

Final Project Report for 2011 START Grants for Global Change Research in Africa

The Impact of Climate Change on Food Security among Coastal Communities of Keiskamma, in the Eastern Cape, South Africa.



At low tide, Hamburg residents search the coast off the estuary mouth for seafood



Submitted by Sustainable Seas Trust on behalf of all of the participants and partners Editor AJ Ribbink 2012 Grahamstown, South Africa



1. Abstract

Communities of the Keiskamma River are vulnerable to climate change. They are impoverished, dependent upon goods and services of natural ecosystems on land, along the seashore and the estuary, all of which are in decline. The majority of families (70% or more) also rely on social grants provided by the government, but some depend upon incomes that family members earn through employment. There is little security regarding food as the collection of food from the aquatic systems is unsustainable, income is insecure and uncertain, and agriculture, including gardening, is in serious decline. A multidisciplinary team from universities and NGOs worked with the communities to map out a better future in the face of climatic uncertainty. Social scientists relied most heavily on interviews, and the natural scientists upon water, biological and soil samples. Much more work is required, but momentum has developed so that education and skills training, and profitable rehabilitation of ecosystems with community ownership and redevelopment of food gardens are priority objectives. Significantly, community members who attended the feedback workshop concluded that, rather than wait for government handouts, they should develop a forum to play a leadership role to cope with food security in the face of climate change.

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2. Project Information

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Total amount of START Funding	US\$ 45,000
Duration of Project	1 Year: 15 June 2011 to 14 June 2012

Project Structure: a Multidisciplinary Multi-institutional Approach

Participating Institutions

The core participating organizations were:

- Nelson Mandela Metropolitan University (NMMU),
- Rhodes University (RU),
- University of Fort Hare (UFH) and
- Sustainable Seas Trust (SST).

All of these institutions are members of the South East African Climate Consortium (SEACC), a consortium of universities and NGOs.

Project Participants

Principal Investigator, Dr AJ Ribbink, of Sustainable Seas Trust, drew together researchers in: **Agriculture**: led initially by Prof Jan Raats, and then by Dr Leocadia Zhou and approximately 30 other staff and student participants of University of Fort Hare.

Anthropology: led by Prof Chris de Wet, Nolukhanyo Donyeli and Kwezi Nkwintya of Rhodes University.

Economics: led by Prof Gavin Fraser and Assoc Prof Jen Snowball and Masters student, Brendon Martens, of Department of Economics and Economic History, Rhodes University.

Environmental Education: led by Prof Rob O'Donoghue of Environmental Learning and Research Centre, Rhodes University and Sebastian Lewis of Sustainable Seas Trust.

Estuarine Studies: led by Prof Janine Adams and Dr Nadine Strydom, assisted by Taryn Riddin, Daniel Lemley, Kelly Rautenbach and Sheng-Chi Yang of Nelson Mandela Metropolitan University and by Jens Currie of Sustainable Seas Trust.

Geographic Information Systems: led by Dr Gillian McGregor and Ms Sandy de Waal assisted by Breanne Robb and Conrad Swart of Rhodes University.

Marine Studies: led by Dr AJ Ribbink and Ms Stephanie Stack (marine goods and services), Ms Carolyn duBois (conflict for marine resources) and Ms Jillian Leonard (mariculture potential) all of Sustainable Seas Trust.

Partnership with the Keiskamma Trust

Since the project began, very strong links were formed with the Keiskamma Trust, which is an established, well-respected NGO in Hamburg that provided huge support and guidance to the START program. A formal Memorandum of Understanding was signed between SST and the Keiskamma Trust.

Importantly, the Keiskamma Trust has developed positive relationships with the entire Hamburg community. This was beneficial to the START program as the researchers were welcomed within the community, which greatly facilitated research and interchange of knowledge, ideas and learning projects.

The Keiskamma Trust attended the planning meetings at Rhodes University and all the workshops in Hamburg, often helping with logistics and facilities. It was at the Project Implementation Planning meeting that the Keiskamma Trust called for the work of the program to be drawn into a book as an information source for stakeholders in Hamburg and a basis for future research. This book is now the major product of the research. The Keiskamma Trust also called for a smaller colorful booklet that would be of value to all of the Hamburg communities and visitors. The book would be an easy to understand, educational summary of the START Program. Funding for the smaller, readable well illustrated book is still being sought.

The Keiskamma Trust (Dr Carol Hofmeyr) has also contributed the preface and a chapter providing an historical perspective to the book on Hamburg.

Aspire

Aspire, registered as the Amathole Economic Development Agency, is a proprietary limited company established in September 2005 and is wholly owned by the Amathole District Municipality. Aspire's vision is to be a pioneer in the stimulation of spatial economic development. One of its development projects is the Hamburg Regeneration Program, implemented on behalf of Ngqushwa local municipality. Aspire therefore is both planning and supervising specific, mainly government funded, developments in Hamburg. The START researchers and the developers of Aspire developed an excellent working relationship, resulting in Aspire (Ms Esther Moltie and Ms Aileen Puhlmann) also contributing a chapter on planned and actual developments to the book.

Further Financial Considerations

The START contribution to the program was US\$ 45,000 which was the core that made this important project possible.

It is estimated that the START funds were matched by the in-kind contributions of the participating institutions. Every participating organization made contributions in kind by providing time of staff and students free; providing meeting and other facilities at no charge; on occasion, meeting costs of catering; occasionally using own vehicles at no cost to the START program and providing services at cost when they were entitled to charge more.

Nelson Mandela Metropolitan University (NMMU) made boats, vehicles, equipment and enthusiastic people available for its estuary surveys, which certainly cost more than the funds they received.

Rhodes University (RU), particularly Prof Chris de Wet who led many workshops and the infield questionnaire survey that benefitted every organization, made facilities available to the program and gave an enormous amount of time to the START project. Similarly, the Environmental Learning and Research Centre made facilities available to the project, including accommodating Mr Sebastian Lewis.

Similarly, the program received support from the Geography Department, which hosted a GIS workshop, and the Economics Department, which provided a positive approach and made Mr Brendon Martens available to assist and often lead aspects of the planning, execution and evaluation of studies in the field and university.

The University of Fort Hare's (UFH) Risk and Vulnerability Atlas Centre program (RAVAC) shared certain costs and absorbed all the costs of the Agricultural Program.

Similarly, the Hans Hoheisen Charitable Trust, which partners SST in Trust Sustainability Films, made contributions in terms of editing facilities and other equipment and expertise in support of the filming leading to the START film.

3. Introduction

3.1. Background Information

Food security: a multidisciplinary approach by START at the Keiskamma River mouth.

Africa is the continent that will be hardest hit by climate change is a statement that appears often in the press. It is not because Africa will get the worst storms, the hottest days and nights, the greatest droughts and the worst floods, it is because the people of Africa are the most vulnerable and so closely tied to the natural environment that any change affects them directly. For almost all of rural Africa, when it is really hot, relief cannot be sought from an air-conditioner as they don't have electricity and air-conditioners; when water is scarce and the rivers are dry, they cannot turn on the tap; when crops fail, livestock dies and food runs out they cannot pop into the nearest store and buy some food, as those stores are in distant towns and money to purchase food is simply not available. Poverty is the nub of vulnerability to climate change as poor people cannot afford to buy protection from environmental change: they are dependent upon natural resources. Yet natural resources upon which they depend are themselves being modified by climate change and very seriously impacted by direct human activities on a daily basis, especially in impoverished areas where people have no option but to degrade their lands, use the trees, hunt wild life, pollute rivers and exploit sea life.

In essence, poverty forces people to erode the environmental goods and services upon which they depend to subsist. This is unsustainable. As populations grow and as poverty deepens, the future becomes bleaker even in the absence of climate change. When exacerbated by climate issues, food security of impoverished communities, their health, their human dignity and options for a better future are all diminished.

Food Security in Africa and South Africa

The Food and Agriculture Organization estimated in 2009 that approximately 265 million people of the 915 million undernourished people worldwide were located in Sub-Saharan Africa (FAO 2009c). It is predicted that this region will surpass Asia in terms of food insecurity (Schmidhuber and Tubiello 2007). Further studies indicate that Southern Africa is likely suffer negative impacts to some of its most important crops as a result of climate change, decreasing further the food security in an already fragile area (Lobell et al. 2008).

Defining food security

Food security means access at all times to the food needed to lead a healthy, productive life. Food security has two components—availability and access. Home production of food ensures both components for those who have enough land and labour to be self-sufficient. For all others, ensuring food security means: first, availability of food in the market at affordable prices; and second, the ability to purchase it out of income.

Failure in either of these areas requires safety nets and other emergency interventions to address food insecurity

This has major implications for South Africa, as per capita food production has been decreasing steadily since the 1980s while population numbers have been on the rise (World Resources Institute 2007).

Food security in the Eastern Cape, South Africa

The Eastern Cape Province is the poorest province in South Africa (Eastern Cape Provincial Government 2006, Davies 2009). The province supports nearly 15% of the population of South Africa, 60% of which live below the poverty line (Schwabe 2004). This high incidence of poverty and joblessness renders the majority of these people highly vulnerable to the impacts of climate change, as they are heavily dependent upon natural resources for food and income (Hebinck and Shackleton 2010). Case studies in different areas of the Eastern Cape have demonstrated that in many communities unemployment is higher than 50%, while education is generally low, with 31-56% of people lacking even primary schooling (Branch et al. 2002a). Monthly expenditures on food to supplement the natural resources harvested averaged nearly 60% of the household income in many cases (Branch et al. 2002a). Most of this income is from governmental social grants (welfare, pension, disability grants). With food prices expected to increase as a result of climate change (Schmidhuber and Tubiello 2007), food security in Eastern Cape communities will be an even greater concern.

South African coastal communities

Food security in the coastal regions of the Eastern Cape depends upon a combination of agriculture and marine harvesting, which are strongly influenced by climate change, principally rainfall and temperature fluctuations. Climate change impacts the availability, stability, access, and utilization of human food supplies, the four key dimensions of food security (Schmidhuber and Tubiello 2007). Agricultural systems in the Eastern Cape Province are an integral part of rural livelihoods and constitute the platform for food security through crop and livestock production. These systems are severely impacted by variability in climatic regime, such as prolonged drought and then flooding. With the frequency of droughts predicted to rise in southern Africa (Badjeck et al. 2009), this will inevitably lead to reduced production and quality of crops, and loss of grazing for livestock. Gbetibouo and Hassan (2005) found that the net revenue per hectare of cropland would drop by at least 2%, given a 2°C increase in temperature and a 5% decrease in rainfall in the Eastern Cape. Marine ecosystems will be impacted by changes in water temperature, wave action and rising water levels, which can change fish and invertebrate populations, and subsequently affect those peoples whose livelihoods depend on the resources (Brander 2010, Drinkwater et al. 2010). Throughout the Eastern Cape Province, the brown mussel Perna perna, the cape rock oyster Striostrea margaritacae, and the giant periwinkle Turbo sarmaticus are examples of some of the intertidal invertebrates harvested for subsistence

as a source of protein, or sold locally in small quantities when taken in excess. Studies from Hamburg, a coastal community in the Keiskamma region, suggest that the standing stock of these invertebrates is already diminishing at a faster rate than can be supported by the ecosystem (Davies 2009), a problem which will be exacerbated if climate change leads to greater coastal migration of the rural populace.

Currently in South Africa, there are more than 140 000 coastal people whose livelihoods and food security depend directly or indirectly on vertebrate and invertebrate fisheries. The Hamburg community within the catchment of the Keiskamma River Mouth is approximately 2 700 people.

Food security among impoverished coastal communities of the Eastern Cape of South Africa depends upon:

- 1. Agriculture (crops, vegetable gardening and livestock)
- 2. Harvesting of biodiversity (mainly sea foods, but also plants and limited hunting)
- 3. Income to purchase food, despite the prevailing unemployment of between 50 and 75%.

To a greater or lesser degree every family is dependent upon agriculture, marine and estuarine fish and/or gleaning invertebrates from rocky shores and/or an income generated by at least one family member with which to purchase food. On entering the project the research team believed that, should any of these forms of food acquisition decrease, there would be a greater reliance on the others. Equally, if any of these were to increase, such as by a good rainy season promoting agricultural yields, then the others, such as dependence on biodiversity harvesting and external incomes, might decline. Understanding food security in these communities requires an integrated evaluation of natural biophysical factors, impacts of human degradation of the environment, and a socio-economic approach. Equally, modeling of solutions needs to incorporate all factors under different future climate scenarios.

The vulnerability of coastal communities is high as their lands are degraded, droughts are common, biodiversity is depleted and incomes are very low and insecure. The downward trends, including a decline in the ability of land, freshwaters, estuaries and coasts to deliver ecosystem goods and services are cause for concern. The trend suggests that present populations cannot subsist from existing natural resources, yet the future will need to accommodate increasing demand as human populations grow. Further, there are virtually no immediate prospects of addressing issues of poverty and inadequate education. These concerns are heightened by climate change predictions that the future will be drier and hotter, increasing the risk to these vulnerable communities.

Food security and the loss of ecosystem services in both terrestrial and marine environments are central issues requiring attention in the Eastern Cape Province because:

(1) They form the core of some of the most pressing socio-economic challenges in South Africa; and

(2) they underscore the local, national and regional priorities in terms of poverty alleviation, job creation, rural development and agrarian transformation, as contained in the Provincial Growth and Development Plan (PGDP), the Comprehensive African Agricultural Development Program (NEPAD 2003) and the Millennium Development Goals. The potential challenges associated with food security and ecosystem sustainability, in both agricultural and marine ecosystems of the Eastern Cape Province, become greater when they are evaluated and viewed at a household level, as self-sufficiency at a national level does not confer food security at an individual level (Schmidhuber and Tubiello 2007).

The extreme vulnerability of the coastal populations adds an urgency to research that can lead to viable adaptation strategies.

Research Area

Hamburg is located about halfway between East London and Port Alfred on the mouth of the Keiskamma River in the Eastern Cape Province of South Africa. It lies 14km off the R72 on a gravel road. It is located within the Ngqushwa municipality in Ward 11.

The Keiskamma catchment in the Eastern Cape Province was selected as the research area because:

- It is similar to many other coastal catchments in the Eastern Cape, all of which are fed by a freshwater river, entering an estuary and with a coastal sea front (there are 213 estuaries in the Eastern Cape, of which more than 50% are similar in many respects to Keiskamma). It would therefore be a good model for a broader regional program that might follow this study.
- The livelihoods of the population rely heavily on natural resource use in both terrestrial and marine ecosystems.
- The socio-economic circumstances in the area, such as health, education and employment are similar to many other areas of Eastern Cape.
- It is close to three of the universities that will make up the research team, namely the University of Fort Hare, Rhodes University and the Nelson Mandela Metropolitan University, as well as to Sustainable Seas Trust.
- It has suitable infrastructure for a research base.
- It has been established that the communities at Keiskamma are willing to participate in a program that might enable them to cope better with the future.
- Previous research provides information of the recent past with which to compare the present and predict the future.

