.

We would like to gratefully acknowledge the donors who made this work possible. This document has been produced with financial contribution by the Swedish International Development Co-operation Agency (SIDA) through the Swedish Society for Nature Conservation (SSNC), as well as the Water Research Commission (WRC). The views herein shall not necessarily be taken to reflect the official opinion of WRC, SSNC or its donors.



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# Contents

1.

# Snoek en Patat

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## Snoek en Patat

Goedverwacht is a small Moravian mission village situated between Piketberg and Velddrif in the Western Cape province of South Africa. A highlight of village life in this tucked-away corner of the Swartland is the annual 'Snoek en Patat' festival of food and music. The festival theme references the early days of the village when surplus sweet potato (patat) was traded for snoek with fishermen from the coast. The snoek and patat in various combinations was the villagers' staple winter food. Although farming is currently practiced by only a handful of the 1 700-odd residents, there is a growing desire to see the village, and the small valley it lies in, becoming once more an important food producer.

This case-study describes the relationship over a period of two years between residents of Goedverwacht and EMG as we jointly explored climate change, what it means for the future of the community and how they can respond.

# The research question

EMG was invited to be part of a consortium to implement a Water Research Commission (WRC)-funded project.[1] The idea behind the project was to explore whether down-scaled climate and hydrological models offered useful and practical information for rural communities in responding to climate change.[2] EMG undertook to facilitate research in the Western Cape. Other members of the consortium were Durban-based NGO Umphilo waManzi (project leader and facilitator of community research sites in KZN), the Climate Systems Analysis Group (CSAG) at the University of Cape Town (down-scaled climate models) and the Centre for Water Resources Research at the University of KwaZulu-Natal (integrating hydrological information into the climate models).



After narrowing down a few suitable options for a pilot community site, we contacted representatives of the Goedverwacht community to propose their involvement in the project. A number of factors made Goedverwacht a suitable choice: this was a relatively close-knit community, dependent on a localised catchment for their water needs, and located in an area already experiencing some recent temperature and rainfall changes. Most important of all, they had actually initiated contact with EMG before this project was conceptualised, asking if EMG could run some workshops in Goedverwacht, along the lines of the climate change adaptation workshops that EMG had facilitated in the Suid Bokkeveld. This sealed the deal for us - the opportunity to work with a community with some awareness of climate change and hungry for more knowledge, was rare and enticing. Back home, an EMG project team was assembled, consisting of Jessica Wilson, Taryn Pereira and Stephen Law.

Our plan was to use an 'action-research' methodology.[3] In essence, Goedverwacht residents would be the primary providers of data to the modellers; they would assess the model's outputs, and would determine how to integrate the information provided into their own communal plans and adaptive strategies. EMG's role would be to facilitate the action-research and learning process, and to analyse and document the process to better understand the relationship between scientific knowledge and its practical use in adapting to climate change.

[1] Full documentation available from WRC – Ref Project K5/2152.

[2] See Appendix A – Project Objectives.

[3] See Appendix B – Action Research.

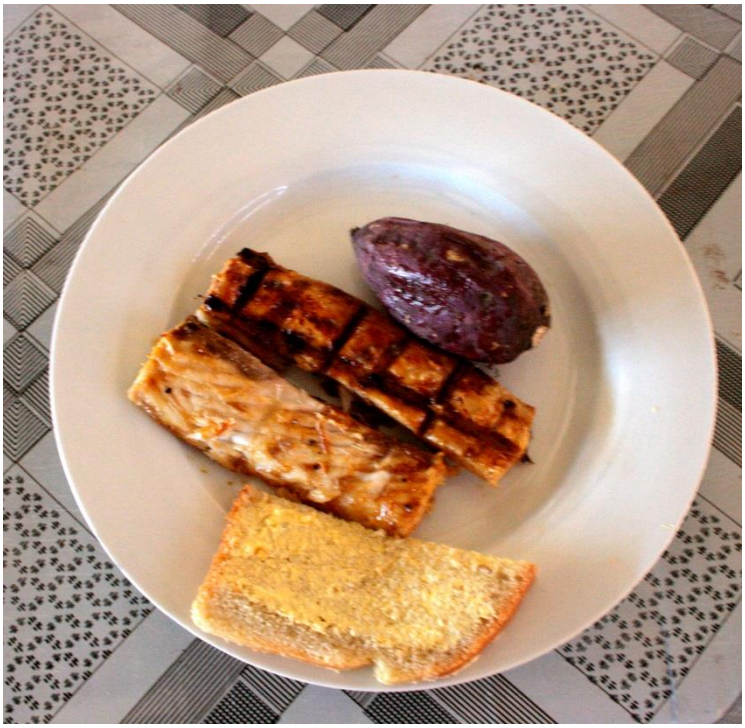
# The end

After having had almost no communication with EMG for about six months after the project formally came to an end, Jessica had a chance meeting with two of Goedverwacht's main movers and shakers, the mother-and-son team of Merle Dietrich and Ian Schaeffers We were interested in a catch-up visit, and they were keen too. So a meeting date was set.

At the final workshop held in the village, we had provided a volunteer group of local farmers with temperature recorders, rain-gauges and climate diaries in which to record their information. We were particularly keen to hear whether the farmers had been using the equipment, whether they had found the information useful, and whether the community was interested in further climate change adaptation workshops with us. But, from past experience, we knew not to assume too much about whom we would be meeting with, and what would be on the agenda. And so, prepared for the unexpected, we set off for Goedverwacht on the appointed morning. Predictably, there had been some last minute change or confusion. There were no farmers, only Merle, Ian and a group of young Green Ambassadors (more about these ambassadors later).

Merle and Ian gave us a good general overview of developments since our last visit. A contract with Working for Water had been concluded and the clearing of alien trees infesting the Rietrivier was ongoing. The farmers' association was going from strength to strength now that they have security of tenure - as a Moravian mission town, the community had struggled to secure the rights to their land, and attributed a breakthrough in these negotiations to EMG's support. At least one person was checking daily temperatures, but it was not clear whether these were being recorded or not, or whether there was any sharing or analysis of information with the wider community. Merle made it clear (in the nicest possible way) that they did not really need any more EMG climate change workshops. What they needed now was legal advice in preparation for a possible land reform process, in order to secure tenure in the long term and clear up the institutional arrangements for the town.

At first this seemed a little sad for us – a little disappointing that the potential of climate diaries, thermometers and rain gauges would probably not be realised, and that there was no chance of a nice and neat potential 'project' for us. As far as Merle and Ian were concerned, big strides had been made, catalysed by EMG's involvement but, for the moment at least, what EMG had to offer was not what they needed. In spite of our sadness at the ending of a process we had all enjoyed, it was good to hear them being so clear about their priorities. Surely this was an indication of the best kind of NGO/community project coming to a successful conclusion?



# The beginning

EMG's engagement with the Goedverwacht community during 2013 and 2014 formed part of a larger research project exploring the usefulness of down-scaled hydrological-climate models for community-based adaptation. Our plan was to follow an action-research methodology, centred around a series of community workshops taking place in Goedverwacht over a two-year period. In outline, our engagement would be designed around the following logic:

- introductions, explanations, building relationships
- literature survey
- participatory exploration of climate concerns, vulnerabilities, visions for the future
- collecting and collating local climate and water information for modellers to be used as input into their down-scaled model for the specific sub-catchment
- feeding back results of the model's medium and long-term projections for likely changes to temperature, rainfall and water flow in the catchment
- presenting the findings to the community, comparing the scientific assessment with people's local knowledge, verifying and discussing the implications
- if appropriate, facilitating a process of planning community actions in response to the new knowledge gained.

Goedverwacht is a community of some 1 700 permanent residents, swelling to over 3 000 on weekends with weekly commuters returning from city jobs, visitors and relatives. We obviously needed to work through a legitimate community structure and the Goedverwacht Tourism Development Forum seemed to be the ideal vehicle. In this organisation we had a core group of people who were contactable via phone and email, who had a large meeting space, and as organisers of the annual *Snoek en Patat Fees,* were very close to the community's heartbeat.