3.2. Objectives

The project objectives were to evaluate the food security of the coastal community at the settlement of Hamburg, Keiskamma Estuary mouth, in the Eastern Cape of South Africa. The plans were to examine the relationship between agriculture, fishing, catching and gleaning of invertebrate biodiversity, and the ability to purchase food in the face of climate change and declining ecosystem services. An objective was to start a process by working with communities and government, including local and national policy makers, to formulate adaptation strategies and to reverse at least some trends. In this process, the program intended to:

- Evaluate land and ecosystem degradation and biodiversity loss.
- Build capacity (the program was to be supervised and driven by senior experienced researchers, but run mainly by undergraduate and post-graduate students) and develop scientific, technical and socio-economic knowledge to formulate solutions and to make that knowledge readily available to all stakeholders.
- Reduce vulnerability through informed decision making and through promotion of education and awareness within the communities and governing bodies.
- Model the biophysical and socio-economic relationships within the Keiskamma ecosystem with a view to developing a strategy for adaptation to climate change. It is intended that the model would be applied, with minor modifications, to many other similar communities

living along the coast (there are 213 estuaries along the Eastern Cape coast, many of which are similar to Keiskamma).

Using the Keiskamma catchment as a model, the aim was:

- First, to determine the degree to which coastal Eastern Cape communities depend for food security upon:
- Agriculture;
- Natural goods and services of the biodiversity within the estuary, along the marine coast and from the vegetation and wildlife;
- Alternative income.
- Then, to develop models of these dependencies under different projected climate scenarios for the next decades. These models would provide the basis for an informed adaptive management plan which would be shared with communities and policy makers to prioritize actions and set targets.

To accomplish this aim, the project would work closely with communities to attain the following core objectives:

- Establish the history of land use and agriculture, including evaluations of current and past land degradation patterns. Similarly, trends in marine resource use would be established.
- Establish a baseline of current use of agriculture and marine resources in the Keiskamma catchment.
- Predict and model what is likely to happen in the future under different climate conditions and how changing socio-economic circumstances will affect food security.
- Establish the present and future role of external funding (earnings, social grants and remittance from family members working elsewhere) in food security, and the extent of dependence of the population on this funding.
- Develop and recommend to communities and government authorities adaptation strategies that maximize food production and security, and minimize natural resource degradation in the face of climate change.
- Identify mechanisms of flexible governance at the community and national level that promote the resilience of production systems and the adoption of sustainable livelihood strategies.

It is possible that the Keiskamma communities could run out of food acquired from land, estuary and coast in the near future. To circumvent this, the first step is to dramatically increase local and governmental awareness of the threats that climate change and diminishing ecosystem services hold. The second step is to indicate to the communities that the future is largely in their hands. The third step is to have the communities take ownership of the problem and, with the research team, seek positive community driven interventions (probably with support from elsewhere) which might include:

- Adoption of an adaptive management plan
- Maintenance of ongoing education, monitoring and action programs to annually remain abreast of circumstances and adjust the adaptive management plan in response to improved information.
- Introduction of domestic and communal rainwater capture, storage, reticulation and reuse systems.

- Introduction of new production models for small scale farmers which have already been produced and tested by University of Fort Hare. These Agri-park systems could enhance production, promote organic gardening, use new processing and storage systems and increase revenue earning capacity in addition to subsistence livelihoods.
- Evaluation of harvesting from estuaries and the coast, so that communities are better able to understand the consequences of excess harvesting on their immediate future and take a collective responsibility to self-manage the system. Researchers and local authorities can guide harvesting strategies and rehabilitation activities.

3.3. Activities Conducted

Original planning

The multidisciplinary nature of the program demanded that all of the principal stakeholders were brought together in a Project Implementation Planning workshop (Appendix 6.1.1) which was hosted by Rhodes University in July 2011. A principal focus of the meeting was to determine how the disciplines as well as researchers from different institutions might work together among themselves and with local communities.

Important decisions arising from the workshop were:

- The products of the studies should be made available in a book form as a resource for the Keiskamma community and visitors, with ideally a shorter, well-illustrated book that condensed findings for easy reading.
- That Geographic Information Systems (GIS) would be a useful coordinating tool for data evaluation and interpretation
- That some researchers would work independently (e.g. collection of estuarine water samples by NMMU; soil sampling by UFH); where possible, researchers would work together.
- A primary tool for the social scientists would be a carefully constructed transdisciplinary questionnaire.

Sharing plans with the Hamburg community

People from all disciplines met with the local communities in Hamburg (Appendix 6.1.2) to discuss their ideas and invite community input and guidance.

Preparing for field work

As some staff and students had not been exposed to GIS and even gathering GPS data, a GIS workshop was help in order to prepare all researchers to be able to provide geo-referenced field data for analysis. (Appendix 6.1.3).

The need to agree on a questionnaire that was short enough to provide the answers, but adequate enough to not fatigue the householders being interviewed required a set of planning workshops (Appendix 6.1.4). It also required that interviewers were trained and agreed upon protocols, so a trial set of interviews were held in a section of Hamburg which would then not be revisited.

Field work and data analysis involving communities where possible

The water sampling by the estuarine ecologists of NMMU was undertaken from boats, using well established sampling techniques and equipment. Analysis followed proven laboratory techniques.

The soil sampling was undertaken by agricultural scientists from UFH, conducted using an auger and sample bags, then analyzed in laboratories.

The questionnaires and other interviews were conducted following procedures defined in the planning workshops and described in the anthropology and economic contributions. An important component of these activities is that they were conducted with the support of people from the Hamburg community who accompanied the researchers, made the introductions and acted as translators. Furthermore, senior members of the community had contacted the villagers to invite them to be supportive.

Reporting back to the communities and other stakeholders

In addition to a series of visits to the communities and discussions to develop sound working relationships a special feedback and community participation meeting was held on 15th May 2012 (appendix 6.1.5).

3.4. Outcomes and Products

The principal products of this project are this report and its appendices plus:

- 1. An illustrated book which includes contributions from project executants and invited authors which will be completed by September 2012. (Section 3.4.1)
- 2. A documentary film which encapsulates the project (completed June 2012 as part of the report).
- 3. A secondary film which includes a greater number of people and is less formal (to be completed August 2012; not a contractual obligation, but a necessary return to the Keiskamma community and to the researchers and helpers).
- 4. Peer reviewed papers, mostly pending.
- 5. Student mini-theses.
- 6. Eight posters (completed July 2012 as part of the report).
- 7. A teachers guide on the use of the posters in classrooms (completed July 2012 as part of the report).
- 8. Articles and lectures.
- 9. A website report (ongoing).
- 10. Collection of literature to facilitate the next phase of this work in electronic and in some cases hardcopy (printed) form.
- 11. CD-ROMs which contain the products of the START program for distribution to organizations and personnel associated with the program and to other interested parties.

Each of these products or outcomes will be described below in the sequence given above.

3.4.1. Illustrated book incorporating reports of different disciplines

In the Project Implementation Planning meeting of July 26, 2011 (see appendix 6.1.1), the participants from the Keiskamma Trust, supported by community representatives from Hamburg, asked that a product of the program should be a book that brought together in readable format the information to act as source material for the people of Hamburg and elsewhere. This was agreed and therefore most of the detail of the work done is captured in the book.

Outline structure of book, including hyperlinks to PI comments on chapters, is as follows

- Cover with picture Title Page Table of contents Table of figures and pictures Acknowledgements Preface: Dr Carol Hofmeyr Foreword/Introduction: Tony Ribbink
- I. Historic and Environmental perspectives chapters:
 - Chapter 1. History of Hamburg—Carol Hofmeyr (p 14)
 - Chapter 2. Geography and Climate: an historic and contemporary perspective—Conrad Swart (p 27)
- II. Planned developments chapter:
 - Chapter 3. The Hamburg Small Town Regeneration Program—Esther Moltie & Aileen Puhlmann (p 30)
- III. Human Endeavour and Socio-Economic chapters:
 - Chapter 4. Anthropological Perspectives on Food Security and Environmental Change in Hamburg—Chris de Wet, Nolukhanyo Donyeli and Kwezi Nkwintya (p 30)
 - Chapter 5. Livelihoods and Climate Change in Hamburg: Issues for Food Security— Brendon Martens, Gavin Fraser and Jen Snowball (p 31)
 - Chapter 6. Environmental Learning and climate—Rob O'Donoghue and Sebastian Lewis (p 32)
- IV. Natural History, Ecosystems and Biophysical Diversity chapters:
 - Chapter 7. Predicting the effects of climate change on the habitats and resources in Keiskamma Estuary, South Africa—Taryn Riddin, Janine Adams, Jens Currie, Daniel Lemley, Kelly Rautenbach, Nadine Strydom and Sheng-Chi Yang (p 37)
 - Chapter 8. Ecosystem Goods and Services of the Rocky Shore of Hamburg—Stephanie Stack (p 37)
 - Chapter 9. Aquaculture potential of the Keiskamma Estuary and Coast in terms of food security in the face of climate change—Jillian Leonard (p 38)
 - Chapter 10. Understanding subsistence line fishing in Hamburg, South Africa: conflicts and food security—Carolyn duBois (p 39)
- V. The Terrestrial environment chapter:
 - Chapter 11. Gardens, livestock and agriculture—L Zhou, L Musemwa and V Muchenje (p 39)

Synthesis and conclusion

Climate and food security, past present and future. (Ribbink to coordinate all authors) References

List of Acronyms

Appendices

Individual reports

The individual reports of each of the disciplines will effectively be presented within the chapters of the book. For this overall report the Principal Investigator will comment on and give the essence of each of the chapters 1 to 11 as given in the outline of contents above.

As the development of the chapters is in different stages, the PI comment includes a statement on the status of the reports. Additionally, Chapter 1 will be presented in its draft form at the end of section 3.4.1.1 as an example of the presentation and format of the chapters. This short introductory chapter, adjunct to the originally planned research reports, is written by Carol Hofmeyr, a Trustee of Keiskamma Trust and doctor who has worked within the locality of Hamburg for the past 13 years. All chapters are expected to be completed by September.

3.4.1.1. History of Hamburg—Carol Hofmeyr

Principal Investigator comment

Human history is the focus of this chapter. The chapter is being produced by Dr Carol Hofmeyr, a medical doctor and philanthropist who has unselfishly done so much for the people of Hamburg and surrounding areas. Not only has she worked tirelessly as a medical doctor, she also founded and developed the Keiskamma Trust and its community orientated initiatives. Dr Hofmeyr's contribution focuses on the history of Hamburg, but in their chapters, other authors bring in historical perspectives that relate more specifically to their disciplines. In the end, one has a real feel for the history and an understanding of the people and circumstances of Hamburg.

Dr Hofmeyr begins by painting a picture of Hamburg as follows:

"The village of Hamburg is a living monument to many generations of people of diverse cultures who have come together at one of the most beautiful river estuaries in South Africa. It is for this reason I was fascinated by and grew to love the place and its people.

She draws attention to the middens, which the START team observed, but was unable to research. What was noticeable in the middens is that the shell sizes of limpets, oysters, winkles and other molluscs were considerably larger than those found on the rocks today. Whether this reflects a "fishing-down" effect, in which large individuals are fished out and only small individuals remain, or whether the marked size difference reflects evolutionary and ecological responses of the animals over time is not known.

While the middens are almost certainly our historical links to coastal wanderers, now all but extinct, Carol Hofmeyr also draws attention to these nomadic people leaving part of themselves in the local modern day amaXhosa:

"The Khoi and the San, their later descendants, bequeathed the Xhosa people their clicks and some of their customs and physical features. They taught them how to use the sea for food."

Written descriptions of the area, which was to become Hamburg, from the first Europeans to explore the area in the early nineteenth century tell of extraordinarily long grass, thick bush and numerous animals of many types, including herds of elephant. Clearly, at that time, the natural goods and services were abundant and people were not numerous. Hostilities between the local tribes and Europeans of the then British colony grew over the rights to lands, the coasts and the natural goods and services on offer. In those days, however, resources were not viewed as goods and services.

Dr Hofmeyr writes about the clearing of lands and of hunting that destroyed teeming herds, the impacts of colonial rule, injustices of apartheid and the uncertainty that led to changes in Hamburg as different people and economies prevailed.

On the one hand Dr Hofmeyr shows how an area rich in ecosystem goods and services has become so much poorer, on the other, she and the Keiskamma Trust have won such respect among the communities of Hamburg that the START program was readily welcomed by the community and for the most part generously assisted.

Status

This contribution is currently within the review and editing process for development of a chapter in the book.

Draft of Chapter 1: 11 pages are inserted here as a sample and to illustrate the format. Each chapter is separated from preceding chapters by a colorful title page illustrated with a relevant detail from the large tapestries of embroidered or appliquéd artwork produced by the Keiskamma Art Project and Hamburg community members.

(Skip over Chapter 1 draft to next chapter summary, Section 0)

1

A Glimpse into History: Hamburg, South Africa

CAROL HOFMEYR

Keiskamma Trust, Hamburg

Sustainable Seas Trust



'...we had two gifts, resulting from the strange politics that had buffeted Hamburg, a relatively unspoilt environment and the homes of black and white people had long ago been integrated.'

1. A Glimpse into History: Hamburg, Eastern Cape

CAROL HOFMEYR

'and then there was the environment' (Noel Mostert 1992)

The village of Hamburg is a living monument to many generations of people of diverse cultures who have come together at one of the most beautiful river estuaries in South Africa. It is for this reason I was fascinated by and grew to love the place and its people.

The buildings, the people living there now and the natural environment of the place tell stories of different races and cultures, buffeted by political, social and environmental changes, usually not of their own making, but impinging on and changing their lives forever.

An observant curious visitor in 2012 will find all the signs of a long history written in the names of places and people, the ruins of buildings, the homes and customs of all who live there.

The traces of the human story of Hamburg start in dune fields west of the Hamburg beach.

Probably dating at least 3000 years back is the late stone-age midden (Lubke and de Moor 1998), just past the second dune heading south west from Hamburg beach toward the Umtana River. As far as I know this site has not been excavated so not much is known about it. The midden was probably inhabited seasonally for thousands of years and rises steeply to a sheltered cove. As the dunes move centimeter by centimeter eastwards, they reveal and hide stone-age tools, layers of ash, shells, broken pottery and bones.