Our formal engagement began with a meeting in November 2012. Three EMG staff met with ten representatives from Goedverwacht. The aim of the meeting was to share details of the proposed project, to get a better understanding of the village context, and ultimately to agree on some basic conditions for working together. The first community workshop was scheduled for March 2013, and the others followed in May, July and September 2013. After these four formal climate change adaptation workshops, there were a number of follow up meetings to address aspects of the adaptation action plan that was developed. The basic outline of each workshop or meeting was planned with the Goedverwacht Tourism Development Forum, who also took responsibility for inviting participants, securing a venue and providing teas and a meal.

# 2.

# A bit more about Goedverwacht


In the past, Goedverwacht was known as the ‘fruit and vegetable’ basket of the region. It also had a functioning mill, where flour was milled and bread was made and sold in nearby towns. There is good arable land adjacent to the river, but much of it is presently uncultivated. Some people are involved in fruit and vegetable farming, as well as keeping livestock. There is a boere-vereeniging (farmer’s association) that promotes and supports local farmers, but they feel that there is huge unrealized potential for agriculture in the valley. People sell their produce to each other and to visitors, but do not have access to markets beyond their village. Some people earn a living in the community, as builders, mechanics, caterers, etc. Many must leave Goederwacht to look for work. There is an energetic and creative Tourism Development Forum, whose annual Snoek en Patat festival brings thousands of visitors to Goedverwacht every June, but for most of the year the village is quiet, and most people struggle to make ends meet.

Goedverwacht is completely reliant on the Platkloof River (known as the Riet River to local residents) for all of their water needs. There are two weirs in the river, diverting water for domestic and agricultural use.

The institutional arrangements and governance of Goedverwacht are complex and unique, because it is a Moravian Mission station. The Moravian Church of South Africa owns all of the land; community members own their physical houses, but not their properties, and they pay MCiSA (a holding company that manages all of the Moravian Church’s properties) for basic services like electricity and water. There is a local Overseers Committee, made up of Goedverwacht community members and the presiding church appointed Minister, to whom rent for

agricultural land must be paid by community members. The Bergrivier Municipality is legally not responsible for any services in Goedverwacht, but because MCiSA is not maintaining the water infrastructure properly, the municipality has intervened and offered support at times (e.g. supplying chemicals for water treatment, supplying water via water tankers when reservoirs run dry in summer). The West Coast District Municipality also offers some support to the community, for e.g. by conducting water quality testing on a monthly basis. However, the municipalities are very constrained by the fact that these communities are in effect living on private land.

This governance situation hinders many aspects of community development. For example, there is a major infestation of the alien invasive tree known as Port Jackson (*Acacia saligna*) in the river that Goedverwacht relies upon for all of its water needs; community members and government alike have identified this as a serious problem. Working for Water has money available for clearing the vegetation, but requires a contract be signed with a commitment to ongoing maintenance after the initial clearing. The Church has been unwilling to sign such a contract, for reasons that are unclear, leading to a stalemate and no progress on clearing the river.

There is a lot of frustration and unhappiness about MCiSA's role, within this community (and other Moravian communities in the Western Cape), and there is a growing call for land reform of some kind, supported by the NGO Surplus People's Project (SPP).

In 2009, some community members from Goedverwacht attended a climate change awareness workshop run by the NGO Project 90X2030. This was well received, and there was a call from other community members to learn more about climate change. Therefore, when EMG was trying to identify a pilot area for this project, and one of our criteria was that we wanted to work with people who had an interest in climate change, Goedverwacht came to mind. We had an introductory meeting there in December 2012, where we discussed possibilities for building a working relationship, starting with but not limited to this WRC funded project on localizing climate change models, which was welcomed by the community representatives at the meeting. Some participants were familiar with EMG's work with small-scale rooibos farmers in the Suid Bokkeveld, and there was a hope that EMG could offer support to their own efforts to access organic and fair trade markets for their produce. It was on this basis that we agreed to facilitate three 'climate change' workshops in Goedverwacht, that would seek to make links between global climate change and a sustainable future for Goedverwacht, by focussing on: general knowledge about global climate change; describing Goedverwacht's assets and challenges; understanding what Goedverwacht will need to respond to in terms of climate change; and developing an action plan to support community led adaptation to climate change in Goedverwacht.