I have often sat in this sheltered evocative place imagining these people and their loves and likes and fears and joys.



Figure 1.1: Aerial view of Keiskamma Estuary



Figure 1.2: Cross section of midden showing layers of shells and ash



Figure 1.3: View from the midden

I wonder if the break in the rocks, where many later generations learned to swim as little children and catch sole on tridents, was their natural or man-made fish trap; if the elephant femur I found buried in the coastal forest in a nearby midden, was their weapon or trophy.

The Khoi and the San, their later descendents, bequeathed the Xhosa people their clicks and some of their customs and physical features. They taught them how to use the sea for food.

Did they watch the shipwreck of the Dutch vessel the Bennebroek carrying blue and white porcelain back to Europe in 1713? The Hamburg fishermen who scour the rocks for bait find many pieces of this four hundred year old china. The porcelain has been dated at the University of Pretoria by Dr Valerie Esterhuizen as made between the 1662 and 1722 and of the Kangxi dynasty (pers comm V Esterhuizen, letter to H Potgieter, April 17 2003).

There is little left in Hamburg to tell of the Xhosa inhabitants, of the Gqunukhwebe tribe, the ama-Mbalu and ama-Ntinde clans whom early European hunters and explorers met in the eighteenth century (Donald et al. 1960:4–6).

The hunters, explorers and military expeditions report that the area of future Hamburg and Peddie were fertile, covered in trees and supported many animals, both wild and domestic.

Beyond the Keiskamma river the grass grows to an extraordinary height....on the west side of that river there are many wild goats (antelope) and especially an unbelievable number of springboks, of which I often saw more than a thousand together, besides whole troops of deer and although less numerous, elands, bush-, reed-, and steen-boks and orabi (the gnu animal), and likewise wild horses in great numbers and also nor seldom wild pigs. And in consequence of the existence of these different sorts of animals there were also lions, tigers, wolves and jackals, who choose these regions for their abode.

(Andrew Geddes-Bain 1960)



Figure 1.4: Possible stone age fish trap

In a copy of a hunters map drawn by Lieutenant Henry Foley in 1823, many areas around Hamburg Bodiam and Bell are marked *immense herds of elephants* (Bullock 1960:9–10).

In 1819 it was agreed by Lord Somerset and the Xhosa chiefs at Gwanga to clear the area between the Fish and the Keiskamma rivers in an effort to decrease hostilities (Bullock 1960:14). However, this did not work as expected. The effect of this policy on the area where future Hamburg was built, instead, must have been to dislodge and destroy a sense of land ownership and of continuity for the Xhosa inhabitants.

In 1847, after the seventh frontier war, the British colony was extended as far as the Keiskamma River and named British Kaffraria. After the devastating humiliation of the cattle killing in 1856 and 1857, the border of British Kaffraria was further extended to the Great Kei.

As the British annexed more land, they introduced harsh military rule and moved people off their ancestral lands. They attempted to make a strong border between the fierce, intrepid, and stubborn Europeans advancing further and further east and north and the Xhosa wondering what these intruders wanted.

Some say the Xhosa wanted the iron they saw in their wagon wheels, others that they were simply naturally expanding and in search of good grazing for their 1.

cattle (Peries 2001:161). The Europeans wanted land, cattle, ivory, freedom.

One story, perhaps related to the area around Hamburg, tells of Colonel Brereton who set up his artillery in the grassy hills on the west side of the Keiskamma River in 1818. He fired canon into the thick bush on the other side of the river and when the herds of Ndlambe panicked and stampeded the British collected 10 000 cattle belonging to Ndlambe and a further 13 000 from the surrounding district (Peries 2001:70).

Whatever was in the minds of these people, the environment dictated their movements and gave them their bounty.

In this process of loss and war and movement of people, of clearing of land for farming and of hunting for ivory, the fragility of the environment was not understood, and in a very short period most of the teeming herds of wild animals were destroyed.

The Eastern Cape bush remains much the same on the eastern side of the Keiskamma River, as painted by Eastern Cape artists, drawn and printed by travellers and explorers, but most of the wild game and huge cattle herds are gone.

In 1856 and 1857, the British government decided to defend the colony south west of the Keiskamma by settling unsuspecting German mercenaries, released from the British army at the end of the Crimean war, at the estuary and along the river. These Germans preferred an unknown land and people to their own lives in Germany haunted by poverty. They touchingly thought Africa would be subdued or manageable if their German town plans and German customs were brought to bear on this harsh and foreign environment.

They laid out their villages along the Keiskamma, Hamburg, Bodiam and Bell, each with a market square, a church, a graveyard.

They made their houses of stone foundation and clay bricks which fired a deep rust colour. But for most this place of salt water wind and sand and with the enemy across a river was too hard to accommodate and they left slowly.



Figure 1.5: Twentieth century painting of Eastern Cape bush



Figure 1.6: Horn family of Bodiam

Some stayed and planted and hired Xhosa and Mfengu labourers from Peddie who came to live on the lands. They gave their names to some lost Mfengu and family-less Xhosa. They left their lands in their keeping when they went to the cities to make a living

Some stayed forever in graves near the river. I have pieced together old graves broken by cattle covered by the Kei apple hedge.

Snatches of stories tell of fear and home sickness, the hard task of making a life in an unfamiliar and harsh environment.

Among the sad cases recorded is the drowning tragedy soon after the family's arrival in the country, of our "Settler mother" in the Keiskamma River, near Hamburg in 1861. She was a hardworking woman and while her husband was away on a business trip to look for a new farming area she and her sons rowed across the river to work in cultivated fields on the opposite bank. A sudden storm arose and the weather turned bad. She took some of the children home in the small rowing boat and went back to fetch the farming implements and the remaining two sons. Unfortunately she left the return trip rather late and it was almost dark by this time. In the meantime the river had come down in flood and as they attempted the crossing the boat over turned and she and her teenage sons were drowned. When her husband returned to Bodiam he was told the sad news that his wife and sons had drowned. They were buried under a big wild fig tree. This was the beginning of the Bodiam cemetery.

(Valda Meier 1995: 37-38)

The same blue sea that the stone-age people watched, evoked different emotions in these settlers.

Grandmother's only outlet for her loneliness was a glimpse of the sea, her only link with the old country they had left forever, When life became almost unbearable with homesickness she would take the children and go up the hill to look at the sea at Hamburg, a mere patch of blue six miles away.

(Auguste D. Le Roux 1975:15)



Figure 1.7: Ntilini graves



Figure 1.8: Peddie tennis team, circa 1920



Figure 1.9: Peddie holiday makers' huts

1.

Today in Hamburg only two of these houses remain; one lived in for four generations by the Mvambasa family who can verbally trace their history back to the Germans. Their home is kept immaculate and unspoilt and beautiful.

After the Germans, the British came; mostly teachers, missionaries and lawyers from the British fort and settler town of Peddie. They lived as the British did all over their empire making clubs and churches and schools. These families spent holidays fishing near the pristine beach. According to Nan Staples, who died last year at 93, they took two days by ox wagon to travel from Peddie to Hamburg.

They collected water at the Bell hotel and herded live cattle for food plus had many servants to care for them.

They dug for fresh water between the dunes, knowing which plants indicated fresh water to make wells.

Their catches still amaze us.

Their numbers grew, and some retired to Hamburg.

Three hotels were part of a moderately wealthy holiday resort.

A bowling club, dances with bands and Christmas picnics became part of cherished memories for three generations of mostly English setter descendants: farmers, lawyers, doctors, missionaries and teachers holidaying in Hamburg.

Then apartheid pushed its ugly head into the peaceful albeit colonial lives of the people living and holidaying in Hamburg.

Noyena Mapuma showed me a tree; her family lived near it, but had to move when a law said all houses in the center of the village had to have iron or tiled roofs, impossible for subsistence farmers. To her this ancestral ground was still precious.

So the mostly English speaking white residents began to control and create the same separated community the Europeans created all over Africa. They told people where and how to live while using their labour to build their houses, roads, clubs, and to help them with fishing and cooking and cleaning. Hamburg became a microcosm of life all over South Africa: a white village with hotels, boarding houses, shops, and bowling club, with a much bigger black population living separately and doing hard and menial work for the white population.



Figure 1.10: Hamburg fishermen and -women 1932

For some it was idyllic. Then more directly and more harshly, apartheid was felt.

In the early eighties, it was decreed in a far off place that the area from the Fish River to the Chalumna River should become an independent homeland, with its own president, its own education, health and government.

White land owners, especially those who had invested all in their life savings and pensions in Hamburg, sold for fear of losing all their security. It became common opinion that property values would fall, and the area would no longer be safe when it fell into the hands of black people. The English, mostly third generation settlers, felt betrayed by the Afrikaans nationalists.

All white owned houses, except one fishing cottage, were sold to the South African government and given to Sebe the new president of Ciskei. The president took one home for his holiday house and many others for his body guards and faithful officials. Many black people were resettled here after being moved out of what became exclusively white areas. Many bought land here and built houses. The benefits of being real citizens for the first time, even of a puppet state were felt. People could live where they liked.



Figure 1.11: Hamburg bowling club badge



Figure 1.12: Hamburg bowling club team

te k	Trespondence to be ed to the Town Clerk P.C./P.K. prespondencie most can tadsklerk gerig word. 561	. 16 HAMB Kaap 4
	27th June 1975.	
	Dear Sir/Muian,	Tin .
	ZONING OF HAMBURG	
	I enclose a copy of a letter received from the Ministry of Banta Administration and Development and of Bantu Education for your information. The Proclamation referred to in paragraph 5 of this letter was published in the Government Gazette No. 4716 dated 23rd May 1975. The number of the Proclamation is H115 of 1975. If you wish to offer your property or business to the South African Bantu Trust in terms of the second last paragraph of page 2 of the letter, I enclose three copies of the prescribed form which must	
	or to the Magistrate at Feddle.	
	Any further information which you require in connection with the completion of the form should be obtained from your local Magistrate	
	Yours faithfully.	

Figure 1.13: Letter explaining policy of sale of Hamburg houses to create Ciskei homeland

1. A Glimpse into History: Hamburg, Eastern Cape

Determined to make their crazy destructive system work, the South African government created "border industries" and offered factory owners special financial support to set up industries near the homelands. Tourism faltered. White indoctrinated South Africans were afraid of a black area. But as far as I can gather, in this false system, people had jobs, people could own land, and the black and white starkly delineated areas broke down. Like all change, these effects are still felt long after the system was dissolved.

Then came ANC uprisings in the late eighties, much later than the similar riots in cities like Johannesburg and Cape Town. Zukiswa Pakama, born in Hamburg and a teenager at the time, tells of running from Sebe's police and hiding in the mealie (maize) fields and then being arrested.

In her as yet unpublished autobiography, Zukiswa, who was born and grew up in Hamburg in the 1980s and 1990s, wrote about this time, her experience of police brutality and the Hamburg community turning against itself.

Then something happened which affected me very badly. The truth is we were a bunch of children from Hamburg, a tiny rural, rather backward little place not up-to-date with all this protest. We loved the rhythm and the pulse of the freedom songs and the rather harsh lyrics, which nevertheless stated the truth and rawness of our lives. I did not understand the significance of all of this activity but I followed the others all the same. We started to toyi-toyi against our then Ciskei government, under the leadership of the late Dr. L.L.Sebe. Aa! Ngweyesizwe!

It was said that people were not happy about certain things within the ruling power of that time. The youth held frequent secret meetings in dark places discussing how they would dethrone the government.

How well I remember that fateful Friday. I arrived home from a nearby village where I had been to school as we had no high school in Hamburg then. All was calm in the village and I was standing at our back door admiring our neighbour's corn field close by. The corn had grown so tall that it was hard to see someone walking in between the rows. It was green and leafy, promising to provide a good crop as the rains had fallen pretty well that year.

That night at about 12 midnight we were woken by loud fists banging on our doors. When I went to see what was going on, I was shocked to see a group of about thirty youths outside. "Nilele nina apha? Silandeleni, konakele silungisa ukuhlala, uphi udade wenu? "Are you sleeping? Come with us, we are making things better in this community. Where's your other sister?"

There was no time to get ourselves properly dressed as they were hurrying us to go. The only thing I could grab was a knee-length tunic jersey and my mother's thick checked skirt and a pair of flip-flops for my feet. My sister wore a short nylon dress and a light georgette top. I was confused, but thrilled by the singing. At the same time I felt frightened because I had heard how other youth from nearby villages were beaten by the police for toyi-toying. To be honest, although I had no idea of what was happening, I went along because I had no choice. The bigger boys were making sure no one was left at home; anyone from eleven upwards was expected to join this swelling crowd.

By 6 o'clock in the morning we had collected almost every young person in Hamburg. The rain had caught us badly for an hour or so and our clothes were damp, leaving us shivering from the freezing morning breeze coming in from the sea and the great Keiskamma River. Despite this there was no going back as the older boys would not allow it. Their mission was to destroy the property of the headman and burn the CNIP (Ciskei National Independent Party) cards that our parents were supposed to pay five rands for every month. Through the night, we went collecting the CNIP cards from every household. The older boys told us that they were to be burnt at the headman's house.

Suddenly we heard "Nantsi iveni madoda! Nanga'amapolisa!" (Here comes the police van! The police are here!) The cry made us weak at the knees. About three vans were approaching us from different directions. We all dispersed, running madly to hide. Since we were now 1. A Glimpse into History: Hamburg, Eastern Cape

close to our home (the headman's house was not far from our place), my sister and I ran there even though we were frightened by the fact that the police could easily come to get us. When we got home, my mother suggested that we hide in the next door corn field. As we ran there we saw a number of terrified people who had the same idea. We saw some girls being kicked and punched. They were sworn at while being dragged into the cold police van. We threw ourselves flat on our stomachs in between the corn rows never minding the muddy loam soil that covered our faces. Ten minutes passed and my heart felt like a hundred drums thumping loudly in my chest. Our fears grew worse when we heard a voice shouting from a distance. "Nankuya uZukiswa no Ntshantsha betshone'mboneni" ("There're Zukiswa and Ntshantsha hiding in the corn rows.")

Within minutes the police were dragging us from our hiding place swearing, kicking and punching us as if we were hardened criminals. 'Niza kumazi u Yesu' ("You will know Jesus today."), said one tall hefty policeman as he kicked my sister. I watched her being thrown down into the dongas hitting her head so hard that it started to swell. I was angry. Furious. We didn't even want to do what we were doing, but circumstances had forced us to do so! My sister was left with a deep wound that has left a dent on her temple to this day. When we were finally dragged into the cold, damp police van, we found four other girls shivering inside including the one who had told the police about us. ("Where are your leaders?"). ("They ran away and you are going to suffer for them as well. Look how stupid you are!") sneered one fat police captain banging the door behind us and locking us inside. That was the worst and bumpiest ride I've ever had in my life! When we finally reached the police station our heads and faces were sore and bruised from being thrown around inside the speeding van.

We were all taken to the police station in Hamburg to be beaten up with canes by about six policemen standing in a row as we passed them being made to do a frog-jump. I was beaten hard on my head several times and I

remember licking the blood as it trickled down my face. I think I was lucky to have my thick afro-hair to cushion the blows, otherwise I have no idea what might have happened to me. I felt sick as I saw blood dripping down my sister's thigh. Some girls had cuts all over their face and neck. It was terrible. We were taken to the dirty, smelly jail in Peddie for three days. Explaining the conditions there would be a whole other story. I sometimes think that even hell might be better than that stinking, dark, mice-infested cell with its filthy floors. A big bucket of human waste was standing foaming in the corner giving off an unbearable stench. I was nauseous and vomited for the three days I was there. There were about sixty of us as we found other girls from neighbouring villages who were also thrown into the cells at Peddie prison.

To add salt to our wounds, the policemen would mock us and call us all the dirty names one can think of, likening us to the worst and most horrible looking creatures. I remember feeling dehumanised. Then our nightmare came to an end. What saved us was the dethronement of President LL Sebe by Brig. OJ Gqozo over that weekend. We were released on the Monday. While we were held in prison the young people back home continued to fight for our release. They destroyed the properties of those believed to be working hand in hand with the loathed government. My heart sank when I came back and saw some girls with broken limbs and bruised faces. Some had been kicked so violently that they lost their teeth. It was madness really. Or was it?

Things were bad in Hamburg at that time. I could not believe that this was my beloved village. It felt as if we were living in one of the townships in the big cities known for their fierceness. For years I hated men in big caps and green uniform, even when my late brother was one of them.

No case was opened about what had happened to us. We were sent home freed, but the physical and emotional scars remained many years. Some of us still bear them to this day.

(Zukiswa Pakama, unpublished writing, 2010)

The effects of this schism in the community of Hamburg are still felt today. The headman was loyal to his chief, Sebe. He was the natural leader. His leadership was undermined by apartheid and finally destroyed by the youth of his own community. This rift between young and old has still not healed and it is difficult to find real leaders in Hamburg even now.

By then it was clear the homeland policy would crumble.

Adult children of the white Peddie families who had sold their homes came back to this place they had known and loved. They came back to fish and walk and remember.

Others had come for more sinister reasons. Like the early trek-boers and settlers, they wanted a place beyond the reach of the law. They came to hide. There are stories in the town of some who came to smuggle arms into Hamburg, to destabilize and thwart the new democracy just beginning to grow. There are rumours of white people and some of the black villagers working to damage the good that was happening far away in Cape Town, Johannesburg and Pretoria.

At last, in 1994, South Africans experienced their first free elections and we all celebrated a new future. Sadly this was not as people had dreamed for Hamburg and other villages of former Ciskei. They lost the false support of the Ciskei state; their medical and education systems were in disarray, trying to reintegrate with the rest of the Eastern Cape. There was no work and people who had worked in factories and shops had lost the ability or will to plant their gardens. Very few tourists came as the idea this was an unsafe place persisted. Luckily the few people who remembered growing up in Hamburg longed for its beauty and people, and told the story in far-away cities so people with some skills and money trickled back.

This was how I found Hamburg in 2000 when we moved here. It was a place cut off from history, isolated from the larger world, sad and hopeless with no work, poor medical and educational services, expensive transport to shops, banks and other people. But we had two gifts, resulting from the strange politics that had buffeted Hamburg, a relatively unspoilt environment and the homes of black and white people had long ago been integrated.

Fish, shell-fish, trees, animals had been partly protected from rash development. The environment had remained relatively unscathed and ironically protected by the politics of apartheid. We have inherited a unique place carved by local and distant forces and precious as there is none like it in all South Africa.

Unfortunately, also resulting from politics and economics, the HIV virus found fertile ground in the once German villages along the river. The community had just begun to recover from apartheid when the monster of AIDS struck. We have spent seven years fighting it and had to ignore and sometimes not even notice the beauty around us.

But now in 2012 we at last can think about a real future. We can dream of a happy community in harmony and protecting the place we live in. We can restore the environment and its people if we proceed with care and compassion and knowledge.

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3.4.1.2. Geography and climate: an historic and contemporary perspective—Conrad Swart

Principal Investigator Comments.

The GIS component of the program trained all researchers on the basics of collection of georeferenced data, provided useful geographic grounding for the program and an historic perspective. The historic changes of land use are so dramatic that a fair proportion of what Mr Swart wrote and some of the illustrations from his report are duplicated here.

Mr Swart shows that the area has undergone serious change in 53 years, while the town itself has not extended beyond its limits. The town has remained within an area of around 520 ha. In 1956, the predominant land use was cultivation of land (54.76%). This was also the case in 1973, although 11% lower (42.38 %). In 1990, this changed further and cultivation was no longer the dominant land use: now the abandoned field category. Analysis of the 2009 aerial photography determined that only 3.51% of the land area examined was used for cultivation. The greatest change occurred between 1990 and 2009. According to this analysis, livestock farming increased 1990–2009. Altered land showed relatively consistent patterns and stayed between 32.36% and 37.67% of the area. Natural land showed a decline from 7.44% to 1.67% of the total area. Lower income residential areas emerged in 1973 and grew to 2.93% of the total area in 2009. Middle income residential areas were present throughout the 53 year period but grew in 2009 to 5.99%.

Figure 2 provides an illustration of the land use change in the area from 1956. One can clearly see that cultivation has decreased and abandoned fields are predominant now.



Figure 2.1: Land use trends in Hamburg from 1956 to 2009.

When one compares figures 3–6, the middle income areas change position from 1956 to 2009. Initially they are located inside Hamburg in the farming area but they are located towards the coast and river in 2009. The progression from figures 3–6 also indicates that land use, in terms of

cultivation, changes from each year. The images also show the emergence of livestock farming in the area from 1990 onwards.



Figure 2.2: Land use for Hamburg for 1956.



Figure 2.3: Land use for Hamburg for 1973.



Figure 2.4: Land use for Hamburg for 1990.



Figure 2.5: Land use for Hamburg for 2009.

Most of the respondents on the interviews admitted that land use, in their experience, had changed in Hamburg. The older respondents believed there was more farming in the area before apartheid. They believed the change occurred because of apartheid and because the community does not have money to buy expensive equipment to farm. Younger respondents stated that the community farms less than they used to. They believe the change has occurred because of HIV/AIDS and unemployment. One female respondent replied that government needed to intervene and give jobs to the community. When asked how this should be done, she replied that

there are many abandoned farms in the area that could be used to create jobs for locals. The respondents relied mainly on pensions and grants for income, with some relying on informal work activities such as hawking and casual labour. When the respondents were asked what they used the land for, they stated that it was mainly not used or used for subsistence agriculture. Respondents thought they could not cultivate the land as they lacked the equipment and financial support. Despite what appears to be unhappiness with bureaucracy, the respondents appeared to be satisfied with life in Hamburg.

The area of Hamburg is currently experiencing complex land use changes. Policy, both past and present, has shaped the land use to such an extent that people's livelihoods have changed. Land use continues to change. Many people have moved away from cultivation and now are forced to live on remittances or small scale subsistence livestock farming. It is evident that new policy needs to have key stakeholder input before implementation and cannot simply be based on assumption. Other studies that have focused on the surrounding area have found similar results. There generally has been an abandonment of farmland and a move towards informal economy.

Status

This contribution is currently being developed so that it might be reviewed and edited as a chapter for the book.

3.4.1.3. The Hamburg Small Town Regeneration Program—Esther Moltie & Aileen Puhlmann

Principal Investigator comment

Planned developments are critically important to assessing the future of an area in the face of climate change. Rather than leave development to market and other more passive forces, the Eastern Cape Government has taken pro-active steps to develop Hamburg. To these ends it contracted Aspire to be the lead agency. Fortunately, the START program has been able to work quite closely with Aspire, which has kindly contributed a summary chapter of proposed development plans, some of which are already being implemented.

Aspire is conscious of the need to retain the identity and attributes of Hamburg that give it its character and appeal, while also endeavouring to promote the lot of those who live in Hamburg and promote economic and environmental sustainability. In this regard, principles of the Green Economy are influencing architects and planners.

Status

This contribution is currently within the review and editing process for development of a chapter in the book.

3.4.1.4. Anthropological perspectives on food security and environmental change in Hamburg—Chris de Wet, Nolukhanyo Donyeli and Kwezi Nkwintya

Principal Investigator comment

The anthropologists lived within the community during their infield studies with a view to getting a real understanding of the way people feel and behave. From the outset they justified their endeavors to obtain personal, relational and contextual information and insights of a qualitative nature, rather than the more direct, numerical approach adopted by those running START's questionnaire to evaluate agriculture, fishing and economics. Prof de Wet and his team argued that they sought to better understand the *wider social and spiritual contexts within which people see livelihoods and resource issues, and about the need for a more inclusive approach to the understanding of 'the environment'. For many inhabitants of the Hamburg area, 'the environment' has not only a natural, but also social, economic, political and spiritual aspects—all of which interact.*

In their research, the anthropologists considered it important that they moved around the settlement in a manner which enabled them to 'see and be seen', and to encounter people going about their daily business. They befriended people and also hired a young woman assistant from Hamburg who was able to introduce them to people and to take them to specific individuals and houses. Consequently, they were taken into homes and became increasingly involved in local activities, and attended ceremonials and meetings.

Surprisingly, in contrast to the more formal approach of those who conducted the questionnaire based survey, the anthropologists reported that: "*The research process was, however, not unproblematic*", as some interviewees were not welcoming. These findings were not common and are in stark contrast to the warm reception that usually dominated other interactions in Hamburg.

The anthropology chapter is laced with quotations from the people interviewed, which are informative and quite often powerful.

Status

This contribution is currently within the review and editing process for development of a chapter in the book.

3.4.1.5. Livelihoods and climate change in Hamburg: issues for food security — Brendon Martens, Gavin Fraser and Jen Snowball

Principal Investigator comment

The economists adopted a Sustainable Rural Livelihoods (SRL) approach to understand food security in the context of climate change. They argue that this approach provides greater understanding of poverty of marginalized people as well as their dependence on available livelihood assets. The economists used the findings of the questionnaire to a greater extent than any other group and provided the most detailed analysis of the data.

They provide a series of interesting and sometimes dramatic findings and concluded that with regard to livelihoods there is a great reliance on welfare payments, with very few families deriving income, directly or indirectly (i.e. remitted by family members working in large cities), from some form of employment.

The economists found that the natural resources play a smaller role in livelihoods than expected. Marine and river resources were accessed by only some of the households, and even fewer were reliant on resources gathered from the sea or river. From agriculture, the growing of crops and vegetables in gardens and fields supplements everyday food consumption rather than forming a major part of it. Livestock are plentiful in Hamburg, but again form only a supplement to everyday food consumption, and few households were reliant on livestock as their only source of meat.

In terms of climate change and its impact on food security, they argue that the heavy reliance of the community on welfare grants makes the people less dependent upon natural resources than would otherwise be the case, as they are shielded to some extent from impacts on natural food resources. A strong caveat, however, is that welfare payments by their very nature are unsustainable, especially old-age pensions. Thus, while the Hamburg community may not currently be heavily reliant on their natural resources, and their food security might not be heavily impacted by climate change, they could in future face such a situation.

Status

This contribution is currently within the review and editing process for development of a chapter in the book.

3.4.1.6. Environmental Learning and climate—Rob O'Donoghue and Sebastian Lewis

Principal Investigator comment

If one were to choose a single word that would help solve the major problems in Africa, in which food security is paramount, it would be *education*. If one were to choose a phrase, it would be *education and skills training for employment*.

Unquestionably, poverty is the principal scourge of Africa. Poverty leads to:

- loss of food security, hunger and, too often, death;
- disease and inadequate development of children;
- social injustices and inequality;
- loss of human pride, dignity and self-esteem;
- inability to adapt to climate change or to even mitigate impacts of climate change;
- economic marginalization of millions of people and loss of national productivity;
- loss of natural goods and services as people who eke out a subsistence existence have no choice but to unsustainably use the natural environment to survive. In such circumstances sustainability, conservation and rehabilitation of ecosystem are not possible.

When Mr Nelson Mandela was President of South Africa, he stated that there can be no conservation of the environment until issues of poverty and social justice were addressed. The best way to address issues of poverty and the associated maladies listed above is through education. The best ways to prepare people for the exacerbation of their vulnerable conditions in the face of climate change are through education. In Africa, however, education alone is not enough; skills that promote employment opportunities are also required

Education does provide knowledge and understanding. If and when circumstances permit, people who have knowledge and understanding may act for the benefit of all by caring for the environment. But, as Dr Sylvia Earle, patron of Sustainable Seas Trust writes, *"There is no guarantee that people will care if they know, but it is certain that they cannot care if they do not know"*. In the case of the most seriously impoverished people, even if they know and care, their survival is so shackled to unsustainable use of natural resources that they cannot afford to be altruistic. Education, therefore, needs to be more than just a sharing of knowledge, it needs to be a tool to securing a better life and hence to the protection and rehabilitation of the environment. Education needs to break the shackles that tie people to unsustainable exploitation of the environment by giving them the skills to find employment.

The education chapter deals with these critically important aspects. Hamburg is an excellent community in which to develop the essence of models for use elsewhere. On the one hand the people are impoverished and therefore do represent a microcosm of the overall problems of Africa, but on the other, they are not so desperately poverty stricken that hasty emergency measures are necessary. Careful, wise educational programs can be built with the community.

Status

This contribution is currently being developed so that it might be reviewed and edited as a chapter for the book.

In addition to the chapter for the book, Mr. Lewis has added the following notes on education:

Education is a vital aspect to any work conducted in impoverished communities. This is because many issues can only be tackled once high illiteracy rates and poor quality of education have been addressed.

Sustainable Seas Trust's (SST's) goal in its work with the Hamburg community from an educational perspective is to use education to help tackle environmental issues and simultaneously use the same educational tools to improve the lives of those living in the Hamburg community. The aim is not only to strengthen their food security but also to develop skills that will aid impoverished, unemployed people in their quest to find a job, ideally a job that reduces the need to use diminishing natural resources.

It was with these goals in mind that SST undertook the START project. The following section examines the educational work that SST has undertaken with START within the Hamburg community.