## What was significant about EMG's intervention?

Looking back at where we and the Goedverwacht community were when our project started, it is clear that a lot has changed since then. Our inputs into the community over that period were intangible in the sense that we did not provide funding, equipment, labour, or any other hard resources. So any noticeable changes are entirely the product of the community's actions. Yet clearly our role was meaningful. We did somehow contribute – and people in the community assert that we played a crucial role in unlocking certain things for them. But exactly what and how we contributed is still something of a puzzle.

A few particular moments stand out as points of significant shift. One was early on, perhaps the first workshop, where at some point we broke up into small thematic groups to do a 'community mapping' exercises. Each group was asked to look at a specific theme – some characteristic aspect of village life, such as water supply, waste removal, history, institutional arrangements, etc – and then to discuss the issue and map their findings onto flipcharts for reporting back to plenary. At one level, the participants were obviously doing the exercise for us (since we asked them to do it). But at another level, it seemed almost like a revelation. None of the information they shared was new to them, but somehow the process of discussing, capturing and making this knowledge public fundamentally changed its status in their own minds. It felt new and relevant and more valuable than it had before. A few factors possibly influenced this change. Firstly, the participants were aware that this information would be forwarded, along with other baseline information, to the academic modellers. This was a serious research exercise and they were the researchers. Secondly, the exercise focused on the community's assets, things that they had that could be built upon, rather than a list of all of their needs and problems. If the information itself was not new, perhaps some of the participants now saw it in a new light. Lastly, it may have had something to do with the participants seldom being given the space to simply be heard. Amongst the various presentations, one on Goedverwacht's past (how it used to look in the old days) and one envisioning its future were the most animated.

Another significant moment was the first guided meditation/relaxation exercise that Jessica ran. In our planning meeting at EMG a few days before, we wondered whether we were taking too much of a risk. Such mindfulness exercises are a regular part of EMG's internal routine, but to people we hardly knew in a church-centred rural community, it might have been a bridge too far. We had in mind a simple 20-minute visualisation exercise with the aim of connecting the workshop participants to the natural world around them – the air, the sounds, the water, etc – and to stretch this a little by visualising the passing of time to a Goedverwacht way into the future. We decided it was worth the risk, and with due warnings and disclaimers we began. After it was all done there was a kind of quiet peace over the room. It was clear that, while the Goedverwacht villagers are generally a relaxed bunch, they had never done such a relaxation exercise before! In the following workshop, we decided to push things a bit further - Jessica led a guided visualization in which we took our minds back through time, thinking about yesterday, then the day before that, then last week, last month, last year, last decade, all the way back to the time of our grandparents, then their grandparents, then all the way back to a time before humans, before animals, to a time of swamps and ferns and humidity, to the original plants and trees. This was an immersive, challenging and yet deeply relaxing visualisation; and it led seamlessly into the next session, which was a fossil fuels timeline, showing the history of fossil fuels from the time they were formed all the way to modern global warming. NGO practitioners have an understandable urge to make participatory processes action-focused. We seldom have enough time, there is always a budget constraint, and we feel we need to 'deliver' something useful at the end. But we also need to recognise the value of taking time to make deeper connections – as the facilitator with participants, and as participants, with the world around us.

The main theme of our third workshop was to give feedback to the community on the outcome of the climate and hydrological modelling exercise. This was another significant point in the process. This project was very interesting, because it explored the science-society interface in very practical ways. There were hydrologists and climate modelers who were trying to find ways of zooming in to a very fine scale with their projections; there were community groups whose work could potentially be strengthened by having more information about climate change where they live; and there was us, the NGO, acting as bridge and translator between these worlds.