Survey in Hamburg and Other Interactions with the Community

The first step was to gauge what the state of education was in the Hamburg community along with what the community wanted from an educational perspective. This was done through the survey that SST conducted in Hamburg. Although the survey examined at a number of different disciplines and areas of focus, every section of the survey offered insight into the educational needs of the community. There was also an interaction with the Keiskamma Trust, in particular Mrs Colette Tilley of the Keiskamma Trust Community computer centre. The personnel of the Keiskamma Trust were exceedingly helpful, have an intimate knowledge of the Hamburg community and their close working relationship with the community.

The group conducting the survey (made up of students and staff of University of Fort Hare, Rhodes University and SST representatives as well as translators from the Hamburg community) took nearly two weeks to survey 134 households within the community. The survey collected data on demographics; land and agriculture; use of marine resources; food consumption patterns; income and expenditure; access to water; and perceptions on climate change, other environmental issues and, of course, education.

After this data collection period had been completed, the survey data were captured and sent to the different collaborators for the project to use for their work for the project. From an educational perspective the following emerged:

1) A large proportion of the adult population of the Hamburg community has not completed school up to Gr 12 level, in fact a large proportion have only completed schooling up until the end of primary school. This is closely linked to fact that the majority of the

community is unemployed and largely dependent on social grants for income. In fact 88% of households surveyed were receiving welfare grants, and it made up the largest source of monthly income for the surveyed households (47% of income per month comes from these grants).

- 2) The survey indicates that 318 out of 599 people in the households surveyed are made up of children and young adults living with their grandparents, because their parents were living in other parts of the country for employment reasons.
- 3) All children over the age of six are currently attending or did attend some sort of schooling.
- 4) Most (61%) of households had their own food garden or arable field and consumed some sort of fruit or vegetable form their agricultural pursuits, but many of these fields or gardens were poorly managed. A number of survey participants indicated that they would like to know more about proper gardening techniques. This indicates that there is a need to develop educational programs which help improve the state of food gardens.
- 5) Many (80%) of households within the survey had livestock in one shape or another. The biggest issues with livestock were pests, diseases and predation; medicine and dip for livestock are a large but necessary expense. Indicated was a distinct lack of knowledge on effective livestock management techniques.
- 6) It was found (albeit from informal observations and conversations with community members) that the community is dependent on natural resources garnered from the coastline and estuary. Although the survey found that not many (25%) households collect marine or estuarine natural resources, around 50% of households ate fish or other marine creatures on a regular basis. In particular kob, grunter, mussels, cockles and oysters were consumed by the community. This shows us that educational programs focused around marine natural resource conservation could be of vital importance.
- 7) There were indications that the community had very little understanding on the subject of marine natural resources or the collection thereof. This extended to fisherman who did not understand the reasoning behind bag limits and size restrictions of fish, oysters and mussels. This included a low level of understanding of the different ecosystems around the Hamburg area and how peoples' activities impacted on these ecosystems.
- 8) The survey found that the Hamburg community had a fairly clear perception of changes in the environment; however, there seemed to be almost no understanding of why these changes had occurred. Along these same lines, many community members had heard of climate change and global warming but not many fully understood the concept or how this may affect them personally.

Posters and Educational Booklet

It was out of these findings that the concepts for the 8 educational posters along with the accompanying teachers guide book were developed. Research concepts were developed in line with what SST considered to be the most important focus areas. Posters aim to support endeavours to promote food security. The posters are predominantly aimed at school children, but also attempt to be of use to all community members.

With these factors taken into consideration the following posters were designed.

• Two posters were developed focusing on estuarine ecosystems. The first poster highlights what an estuary is and why it is important. The second poster focuses on estuaries from a "catchment to coast" point of view; it's a poster that predominantly uses pictures to tell the

story and examines how human activities from catchment right down to the estuary itself affect estuarine ecosystems.

- Two posters focus on rocky shore ecosystems. Again the first poster highlights what a rocky shore is, including, the different zones of a rocky shore; what species are found within each zone; why the ecosystem is important and how it functions. The second poster demonstrates the interactions of people and each level of the rocky shore ecosystems, including a food pyramid.
- Two posters on mussels. The first poster focuses on the biological aspects of mussels. The second draws attention to sustainable collection of mussels. It also summarizes current legislation on mussel collection and highlights the right and wrong ways to collect mussels.
- The poster on the Cape Rock Oyster incorporates both the biological description of oysters and how humans impact on oyster populations (threats to oysters).
- The global warming poster indicates some potential effects of climate change. The intention is to broaden understanding of global warming and to indicate how it may affect people of Hamburg.

The set of 8 posters is accompanied by an educational booklet that adds detail to the information. The booklet is a support tool to be used by teachers in lessons that will broaden learners' understanding of topics introduced by the posters. Although the posters were developed with the Hamburg community in mind, all the topics and information are relevant to other coastal communities.

Other Conclusions and Recommendations from Work within Hamburg

The posters and educational booklet explore a number of environmental issues within the Hamburg community and provide a useful beginning. The scope for more research and educational work is enormous and growing. This is one facet of the START program that must be developed further. Future educational programs in terms of sustainability and adapting to climate change include, but are not limited to:

- 1) Food gardening—already an integral part of the daily lives of the Hamburg community; however, gardens and fields are often poorly managed or largely inefficient. Improvement of land husbandry and growing of food are valuable for both the environment and food security. Through the development of educational source materials to be used in workshops on proper gardening techniques (as well as perhaps garnering funding to supply start up seeds) will enable the community to shore up the food security (as well as reducing some of the financial burden of feeding large families). Growing one's own food also aids in the reduction of carbon emissions as transport is eliminated from the equation.
- 2) Keeping of livestock—is of value in terms of food security, but to the Xhosa, livestock are used ceremonially in traditional, spiritual and celebratory events. Cattle also are a sign of wealth, but it was evident from the generally poor condition of animals that the expense of medicines for disease and pest control is too great for the people of Hamburg. Educational posters and supporting educational programs on animal care and natural ways of controlling pests will be useful to the community as well as offering sustainable alternatives to the pesticides and chemical use.
- 3) Development of education and skills programs—critically important to success, to render people employable. Development and implementation of workshops to develop useful skill sets is vitally important. Basic skills that need to be developed initially, include:

- English literacy
- Computer literacy
- Home financial management
- Basic health care
- Technical skills such as plumbing, carpentry and catering would all help provide employment that then enables people to reduce their dependence on natural resources on land, from the estuary and sea.

Arising from the START program a preliminary computer literacy course is being planned by SST in conjunction with Keiskamma Trust and the SEACC Student Forum at Rhodes University to be initiated in August 2012.

- 4) Rural schools are notoriously underfunded and lack the vital resources in order to adequately prepare learners for life after school. It is necessary (and during the START project SST has taken steps towards developing a relationship with the Department of Education) to delve into the new CAPS curriculum and develop after school programs and resources that offer support to schools and learners to help strengthen their educational experience. Partnership with the Keiskamma Trust here is vitally important, as it has a much deeper understanding of where the schools in the community need support. The Keiskamma Trust also has a new computer centre and the beginnings of a comprehensive resource library. It also offers a chance for university students from the major Eastern Cape universities to get involved, by travelling to Hamburg and offering extra lessons in subjects such as Accounting, Computer Science and Mathematics.
- 5) There needs to be a more intensive interaction with fishermen and other collectors of natural resources. Additional research needs to be conducted into what the needs and wants are of these subsistence fishermen, in order to understand the struggles they endure to secure their livelihoods. This must include programs that look at strengthening their understanding and ability to sustainably collect natural resources (which also help ensure food security). A more open dialogue needs to be opened between government and subsistence fishermen so that new legislation and policy can be developed that not only protects the natural resources of South Africa's coastline, but also better provides sustainable livelihoods for those communities and individuals that rely on marine natural resources for their survival.

Final Note on EE

Environmental Education needs to become a more widely used form of educating communities, as it offers benefits to both people and the environment. It will not only aid in protecting the world's natural resources but will also offer more sustainable and effective ways for impoverished communities to protect their food security in the face of climate change and other environmental issues.

SST has started to engage more thoroughly with the subject and has extended its mandate in order to help develop education (particularly environmental education) in impoverished communities. Our work with the START program in the Hamburg community is a wonderful platform for us to develop these skills so that we can help with educational programs in other communities while simultaneously helping the Hamburg community to secure its food security as well as preserving the beautiful landscapes and nurturing the bountiful natural resources of the Keiskamma estuary and surrounding coastline.
3.4.1.7. Predicting the effects of climate change on the habitats and resources in Keiskamma Estuary, South Africa—Taryn Riddin, Janine Adams, Jens Currie*, Daniel Lemley, Kelly Rautenbach, Nadine Strydom and Sheng-Chi Yang

Principal Investigator comment

There are two principal parts to this report: the one focuses on water quality and estuarine health and the other on goods and services provided by the estuary at the mouth of the Keiskamma River.

The authors pre-empt any questions as to why they should be studying water quality in a program with a focus on food security and climate change by compellingly arguing that only healthy ecosystems can provide the goods and services required.

Their approach was to supplement desk top surveys with field trips (including towing boats and carrying research equipment from Port Elizabeth to Hamburg), laboratory analysis of samples and interpretation of the survey data. Theirs is a comprehensive study which showed that the estuary is not as healthy as it should be: Their data showed that the water in the estuary did not meet the requirements for safe use by the domestic, recreational, maricultural (e.g. oyster beds) and agricultural water use sectors. They indicate that sea level rise and floods will have considerable impacts on the biophysical character of the estuary and hence on the goods and services that support the community of people of the area.

They found that the estuary has high habitat diversity, with habitats providing shelter and food for a variety of invertebrates and fish, which are then available for use by the local rural community and those visiting recreationally. Despite the species richness, only a few species were utilized repeatedly. A decline in the popular fish and invertebrate species was noted.

They concluded that additional research including long-term monitoring of water quality is essential given that the health of people is determined by the health of the ecosystem. There is also a need to develop a better base-line against which to measure trends in sustainability of goods and services.

Status

This contribution is currently within the review and editing process for development of a chapter in the book.

3.4.1.8. Ecosystem Goods and Services of the Rocky Shore of Hamburg—Stephanie Stack

Principal Investigator comment

While the social and economic research suggests that the current dependence of the community on animals of the rocky shore is not large, the biologists demonstrate that the resources are now so limited that there is too little upon which to depend. Historically, the resources were much greater than now.

The seas of South Africa have very high energy. Therefore, studies of the intertidal and infratidal zones are challenging unless the weather is exceptionally good. Weather was unkind in that on each trip to the coast for this study, it was too rough and dangerous for new research to be undertaken. Most of the work, therefore, was dependent upon analysis of previous work and interviews.

This study calls for:

- a rehabilitation of the rocky shore ecosystem and its goods and services to be managed by communities
- a marine protected area
- long-term intensive monitoring rather than sporadic studies and
- improved education of communities so that they are better able to practice wise husbandry of the rocky shore ecosystems.

Ms. Stack also calls for a similar study to be carried out on the sandy shore ecosystems.

Status

This contribution is currently within the review and editing process for development of a chapter in the book.

3.4.1.9. Aquaculture potential of the Keiskamma estuary and coast in terms of food security in the face of climate change—Jillian Leonard

Principal Investigator comment

Ms Leonard reviews aquaculture and especially mariculture potential within the region and argues that estuaries offer amongst the best opportunities for mariculture, primarily because they provide calm areas along high energy rough coasts. She also points out that estuaries are rich in nutrients and are warmer than the seas so that growth of the organisms is more rapid.

She recommends that mariculture should be promoted in the Keiskamma estuary and supports the development of an oyster farm and other potential initiatives. All of which will provide employment opportunities to people in the Hamburg communities. A worrying aspect, however, is that the NMMU analyses of water quality indicate that water bacterial loads are unsafe for mariculture and that steps need to be taken in the catchments to reduce pollution. It is also necessary for long-term water quality monitoring to take place if mariculture is to be a viable option.

Status

This contribution is currently within the review and editing process for development of a chapter in the book.

3.4.1.10. Understanding subsistence line fishing in Hamburg, South Africa: conflicts and food security—Carolyn duBois.

Principal Investigator comment

In any open access system competition for resources leads to conflicts and to misunderstandings as there are both real and perceived inequalities. Ms duBois provides an overview of conflicts and then reviews the situation in Hamburg. Ms duBois based much of her information on interviews and a literature study.

The study was not restricted simply to areas of conflict, but also embraced a useful evaluation of each of the principal fisheries of the nearshore coastal areas and the Keiskamma Estuary. The conflicts which she explored were those between:

- commercial and subsistence fisheries:
- subsistence and recreational fisheries;
- those who have authority to manage and control the fisheries and the fishers;
- permit givers and permit recipients.

Ms duBois acknowledges that her work is perforce exploratory and calls for longer, in-depth studies. She provides valuable pointers as to the direction that future studies should take. She also emphasizes the need for resource managers and government to seriously address both real and perceived areas of conflict. As resources become scarce, as food security diminishes, and if climate change brings greater hardships, simmering conflicts can become aggravated into unnecessary hostilities.

Status

This contribution is currently within the review and editing process for development of a chapter in the book.

3.4.1.11. Gardens, livestock and agriculture—L Zhou, L Musemwa and V Muchenje

Principal Investigator comment

Every facet of the study in Hamburg demonstrated the population's affinity to land and capability of growing crops and developing gardens. There are historical and traditional links to the land. Modern trends suggest, however, that younger people are less likely than their parents and grandparents to work the lands. This trend is not unique to Hamburg, it is strong elsewhere in Africa and indeed almost everywhere in the world. In terms of food security there is a need to revitalize an interest in gardens, crops and livestock. Achieving that will not be easy, but starting points should be to make the gardening more worthwhile and easier. Investments of time and effort need to be more profitable and enjoyable, to bring pride to the gardener or larger scale farmer. There also needs to be a way to ensure that excess produce is not wasted, but preserved or marketed.

The University of Fort Hare, which led this study, had previously noted that Eastern Cape farmers were less productive by quite a large margin than they should or could be. There are many reasons for this, but paramount among them is the rationale of, "why produce more than you as a family can manage, especially if you are unable to transport the food to a market and

obtain a fair return?" The Agriculture Department of the university then enhanced productivity by:

- Providing better seeds, fertilizers and training. They also facilitated the agriculture where possible by providing mechanized assistance in cultivation.
- They then undertook to purchase the excess produce (i.e. that which was not required by the family) and to employ people from the community to
 - Process the vegetables (wash, peel, cut into small pieces),
 - Preserve the food in desiccators and to finally
 - Pack the food and distribute it to children in schools.

This very successful collaboration between the university and communities, referred to as AgriParks, inspires hope for the future.



Status

The agricultural report given here is currently being substantially revised for the chapter on gardens, crops and animal husbandry. It will emerge later in a somewhat different form when it will be reviewed and edited as a chapter for the book. This current report, however, shows some strong trends, gives a number of very clear messages, demonstrates the essence of the AgriParks Program, and makes excellent recommendations for the future. The final chapter will include a greater contribution to the issues of climate change and food security.

3.4.2. A documentary film which encapsulates the project

The film captures the essence of the communities within the catchment area of the Keiskamma River Mouth and is presented as a product of this START Program on the web and on DVD.

3.4.3. A secondary film: an inclusive educational opportunity

The primary film is a 12 minute long documentary. However, in preparing the film approximately 15 hours of footage and 27 interviews were made that have not been included in the documentary. A second film which includes a far greater number of interviewees and many interesting aspects not covered in the short documentary should be made available to the community for the following reasons:

- People love to see themselves and others in the community on film and to listen to what their associates have to say. This inclusiveness will be a morale booster for all, but more significantly it provides a learning tool.
- Many very significant points were made by interviewees that need to be aired and considered, but which could not be included in the primary film.
- The follow up film provides a truly powerful education and learning opportunity that will have a more significant impact than that given by the documentary. It is because of the educational opportunity that the quotation calls for some simple animations.

3.4.4. Peer reviewed papers, mostly pending

Four research groups intend to publish their findings, namely:

- 1. Taryn Riddin, Janine Adams, Jens Currie, Nadine Strydom and Sheng-Chi Yang. Predicting the effects of climate change on the habitats and resources of the Keiskamma Estuary, South Africa
- 2. Brendon Martens, Gavin Fraser and Jen Snowball. Livelihoods and Climate Change in Hamburg: Issues of Food Security, in a target journal: Development Southern Africa or Agrekon.
- 3. Leocadia Zhou et al. Agriculture and gardens in the Hamburg catchment, of the Eastern Cape, South Africa.
- 4. Rob O'Donoghue and Sebastian Lewis. New Educational Frameworks for Impoverished Rural Communities.

It is also hoped that current student projects, which were initiated by the START program and are continuing through their academic year, will develop to the point where papers will emerge.

3.4.5. Capacity Building and Student Projects

Table 1. List of students from different institutions, whose projects conducted in Hamburg contributed to the partial fulfillment of Honours degrees, Masters degrees or were part of Post-doctoral training

Nelson Mandela Metropolitan University (NMMU)						
Student name	Department	University Degree	Project title			
Daniel Lemley	Botany	BSc Honours: research	Water Quality Status of the Keiskamma Estuary, Eastern Cape.			
Kelly Rautenbach	Botany	BSc Honours research	Elevation and sediment characteristics of the salt marsh at the Keiskamma Estuary.			
Dr Taryn Riddin	Botany		Post -doctoral			
Dr Sheng-Chi Yang	Botany		Post- doctoral			
l 		Rhodes University				
Nicole Viljoen	Economics & Economic History	Honours in Economics	The role of the state as part of a national sustainability strategy: a South African case study			
Brendon Martens	Economics & Economic History	Master of Economics	Livelihoods and Climate Change in Hamburg: Issues for Food Security			
Nolukhanyo Donyeli	Anthropology	Bachelor of Arts (Honours) Research Project	Social Relationships as a Resource in Dealing with Economic and Wider Environmental Uncertainty in Hamburg, Eastern Cape Province, South Africa.			
Kwezi Nkwintya .	Anthropology	Bachelor of Arts (Honours)	Research Project: Cultural Resources, Risk and the Environment in Hamburg, Eastern Cape Province, South Africa			
Conrad Swart	Geography	Bachelor of Science (Honours)	Research Project: Investigating issues of land use change in Hamburg, Eastern Cape, South Africa			
Post	graduates who	participated but not	for degree purposes			
Breanne Robb	Geography	Contributed to field to chapter	trips, workshops and authored a GIS			
Sandy de Waal	Geography	Contributed to works training workshop	shops including leading the GIS			

University of Fort Hare						
Thembelani Mthoko	Agricultural Economics	Honours	Conducting field surveys			
Sunungurai Mabhera	Agricultural Economics	Masters	Conducting field surveys			
Njongenhle Nyoni	Livestock & Pasture Sciences	Masters	Conducting field surveys			
Tumelo Mathe	GIS	Masters	Conducting field surveys			
Leeward Jeke	Agricultural Economics	Masters	Conducting field surveys			
Hupenyu Alan	Agricultural Crop Science	Masters	Conducting field surveys			
SUSTAINABLE SEAS TRUST						
Post graduates who participated but not for degree purposes						
Jens Currie	As a CIDA intern, Mr Currie contributed to the filming and to the chapter on estuaries goods and services					
Carolyn duBois	As a CIDA intern, Ms duBois contributed the chapter on conflict over marine resource use.					
Jillian Leonard	As a CIDA intern, Ms Leonard of	As a CIDA intern, Ms Leonard contributed the chapter on mariculture				
Sebastian Lewis	Mr Lewis joined SST as consultant from RU to assist Prof O'Donoghue with the educational programme, but he then also assisted in many other spheres and is responsible for the education products.					
Kyle Robinson	Mr Robinson joined SST as a co the START programme	Mr Robinson joined SST as a consultant from RU to develop the films for the START programme				
Stephanie Stack	As a CIDA intern, Ms Stack con services	tributed the	e chapter on coastal goods and			

Capacity was also built among the Hamburg community where young people joined the START program as translators and guides, and there were those who benefited from the workshops and educational programs run by Mr Lewis.

Members of the Student Forum of the South East African Climate Consortium (SEACC SF) were also taken on field trips to Hamburg and as a consequence they will now participate in a follow up educational program.

3.4.6. Eight educational posters and teachers' guide

Eight educational posters have been designed in line with requests from the Keiskamma communities. These posters are currently with printers and will shortly be taken to the communities and used by teachers in classrooms. In order to make posters more valuable as teaching aids and to increase their impact in learning and conservation, a booklet to guide teachers was prepared to accompany the posters.

The posters will also be placed on the START website of SST.

3.4.7. Articles and lectures

Four articles have been commissioned (Mrs Esti Stewart an environmental journalist and Dr Leocadi Zhou, head of the agricultural component of the program, are writing the articles.) for distribution in the press and other media. Dr Ribbink gave 23 lectures to the public in a variety of South African towns which incorporated PowerPoint illustrations of the START program and needs of communities. In particular he stressed the need to provide education and skills training to alleviate poverty and break shackles to unsustainable use of marine and estuarine resources.

3.4.8. A website report (ongoing)

START had an allocation on the SST web page under the SEACC banner at the initiation of the program, which included a login system so that ideas and plans could be shared online by participants. When the SST site was restructured to give it a new look and feel at the end of 2011, the log in system fell away and has not been replaced. Instead, items are shared by participants directly.

Currently the web page is being redesigned as it moves from being a discussion of what is planned or being done to be a report on achievements which will enable the products to go on line as they emerge. It is envisaged that the new START page on SST's site will remain operational for at least a year as:

- 1. Chapters of the book and other products emerge between July and September 2012
- 2. Student projects are completed between July and December 2012
- 3. Coverage of the hand-over of products to the Hamburg community in September 2012 is recorded
- 4. Coverage of the START meeting in November 2012 is ensured
- 5. Follow up project initiatives, especially in environmental education, remain productive until July 2013.
- 6. Place articles and media reports on web as an ongoing feature.

3.4.9. Collection of literature to facilitate the next phase of this work in electronic and in some cases hardcopy (printed) form

Most of the literature gathered will be stored on CD-ROM (see 11 below) at SST and Keiskamma Trust, but over time and as funds permit, hard copy versions of the most relevant literature will be placed in the Keiskamma library.

3.4.10. CD-ROMs which contain the products of the START program for distribution to organizations and personnel associated with the program and to other interested parties

CD-ROMS and DVDs which contain the products of the START programme, including films, will be distributed to stakeholders as costs are considerably less than those for printed versions.

The distribution will take place in September 2012, when the book is completed. In November, several copies will also be taken to the START Learning Forum, which will be held in Accra, Ghana, November 13 through 17.

4. Conclusion

Economic Extinction of some goods and services

Historically, the Keiskamma Estuary, its catchments and adjacent coast were rich in biodiversity, with ecosystem goods and services being abundant and readily available to all people of the area. Clearing land for agriculture transformed one form of services for another, but since the mid-20th century, cultivation of agricultural land has been abandoned so that little remains today. On other fronts, inroads into the natural resource base from hunting, fishing, wars and a series of political changes have seen the area lose much of its natural wealth. Consequently, ecosystem goods and services are no longer able to support the impoverished as well as they did in the past. In the case of the invertebrates of rocky shores, such as mussels and oysters, they are effectively economically extinct; the species are present, but in such low numbers that it is not worthwhile for most people to glean such items. This is reflected in the economic and other reports which found that currently (2011 and 2012) no one is dependent upon these items of food, but some may occasionally supplement their diets or income.

Bait collection and fishing in both the estuary and the sea are still viable, but are not as significant to the livelihoods of people of the communities as might have been expected.

Unsafe for humans

Ms Leonard's report recommended that mariculture should be developed in the Keiskamma Estuary and applauded the re-establishment of oyster farm and other potential aquaculture initiatives, particularly as they would provide much needed employment. Her arguments are strong and worthwhile, but the NMMU estuarine ecologists found that the water quality was unsafe for humans, because levels of pathogens were considerably higher than recommended levels. These pathogens, toxins and other pollutants were from humans and their domestic animals within the catchment and from activities along the water edge.

Easier to buy than grow

The abandonment of cultivation of agricultural land depicted in the GIS report is quite dramatic and reflects a series of changes. The majority of people, despite being impoverished, purchase vegetables—even though this usually incurs a costly trip to Peddie, East London or Port Alfred.

Purchasing power

The economic report notes that, over time, dependence on natural resources has declined so that they now play a smaller role in livelihoods than expected. The picture that emerges is one of heavy reliance on welfare payments (88% of families), which are used to purchase food, mostly outside of Hamburg. The food gathered from the river/sea resource or self-produced through growing crops and livestock is a supplement to the welfare grant. Thus, the most common livelihood strategy in Hamburg is dependence on welfare income, with a small portion of the community deriving livelihoods based on employment.

Welfare grants are not large and are insecure, often depending on one family member only. The loss of that family member is potentially devastating for those who remain. Employment

opportunities in Hamburg are limited. Employment elsewhere is challenging because the education and skills level of the people of Hamburg is too low for them to be truly competitive in the open market.

The amalgamation of a largely degraded natural resource base, failure to use the agricultural potential available, a primary dependence on social grants and poor employment opportunities, realizes a consequent low level of purchasing power of the people. The exceptions are the few who are employed.

Climate change

Even if there were not threats of climate change, the increasing human population, increasing demands on resources and a reliance on social grants—which in themselves are not secure—mean that the population is vulnerable. That vulnerability could be exacerbated by climate changes, particularly if the area becomes hotter and drier.

However, because the greatest dependence is on social grants, with nature providing only supplementary food and income, the direct impact of climate change on food security will not be as acute as if the population were not shielded by government welfare payments.

Complementarity and contradictions in a multidisciplinary approach

The multidisciplinary approach to the problems meant that a variety of different perspectives were obtained: several differed in detail; others were complementary, but all pointed to the same major issues and trends. In some cases, different methods for obtaining data gave results which differed. For example, anthropologists found a higher dependence on fishing and marine food resources (55%) than did other quantitative surveys (12%). There are many similar examples of not only differences between groups within the START program, but also between the SEACC researchers and those of EcoAfrica in 2010/2011. Whether these differences in results reflect a difference in approach, or whether the households sampled were different, or that interviews took place at different times of the day when the mix of people at homesteads is different, still needs to be established.

There is no doubt that in climate issues, which affect everyone, regardless of discipline, a multidisciplinary approach is the most sensible way forwards.

5. Future Directions

A good start, but more to be done...

Every researcher, in every research group engaged, regardless of discipline holds the view that this START program is an excellent beginning, but much more needs to be done. They all consider it essential that we should build on the momentum with follow up programs. Several of the academic departments are looking at following up with postgraduate programs at Hamburg to promote research opportunities that build capacity and generate data which will be of value to the communities.

In the section below, several of the most serious challenges are tabled with possible solutions.

Immediately after the table, descriptions of new project initiatives that will build on the progress resulting from START program are described.

Table 2.	A list of some of the more	pressing	problems	and	indications	of what	future	work is
	necessary to find solutions.							

Category	Status & Challenges	Possible Reasons
Crops & gardens	In decline; trend is for fewer people to grow crops and fewer to develop vegetable gardens	 -expensive and hard work to grow grain & vegetables; -potentially unrewarding if droughts, floods, pests and livestock destroy crops; -fencing too expensive to keep livestock away; -inadequate water supply; purchase of water too costly; -pests and disease control is costly; -poor soil quality in some places; -access to markets costly; -lack of extension services and of access to agricultural inputs and services.
Possible solution	ons: The UFH team sugges	sts that, to increase the contribution of agriculture to
livelihoods of h effort by the go sector role play stakeholders. An opportunity	ouseholds in marginal comm vernment, municipalities, sr vers. UFH intends promoti to develop a mini-Agripark	munities such as Hamburg, there is a need for a joint nall scale farmers, producer organizations and private ng awareness of the need for collaboration among associated with a SEAS Centre for Employment (see 1 isl to provide benefits
Livestock	Livestock have increased	Livestock provide an emergency security net are
management	over the years, but are not a major component of diets	important for traditional ceremonies and are a form of wealth. Usually, there are too few owned by any family to form a frequent contribution to meals.
Possible solution	ons: The UFH team sugges	ts that greater understanding of animal husbandry is
required and tha	t this should be developed b	y agriculture extension services.
Livestock condition	Generally poor	-Medication for animals & for pest control (ficks and internal parasites) is costly; -extension and educational help lacking.
Possible solution	ons: The UFH team recom	mends that greater awareness of the management of
health in livest	ock needs to be promoted	and that government extension officers should be
No solution has	area. s been recommended that y	will deal with the primary challenge of making the
keeping of live	stock profitable enough to	enable their owners to develop healthy herds. It is
recommended th	nat an economics student spe	cifically investigates this fundamental problem.
Rocky shore invertebrates	Not many people glean from the shores (circa 5% occasionally). These resources are effectively economically extinct.	The stocks are so overexploited that returns on effort are poor and hardly worthwhile, particularly in winter and rough conditions. Permits do not allow subsistence licensees to collect sufficient to provide for a proper meal for families or to obtain cash from sales
Possible solution	ns: The rocky shore ecosys	stems need to be rehabilitated, particularly the mussel
beds (see 2 bel	ow for proposed project)	and an area which includes the intertidal zone of the
rocky-shore and	its adjacent waters should	be declared a marine protected area (see 3 below for
proposed proje	ct).	
Estuarine invertebrates	Few (circa 8%) people collect these in any quantity.	Indications are that estuaries are over exploited and most animals taken are used as bait. Permit restrictions inhibit entrepreneurial activities.