Climate systems were first articulated in mathematical language in the 1930s, but it was not until the advent of super-computers that climate models could be used as a practical tool for making reliable forecasts and predictions. But despite their complexity and sophistication, modelled outputs contain a high degree of uncertainty, like any projection into the future, and down-scaling to smaller geographical areas only increases this uncertainty. Our project partners at UKZN and UCT used multiple downscaled Global Circulation Model (GCM) scenarios as input into an Agricultural Catchments Research Unit (ACRU) hydrological model for Goedverwacht's water catchment. The resulting output was a prediction of the hydrological response (eg mean annual streamflow, flooding patterns, etc) to predict climatic conditions. Historical data for the period 1961–1999 was used as a comparative baseline.

In our workshop, we showed a selection of the maps and tables that the hydrologists had given us, but most importantly we interpreted this data and summarized the key findings and the local changes that will require responses, as follows:

### Key findings:

- impact of land use (irrigation farming) and alien vegetation in the catchment will have a bigger effect on water in the river than climate change
- no significant change in rainfall (which means that changes in rainfall due to climate change won't be noticeable given the existing rainfall variability)
- there are potentially more significant impacts on rainfall and runoff in surrounding areas due to climate change including more frequent extreme events such as floods or droughts (also possibly in Goedverwacht)
- the number of hot days will increase significantly and the number of cold days will decrease significantly due to climate change

### In Goedverwacht, we will need to respond to:

- More hot days
- Fewer cold days
- Possibly more droughts and floods in Goedverwacht region
- Land use changes and alien vegetation
- Changes in the agricultural economy
- Neighbouring farmers responding to climate change (e.g. impact on water, jobs, food)
- Low carbon economy (less use of fossil fuels such as petrol, diesel, coal for electricity, etc.)

The gut response from most participants was that the baseline data that the hydrologists had used was incorrect – they said that it was much warmer than the baseline suggested. This led to a fruitful discussion on the limitations of the models. Participants also felt that the models validated what they already knew – that land use change, especially due to the practices of neighbouring farmers and the spread of alien invasive trees, was a major threat to their water supply.

## What we left behind

By the end of our series of workshops, at least some people in the community had been left with:

- A lot of information (and hopefully some knowledge too) about climate change – what it is and how it works, why it's happening and what's to be done about it.
- A better understanding of why weather statistics and forecasts for the region are not entirely accurate for their particular valley.
- A prediction of what changes in weather patterns they could expect to see develop for their valley over the next 50 years (more hot days in summer, fewer cold days in winter, normal amount of annual rainfall, but with a later onset of the rainy season).

- A greater appreciation of the important resources in their community, for example water, institutions, etc.
- Confirmation that despite the looming ‘climate crisis’, their water supply is under greater threat from existing alien vegetation infestation of the Rietrivier, and increasing water abstraction by farmers upstream.
- A recognition of priorities and a draft plan of action to begin to address the village’s water problems.

With this information and perhaps with the renewed resolve and confidence that our workshops had helped to build, the villagers (led by the Tourism Development Forum and the newly established Farmers’ Association) set about responding. Apart from some technical knowledge of climate change and the long-term predictions, there was very little new information that our process brought to bear. The village knew what needed to be done way before we arrived on the scene, but could not, or had not, seen a way clear to acting. Something in our intervention changed this.

There were five key climate change adaptation responses which can be linked directly to EMG’s interventions.

1. The results of the modelling exercise confirmed that any climate change-related impact on streamflow in the Rietrivier would be overshadowed by the negative impact of alien infestation in the catchment. The villagers had begun negotiations for assistance from the Working for Water Programme (WfWP), but this had reached a stalemate because the legal landowner, the Moravian Church, would not accept the WfWP’s terms. Through EMG’s networks and logistical support, there was a high level multi stakeholder meeting in Goedverwacht, with participation of people from the local municipality, the district municipality, the Department of Agriculture, Working for Water and University of Cape Town. With advice and support from this group, the Farmer’s Association was able to pressurise the church management into accepting WfWP’s terms and within months, the clearing had begun. According to the villagers, there is now a noticeable improvement in stream flow.