Possible solut	ions: The data present	ly available are inadequate to make specific					
recommendations, but it is clear that further research on the status of estuarine goods and services							
need to be made with a view to developing sound proposals for management and conservation. At							
the very least a solid base-line against which to measure change needs to be developed.							
Marine fish	Few (circa 10%) people are	Indications are that marine fishes along the coast are					
	anglers.	overexploited; catches are lower and fishes are smaller					
	-	than in the past. Local fishermen do not have boats to					
		facilitate fishing beyond the wave zone.					
Possible solut	ions: The data present	ly available are inadequate to make specific					
recommendation	ns, but it is clear that furthe	er research on the status of marine fishes (goods and					
services) need	to be made with a view t	o developing sound proposals for management and					
conservation. A	t the very least a solid bas	e-line against which to measure change needs to be					
developed.							
Estuarine fish	Few (circa 10%) people are	Indications are that estuarine fishes are overexploited;					
	anglers	catches are lower and fishes are smaller than in the past.					
Possible solut	ions: The data present	ly available are inadequate to make specific					
recommendation	ns, but it is clear that further	research on the status of estuarine goods and services					
need to be made	with a view to developing	sound proposals for management and conservation. At					
the very least, a	solid base-line against which	h to measure change needs to be developed.					
Mariculture	Potential is good and an	Water quality is unsafe due to pathogens					
potential	oyster farm is being						
1	developed with plans to						
	develop a fish project.						
Possible solution	ns: Identify the sources of p	pathogens and work with the communities to eradicate					
the sources (see	4 below).						
Estuary	Poor	Human and animal pollution in the catchments; erosion &					
water quality		sedimentation, water quality is unsafe for human					
		recreation and food from the estuary.					
Possible solutio	ons: Identify the sources of p	bathogens and work with the communities to eradicate					
the sources. The	e NMMU team recommends	s regular monitoring of water quality (see 4 below for					
proposed proje	ct).						
Education	Low, but better among	The local schools are ill equipped to prepare children for					
	young people (64% have	the modern age and adults in particular lack education.					
	secondary education).						
D	XX7 1 '41 41						
Possible solution	ons: work with the comm	funities to mount an improved educational program					
tocused on filli	ng gaps that cannot be aff	forded by local schools. Provide adults with special					
educational opp	ortunities in the SEAS Co	entres for Employment (see I below for proposed					
project).							
Skills training	Low, except for those	Opportunities for skills development are virtually non-					
	troined by Keishamme	existent in the area, particularly for men.					
	Trust						
Possible solutio	ne. Work with the commun	ities to develop a skills training program in the SEAS					
Contros for Em	lowmont (soo 1 below for re	renesed project)					
Deventer	A outo	Look of skills and advantion marginalizes people from the					
roverty	Acute	mainstream economy by precluding them from					
		employment There are few employment opportunities in					
		employment. There are new employment opportunities in					

		Hamburg.					
Possible solution	Possible solutions: Work with the communities to develop a skills training program in the SEAS						
Centres for Em	Centres for Employment (see 1 below for proposed project). Additionally, find opportunities						
with Eastern Ca	with Eastern Cape companies to develop small businesses within the region.						
Expenditure	Monthly expenditure is To receive social grants, purchase food and other						
-	disproportionately high.	necessities community members travel a minimum of					
	once monthly to Peddie at unaffordable costs.						
Possible solutions: Work with the communities to persuade a travelling bank to visit Hamburg,							
investigate possi	bilities of food delivery to H	Hamburg rather than have many people pay so much of					

their income on taxi fare. Fewer vehicles on the road will reduce the carbon footprint of Hamburg.

Project 1: Development of Sustainable Education and Skills Centres for Employment (SEAS Centres)

Poverty, unemployment and their associated maladies of poor health, social injustices, and lack of self-esteem and human dignity are prevalent in people who do not have the education and skills that they might like or need. It is also these people in rural circumstances that have little choice but to exploit the natural environment, denuding it of the very goods and services necessary to sustain them. If such people can be given education and skills that enable them to find gainful employment, then many of the negatives listed above are replaced by much more positive outlooks for people and unsustainable pressures on the environment are reduced.



The SEAS Centre Concept showing the contributions that different members of SEACC might make. The abbreviations are: NMMU (Nelson Mandela Metropolitan University); RU (Rhodes University); SST (Sustainable Seas Trust), UFH (University of Fort Hare); WF (Wilderness Foundation); WSU (Walter Sisulu University).

Development of a model Sustainable Education and Skills Centre for Employment (SEAS Centre) in Hamburg is a high priority for SST and will be fiercely explored from August 2012.

The SEAS Centres Program is a South East African Climate Consortium (SEACC) project that is being driven by Sustainable Seas Trust (SST). Each university and NGO has a role to play: in education and in developing completely green, carbon neutral, welcoming buildings. For example, the architecture will be led by Nelson Mandela Metropolitan University (NMMU); energy & heat by NMMU & University of Fort Hare (UFH); water by Rhodes University (RU) & UFH; AgriParks by UFH; health and family by Walter Sisulu University (WSU); skills training by all universities and the private sector; education and computer training by all universities including students.

The essence of the SEAS Centre is to provide much needed education and skills to the rural communities, beginning with a model in Hamburg where land has been made available for such a set of green buildings. Raising the funding is the next vital step.



Staff and students from the Department of Architecture (NMMU) measuring and examining the site for a prospective SEAS Centre at Hamburg.

A totally green building will be a source of pride to the communities, as well as a lesson in climate and conservation in itself.

The buildings will:

- be made of local materials, designed and constructed to be warm in winter and cool in summer,
- use natural energy with both photovoltaics and wind generators,
- show how water can be captured, stored, reticulated, used and reused,
- have a functional AgriPark which will be scaled down for the size of the communities to encourage increased production of crops and vegetables, provide income and employment, and combat food insecurity by drying and storing the produce and ensuring that surplus is distributed to the hungry;

They will provide a community space for various activities to:

- encourage good family health by having a focus on health and hygiene,
- encourage literacy and reading
- conduct a series of educational programs for children that are in line with schools curriculae
- provide educational and skills training for adults
- assist trained people to find employment

One of the critically important prerequisites to development of a SEAS Centre is to ensure that the correct educational programs are developed to meet both the needs of the community and the needs of the country. Educational projects which are well intended but which draw children and teachers away from the national school curriculum may ultimately be detrimental to learners. As a first step, therefore, from August 2012, SST will be investing in a educational development program for Hamburg and will do so in conjunction with the Department of Education, which will have a member on the Steering Committee.



In this, the digital and electronic age, fewer than 10% of children in South African schools have computers in their class rooms and cannot therefore become computer literate. SST will be working with the Keiskamma Trust and students from the SEACC universities to address this problem.

This new educational program has grown out of the START initiative and will be conducted with the Keiskamma Trust.

Projects 2 &3: Rehabilitation and Conservation.

It was concluded above that the abalone, mussel, oyster, limpet, winkle, octopus, crab and other invertebrate resources were effectively economically extinct. While the species could still be found there, they are present in numbers that are so low, the difficulty of catching or gleaning is so great that it is hardly a worthwhile, economically viable undertaking.



Meager takings in Hamburg with more winkles than mussels



Better takings in Coffee Bay

At Coffee Bay, to the north of Hamburg, a rehabilitation program was undertaken with the community, which was successful. Using the same techniques, SST wishes to work with the Hamburg community, which has already indicated a desire to rehabilitate Hamburg rocky shores, to replace lost ecosystem goods and services.

The Hamburg rehabilitation program: will ensure that the community has ownership and is rewarded for sensible harvesting schedules; is aimed at obtaining a good price for produce and designed to develop a sense of pride.

On land in Hamburg there is a nature reserve; SST plans to work with the government to have the reserve broadened to include the marine shore and extend several hundred meters out to sea, specifically to protect the abalone and their ecosystems. Thus abalone too can benefit the communities through community managed harvesting, initially under the guidance of scientists until such time as sufficient Hamburg residents can take over full management.

The funding application forms for these two programs are being developed.

Project 4: Water Quality, Mariculture and Human Health

In her work on the START program, Ms J. Leonard reported on the attributes which give the Keiskamma Estuary considerable potential for mariculture. She indicated too that there is already an incipient oyster farm in place and there are plans being formulated for further developments using fish species. Potential benefits to community members, primarily through employment opportunities, are clear. However, the NMMU researchers reported that water quality was found unsafe for human consumption due to a variety of pathogens that enter from the catchment and water edge.

Clearly, for the developments to go ahead, and for the normal high season tourism and its annual injections of funds to continue, the water of the estuary needs to be healthy. NMMU suggests that efforts to stop the inflow of contaminants from the catchment are a high priority, and that very regular monitoring of water quality should take place to track improvements.

One of the developments that Aspire has planned for Hamburg is the construction of a new environmental centre with laboratories. SST will work with NMMU and Aspire to develop a program to reduce contaminant inflow and to regularly monitor water quality. This program is still in the conceptual stage.

Climate Change and Food security

No one really knows the nature of what the future holds with regard to climate change in the Eastern Cape, and the Hamburg area is particularly unpredictable, being positioned at the interface of several different climatic zones. Accordingly, authors of the various sections for the START report were invited to predict the future under three possible scenarios: no change except population growth and development; hotter and wetter; hotter and drier.

In the final analysis, however, the best way in which the community can cope with climate change and food security is to become less vulnerable to change. Education is seen as the key, in which knowledge provides the understanding of how to do things better. So rather than teaching about problems which might lead to confusion and concern, the focus is on encouraging people to choose practices that improve their lives, reduce resource consumption, restore ecosystem functioning and hence services, and mitigate carbon footprints.

Modeling improved human relationships for a more sustainable future seems more logical in the context of a small, rural, impoverished community than endeavoring to predict climate change.

6. Appendices

6.1. Workshops

6.1.1. Project Implementation Planning Workshop.

July 2011 at the Environmental Learning and Research Centre of Rhodes University Program and Participants



Participants	Affiliation	Email address		
Dr A J Ribbink	SST	a.ribbink@sst.org.za		
Prof Janine Adams	NMMU	Janine.Adams@nmmu.ac.za		
Prof Derek du Preez	NMMU	Derek.DuPreez@nmmu.ac.za		
Prof Nadine Strydom	NMMU	Nadine.Strydom@nmmu.ac.za		
Prof C de Wet	RU	c.deWet@ru.ac.za		
Prof R. O'Donoghue	RU	R.Odonoghue@ru.ac.za		
Prof G Fraser	RU	G.Fraser@ru.ac.za		
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Nozeti	Keiskamma Trust	No email		
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Mr K Sotsha (MSc student)	UFH	0007016190@ufh.ac.za		
Mr Ngemtu (PhD student)	UFH	000503383@ufh.ac.za		

6.1.2. Hamburg Community Workshop

Program and Participants

September 2011 at the Old Community Hall, Hamburg COMMUNITY WORKSHOP PROGRAM: HAMBURG 16TH SEPTEMBER 2011

The purpose of the meeting is to both inform the communities and to invite participation, suggestions and guidance from those who live in Hamburg.

In your presentations also please

- 1. define what each group will do
- 2. agree on how to integrate the work on GIS
- 3. finalise decisions on questionnaires
- 4. help students from UFH with project proposals
- 5. set a timetable of activities
- **10:00 Tony Ribbink**: *Welcome, overview, goals and deadlines.*
- **10:10** Gavin Fraser: Sustainable Rural Livelihoods- Focus for START Project
- **10:30** Sandy de Waal (also representing Gillian McGregor): GIS for START and RAVAC
- **11:00 Discussion** of GIS: Sandy has to leave early so we need to each have input into the GIS program.
- **11:20** Leocadia Zhou: Agricultural and land use project.
- **11:40** student 1: Use of Marine and Agricultural Resources by Hamburg's Local Community
- **12:05** student 2 Assessing impact of Climate Change on Water and Household Food Security: A case Study of Keiskamma Hamburg Community
- **12:30:** General discussion of morning issues.
- 12:50 lunch break
- 14:15 Janine Adams and Nadine Strydom: Marine Research Project for START
- 14:35 Chris de Wet. *Questionnaires and Anthropology*
- 14:55 Esther Hautmann: *Planned developments for Hamburg*
- **15: 15 Rob O'Donoghue**....*Educational Program for START and RAVAC*
- 15:30 Open Discussion and planning
- **16: 00** Keiskamma representative to conclude and summarise the day.

Participants	Affiliation	Email address
Dr A J Ribbink	SST	a.ribbink@sst.org.za
Prof Janine Adams	NMMU	Janine.Adams@nmmu.ac.za
Prof Derek du Preez	NMMU	Derek.DuPreez@nmmu.ac.za
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6.1.1. GIS Workshop

As some staff and students had not been exposed to GIS or even gathering GPS data, a GIS workshop was help in order to prepare all researchers to be able to provide geo-referenced field data for analysis.

The course was run by Gillian McGregor and Sandy van der Waal of the GIS unit in the Geography Department of Rhodes University.





At the GIS workshop and as a group

Participants	Affiliation	Email address
Dr A J Ribbink	SST	a.ribbink@sst.org.za
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6.1.2. Questionnaire Workshop

A number of meetings were necessary to adequately develop the questionnaire as a consensus document across universities and disciplines, the first of these was a formal workshop reported upon by Prof de Wet who led the project.

Venue: Department of Anthropology, Rhodes University,

Date & time: 27 September, 2011, 1115

Present: E.Dube, N.Monde, B.Bester, S.Ngemntu, K.Sotshu, I.Zhou, J.Currie, S.Stack, J.Leonard, J.Snowball, C. deWet.

The meeting was chaired by Chris de Wet, and had basically one agenda item: to go through the drafted questionnaire which Chris had circulated electronically and to suggest ways in which it might be amended. What follows are points, rather than a fully polished set of minutes.

Major feelings that emerged from the meetings were that:

- 1) People were broadly happy with the thinking behind the draft questionnaire and the considerations that it should not be too long, and that it did not need to cover everything that everybody was necessarily wanting to have information on, in micro-detail.
- 2) However, there was a need for more empirical detail, particularly on matters relating to economics and agricultural. The group did not reach consensus on what kind or level of detail was advisable to include.
- 3) Some (perhaps all) felt that of the sections that dealt with Perceptions, i.e. Section F (Environment and Climate Change: Perceptions of Change) and G (The Future) could perhaps be better dealt with in focus groups. The group did not reach consensus on this matter.