2. One of the significant constraints to agricultural development in the village was the farmers' lack of tenure. The church as land owner did not want to enter into long-term tenancy contracts. Not only was this a disincentive to investment by farmers, but it also meant that they were not eligible for the various forms of extension, development and marketing support offered by government to emerging farmers. Following our intervention, the newly established Farmers' Association was able to pressurise the church into signing long-term leases with its members, who were in turn able to access government support.
3. Our initial intention was to engage with any interested residents of Goedverwacht. This was facilitated through our partnership with the Goedverwacht Tourism Development Forum. By the end of the process, however, it was clear that the small scale farmers represented by the Farmer's Association were the stakeholder group with the most direct interest in adapting to climate change. As part of our programme we suppled rain-gauges, temperature recorders and climate diaries to a group of volunteers. The aim was to encourage them to begin collecting and recording their own weather data – both as an exercise in getting to understand weather patterns better (and make them better farmers), but also as a subtle process of empowerment – to enable them to speak with authority on their conditions and to remove some of the mystique of the science. After a few months it was clear that a few of the volunteers *were* recording weather data, but not in any coordinated way. Ideally we would have liked a more formalised process where the data-collection and study would begin to make sense as an information tool, rather than just a point of curiosity.
4. Ian Schaeffers, one of our contact people in the community and the key representative of the small farmers, secured a job as the Bergrivier FLOW project coordinator, (flowafrica.org). While Ian got the job on his own merits, it came as a direct result of contacts made through EMG's wider network, and exposure to climate change adaptation issues. Apart from benefiting Ian's own personal career prospects, the job has also made his voluntary community work more viable.

## What Goedverwacht left with us

We came, we met, we ran some workshops. Some things changed for Goedverwacht, but what did we learn?

EMG's Rural Programme has built up considerable experience with community-based climate change adaptation projects, but this experience has tended to remain within the Rural Programme, and focused on a particular context (small-scale rooibos farmers). So it was something new for those involved with Goedverwacht (Jessica, Stephen and Taryn), and was overall, a very rewarding process. We worked well as a team, shared similar readings of the situation, and shared a similar commitment to careful pre-planning and proper post-evaluation. And we liked each other's company on the long car trips between Goedverwacht and Cape Town.

The project provided learning and experience that was valuable input into the Adaptation Handbook that EMG co-authored with others. It was also a good opportunity to pilot our training course material on climate change. The material worked well as 'prompts' for us as we designed the workshops. It was not always ideal, but at least we did not have the feeling (as often before) that we were re-inventing the wheel.

One of the things that keeps EMG relevant is our direct engagement with problems in the field. We are not a policy think-tank, although policy is central to our work. But it is this direct connection that keeps us alive and authentic. Goedverwacht was another case-study under our belt and a lot was learnt.

Being able to quote and reference a piece of work like Goedverwacht is also useful for raising our organisational profile. There is a rich source of material for EMG to draw on and to share in the form of publications, conferences, etc.

The process strengthened our connection with the Goedverwacht community. Despite the fact that they feel they do not need any more climate change workshops, we still retain the link and who knows, other things may grow out of the relationship.

We learnt about climate models and modelling, and its practical usefulness. In the case of Goedverwacht, it was not the output of the climate model per se that galvanised any action, but it did make a significant contribution to focusing people's minds on their natural environment, their dependence on it, and their vulnerabilities. A key aspect was that we were able to frame climate change in terms of direct scientific predictions unique to the location – rather than some frighteningly vague future threat. Even better was that the community was able to validate or critique assumptions and predictions and make the whole issue much more real and tangible.

What was particularly rewarding about working in Goedverwacht was engaging with a very cohesive and motivated community group, who have been building climate resilience and adaptation into their plans almost intuitively, and to be able to hold a mirror up in order to help them see clearly what was already there.

Although the language and science of climate change was unfamiliar to almost all of the participants, the pertinent climate threats identified by the modelers were all already recognized by the community members as threats, and highlighted as such in our earliest meeting. People were worried about the dwindling water in the river that fed their agricultural lands and domestic reservoirs – we heard people's memories of childhood summers spent swimming in river pools that no longer exist, and picnics beneath riverside willow trees where water no longer flows. They knew that the cause of reduced flow was alien invasive trees and over-irrigation by farmers upstream, and were actively seeking support to address these issues - these were later identified by the modelers as the two major sources of risk under climate change.

The Farmer's Association were learning about organic farming, permaculture, and new diverse crops, and seeking support to convert their farming practices, both to reduce their environmental impact and to be able to access new markets. The older participants in the workshops remembered proudly the way things were done in Goedverwacht 50 years ago, and felt that organic farming would be a return to their traditions. We observed fields of bright orange stink-afrikaners (marigolds), and were told that these were grown for the blom-fees (flower festival) over Easter time, when they were picked and used to decorate the cemetery, after which they were dug into the soil to act as natural pest repellent. The successful Snoek en Patat festival is a celebration of local food and culture, and is a chance for the small scale farmers to sell a lot of produce. This has brought in much needed income for many of the town's people, as well as boosting their confidence and cohesion. We learnt through our engagements with Goedverwacht that all of these qualities and achievements are fundamental to building resilience for the future in a climate-changed world.

Working with the Goedverwacht Tourism Development Forum and the Goedverwacht Farmer's Association, generated a huge amount of learning and reflection within EMG, particularly around what it means to develop truly equal partnerships with community based organisations. This was most evident in the way the project ended - with a mutually appreciative, grateful and respectful 'see you when we see you'.

A.

# Appendix

## Project Objectives

EMG's engagement with the Goedverwacht community formed part of a larger project funded by the South African Water Research Commission (WRC). The project was led by Durban-based NGO Umphilo Wa Manzi, with a project team that included EMG, the Centre for Water Resources Research at the University of KwaZulu-Natal (UKZN) and the Climate Systems Analysis Group at the University of Cape Town (UCT). The project spanned over three years. Full details of the project, reports and other documents are available from the WRC archives (Reference Project K5/2152).

In brief, the project aimed to explore the practical use and application of scientific knowledge about climate change and water resources for local communities, and to understand socio-political and institutional issues that arise at a community level in planning for climate change and water resources adaptation. The project chose a number of pilot locations in order to explore and test methodologies. Umphilo waManzi and EMG facilitated the community action research in pilot sites in KZN and the Western Cape respectively, while the University of KwaZulu-Natal and University of Cape Town provided input on climate and hydrological modelling and long-term predictions.

More specifically, the project aimed to:

- develop and test a process of translating scientific climate and hydrological model output into community-accessible, local-level scenarios of future climate and water resources, to allow for community-led development of adaptation strategies.
- understand socio-political and institutional issues that arise at the community level in planning for climate change and water resources adaptation with local communities.
- pilot, test, and improve an approach and methods for application to other catchment areas in South Africa.
- engage national government and water resource stakeholders in dialogue about climate change and water resources adaptation at the local level.

B.

# Appendix

## Action Research

Learning, rather than generating knowledge, is at the core of an action-research process. Emphasis is on the experiential rather than the analytical, and both researcher and subject take responsibility for investigating the current reality, taking steps to change it, and working with the outcomes.

Action research accepts that the process of research itself is a dynamic social process that, in addition to building knowledge, also exposes the relationship between the individual and the social. As clarity emerges, so people act and change. As they act and change, so relationships change and new variables come into play. Action research may have a clear direction, but there is no end-point. Critically, action research aims to be emancipatory – to release people from the constraints of irrational, unproductive, unjust and unsatisfying social structures that limit their self-development and self-determination.

# Acknowledgements:

Deep thanks to Merle Dietrich, Ian Schaeffers and everyone else from Goedverwacht who hosted us, participated so enthusiastically in the climate change workshops, and always made us feel at home in their beautiful village.

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