With regard to both 2 and 3 above, it was suggested and agreed that members of the group would $-\underline{\text{keeping the format of the draft questionnaire}} - \text{send to Chris their suggested feedins for a) what additional detail they felt needed to be included b) what perception questions they felt needed to be taken out of the questionnaire and rather moved across to focus group discussions.$

- 4) There was discussion as to possible different emphases on the part of START and RAVAC, in terms of what we might be wanting from the questionnaire venture. It was suggested that START was more interested in consumption type data, whereas RAVAC was more interested in production type data in the first instance- but also in consumption data
- 5) How many questionnaires? This raised questions of how many per day, per interviewer, who would do the interviews, when they would be available, training, how many interviewers, supervision in the field, how many sites, representivity, language of administration of questionnaires, budget, etc, etc.
- 6) We decided on 3 sites, 50 questionnaires in each, to allow for error and so 40 in each site.
- 7) There should be a training and testing workshop in the field: 21-22 November.
- 8) The actual interview period should be 28 November to 9 December .
- 9) 10 interviewers, postgrads from Fort Hare, who speak Xhosa and English would form the backbone of the team.
- 10) The questionnaire was to be in both languages and translated both ways, with responses recorded in English
- 11) Timetable
 - a) Questionnaire responses to Chris by 6 October
 - b) Final Questionnaire by 14 October
 - c) Pilot Questionnaire by 21 October
 - d) November Advertise, secure interviewers
 - e) Training 21-22 November at Fort Hare. Chris plus Ben plus
 - f) 28 November to 9 December Administer questionnaire
 - g) Processing, Analysis of Questionnaire. January 2012, plus
- 12) Budget Items
 - a) Questionnaire drawing up plus production
 - b) Questionnaire Pilot
 - c) Training of Interviewers
 - d) Administration of Questionnaires
 - e) Supervision of Administration of questionnaires
 - f) Data capture
 - g) Analysis of questionnaire

Chris de Wet, 7 October 2011

The various workshops and discussions gave rise to the following questionnaire: *(Forward past questionnaire to next section:* Hamburg Community Meeting and Report Back Session)

QUESTIONNAIRE FOR START PROJECT ON RISK AND VULNERABILITY IN RELATION TO FOOD SECURITY IN THE CONTEXT OF CLIMATE CHANGE IN THE EASTERN CAPE, WITH SPECIFIC REFERENCE TO THE HAMBURG AREA (January 2012)

Information to respondents at the beginning of the questionnaire process: linkcukacha nolwazi olujoliswe kwabo baza kuphendula imibuzo

1) This questionnaire is <u>not</u> part of a government process. It is part of a research exercise by the Universities of Fort Hare, Nelson Mandela and Rhodes Universities. The information obtained will however, be valuable to government in its planning for the Eastern Cape and for the Hamburg area. Your participation in answering this questionnaire is entirely voluntary, and your choosing either to answer or not to answer it, will <u>not</u> in any way either favour or penalize you or your family in relation to anything, such as access to service provision, pensions or other benefits, or to any employment opportunities that may arise in the area.

1) Olu qulunqo lwemibuzo aluyonxenye yeenkqubo zikarhulumente. Luyinxenye yophando olwenziwa ziiYunivesithu iFort Hare, iNelson Mandela kwakunye neRhodes. Kodwa kunjalo ulwazi olufunyenweyo luza kuthi lube lulutho kurhulumente xa eza kuthi alungiselele eli phondo leMpuma Koloni kwakunye nela cala laseHamburg. Inxaxheba oza kuthi uyithathe ngokuphendula imibuzo ixhomekeke kuwe akunyanzelekanga ukuba uthathe inxaxheba nokuba akufuni. Akukho bani oya kubeka ityala kuwe okanye usapho lwakho, ngakumbi malunga nezinto ezifana nokuhanjiswa kweenkonzo, indodla, amathuba emisebenzi angathi avuke kule ndawo ohlala kuye, okanye nayiphina into oneemfanelo zokuyifumana.

2) While we are asking to enter your name on the questionnaire form, this is only to help us to get a representative sample of respondents covered in our research, e.g. in terms of men and women, in terms of younger and older people, etc, and so that we do not make the mistake of coming back to the same houses again. Your identity will be kept completely anonymous. We will not be mentioning the names of anybody in anything we write, and we will take care to describe people and what they tell us in such a way that they cannot be identified afterwards by anybody who reads our reports. We are seeking to obtain representative information that tells us about what is going on in the area, not personal journalistic material.

2) Nangona siza kukucela ukuba ubhale igama lakho kwiphepha elinemibuzo, oku kwenzelwa ukuba silazi inani labantu abaza kuthatha inxaxheba kolu phando, umzekelo siza kufuna ukwazi inani labo bangootata kwakunye nabo bangoomama. Kananjalo oku kuza kuquka ukwazi malunga nobudala babantu abaza kuthatha inxaxheba, oku kuza kusinceda ekubeni singenzi impazamo yokuya kwizindlu ebesiyile kuzo ngaphambili. Iinkcukacha zakho ziya kuba yimfihlo ngokupheleleyo. Asizi kubhala amagama abantu kuyo nayiphina into esiza kuthi siyibhale, kananjalo siza kuqinisekisa ukuba sibachaza ngendlela eyiyo abantu kwakunye noko baza kube besixelele kona ukuze bangabi sisisulu sokwaziwa nguye nabanina oza kuthi afunde iingxelo zalo msebenzi. Esikunqwenelayo kukufumana ulwazi oluza kusixelela ukuba kwenzeka ntoni kule ngingqi enihlala kuyo, ingelulo ulwazi olungqamene nomntu lowo uza kube ephendula.

3) In our research, we are seeking to understand the factors that affect people's level of food security. People may be seen as having food security when the "at all times have access to sufficient, safe ,nutritious food to maintain a healthy and active life" (World Food Summit of 1996). We want to understand what places people at risk in relation to having such food security , and whether this has changed over time. Could this be related to changes in the weather and climate patterns over time, and how do we think that is likely to develop in the future?

3) Kolu phando lwethu, sifuna ukuqonda malunga nezinto ezichaphazela yaye zibe ngumqobo kwindlela abaphila ngayo ngakumbi kwicala lokutya okukhuselekileyo okungenaziphako. Abantu bangakhangeleka befumana ukutya okukhuselekileyo okungenaziphako, ingakumbi xa kuphuma imipoposho echaza ukuba "Yidla yaye fumana ukutya okwaneleyo, okukhuselekileyo ngokwasempilweni, okunesondlo, okunenkxaso kubomi nempilo engcono" (World Summit of 1996). Sifuna ukuqonda ukuba yintoni ebeka abantu emngciphekweni xa kufikelela ekubeni bafumane ukutya okukhuselekileyo ngokwasempilweni, kananjalo sifuna ukuqonda ukuba, ngaba oku kuye kwatshintsha ekuhambeni kwexesha? Ngaba oku kungqamene nokutshintsha kweemozulu ngokubanzi, yaye sicinga ukuba oku kuza kuhamba kuye kuma phi kwixesha elizayo?

4) We would be very grateful if you would be prepared to help us by answering this questionnaire with us. We will do the writing, so that you can relax and think about what you want to say. Please take your time-there is no pressure to answer immediately. Please ask the interviewer to explain anything you are not clear about. It should not take us more than 45 minutes to go through the questionnaire together. Thank you very much for your willingness to participate.

4) Singavuya kakhulu ukuba ungaba nomdla wokusinceda ngokuthi uphendule le mibuzo iqulunqiweyo kunye nathi. Siza kubhala ngokwethu, ukuze ukwazi ukucinga malunga noko ofuna ukukuthetha. Nceda uthathe ixesha lakho, asingxamelanga ukuba uphendule msinyane. Ukuba akuqondi, cela lowo uza kube ebuza imibuzo ukuba akucacisele. Oku akuyi kuthatha ngaphezulu kwemizuzu engama-45. Siyabulela kakhulu ngomdla wakho wokuthatha inxaxheba kulo mcimbi.

Enumerator's name/ Igama lalowo obalayo/obuza imibuzo	
Date/ Umhla	
Village Ilali	
Name of respondent/Igama lalowo uphendulayo	
Questionnaire reference number/ Inombolo yencwadana yoqulunqo mibuzo	
GPS Coordinates/Isalathisi se GPS	1)North/ePhuma 2)South/eNthsona

QUESTIONNAIRE IDENTIFICATION

DEMOGRAPHIC INFORMATION A. IINKCUKACHA EZIPHELELEYO ZOMNTU NGAMNYE A1.Household composition and characteristics

A1. Umzi ngamnye kwakunye neempawu zawo

Name of Head of Household/Igama lentloko yekhaya:

	Name Igama	Relation to head Ngokuphathe lene nentloko yekhaya	Age DoB Umhla wokuza lwa	Gender Isini	Marital st. Utshatile ?	Education Imfundo	Employ Status Uyasebenza?	Occupation Yintoni umsebenzi wakho?	Place of Employ Indawo yengqesho?	Where now Uphi ngoku?	When Last home Ugqibele nini akhaya?
A1.1											скпауа:
A1.2											
A1.3											
A1.4											
A1.5											
A1.6											
A1.7											
A1.8											
A1.9											

B. LAND AND AGRICULTURE/ UMHLABA NEZOLIMO

B1	Does this household have its own residential site? Yes = $1 \text{ No} = 2$	
B1	Ngaba le ndlu ikwisiza sayo ? Ewe = 1 Hayi = 2	
B2	How did you obtain this site? Did you buy it, or in	nerit it, or lease it?
B2	Uyifumeme njani indlela yokusebenzisa le siza? W le siza njengelifa? Okanye uyaxesha le siza?	'a thenga le siza.? Okanye, wafumana
 B3	What is the size of your residential site?	
B3	Ungakanani umlinganiselo wesiza sakho?	
	Pace out the size of the site (Also accept local size estimation)	Paces by Paces
(Yaml	kela uqikelelo lomlinganiselo wale ndawo)	
 B4	Do you have a garden on your residential site?	
	(Yes = 1 No = 2)	
B4	Unesitiya kwisiza sakho? (Ewe = 1 Hayi = 2)	
B5	What is its size?	
В5	Uthini umlinganiselo waso isitiya?	
	Pace out the size of the garden (also accept local size)	Paces by Paces
	(Yamkela uqikelelo lomlinganiselo wale ndawo)	
 Вб	Do you grow crops or vegetables in your garden?	
	(Yes = 1 No = 2)	
B6	Ukhulisa izityalo okanye imifuno kwisitiya sakho? (Ewe = 1 Hayi = 2)	
B7	What crops have you grown in your garden in the l	ast year (2011)?
B7	Walima ntoni kule gadi yakho lo nyaka opheliley	o (2011)?

B8 Do you have access to an arable field (on your site)? Yes = 1 No = 2. **B**8 Unavo intsimi apha kwa siza sakho? Ewe = 1 Hayi = 2 **B9** What is the size of the field? **B9** Ungakanani umlinganiselo le ntsimi? Pace out the size of the fieldPaces byPaces (also accept local size estimation) (sebenzisa uqikelelo olusetyenziswayo apha ekuhlaleni) Did you cultivate all or only part of this field last year? B10 All = 1; Part = 2; None = 3Uwalime yonke intsimi yakho kunyaka ophelileyo okanye ulime iindawo ezithile? B10 Yonke = 1; Iindawo ezithile = 2; Khange ndilime = 3 B 11 If Part or None, why was this the case? Ukuba ulime iindawo ezithile okanye khange ulime, besiyintoni isizathu? B 11 How did you obtain access to your field? B 12 B12 Uyifumene njani indlela yokusebenzisa la masimi?

B13	What crops did you grow on your field in 2011?				
B13	Walima ntoni kule ntsimi yakho lo nyaka opheliliyo				
B14	Is there anyone in your household with training in agriculture?				
B14	Ukhona umntu apha ekhayeni lakho oqeqeshelwe ezolimo? Ewe = 1 Hayi = 2.				
	Yes = 1 No = 2.				
B15	Do you have access to another field here in Hamburg? Please explain.				
B 15	Ungasebenzisa intsimi enye apah eHamburg? Ucacise. Ewe = 1 Hayi = 2.				
	Y es = 1 No = 2.				
B16	Do you have any fruit trees on your land?				
B16	Unayo imithi yeziqhamo kumhlaba wakho? Ewe = 1 Hayi = 2. Ves = 1 No = 2				
B17	How many trees do you have?				
B17	Mingaphi imithi onayo?				
B18	What kinds of trees do you have?				
B18	Loluphi uhlobo lwemithi onavo?				
	F #======= ==== , = =				
B 19	Do you preserve vegetables and fruit? Yes = $1 \text{ No} = 2$				
B 19	Uyayigcina imifuno neziqhamo? Ewe =1 Hayi = 2				
B 20	If yes, what methods of preservation do you use? (Specify)				
B 20	Ukuba uyayigcina, usebenzisa eziphi iindlela zokuyigcina? (Cacisa)				

C) LAND AND LIVESTOCK/UMHLABA NEZEMFUYO

- C1 Which of the following livestock do you keep? Please indicate numbers involved.
- C1 Kule mifuyo ilandelayo? Ngeyiphi oyifuyileyo?

TYPE Uhlobo	Number owned /Inani lemfuyo yakho
Chickens/	
Iinkuku	
Pigs/ Iihagu	
Sheep/ Iigusha	
Goats/ libhokwe	
Cattle/Iinkomo	

- C2 Are there any challenges hindering livestock production?
- C2 Ikhona imingeni ephazamisa imveliso kwakunye nemfuyo?

D) SOURCES OF CASH INCOME/IINDAWO APHO IMALI IVELA KHONA

Source Indawo evela kuyo imali	When Last Received ? Ifunyenwe nini?	Amount? Ibiyimalini?	When Before That? Ubuyifumene nini phambi koku?	Amount? Ibiyimalini?
Remittances (Cash)				
Imali oyithunyelwayo				
Remittances (Kind)				
Uhlobo lwezinto				
ozithunyelelwayo				
Child support from				
parents outside household				
Inkxaso- mali evela				
kubazali xa ungahlali				
nabo				

Salaries & Wages		
Umvuzo		
Overtime		
Imali yexesha		
elongezelelweyo		
Bonuses		
Imali yombulelo		
Pensions		
Imali yenkam-nkam		
Disability grant		
Isibonelelo		
sokukhubazeka		
Child support grant		
Imali yesibonelelo		
sabantwana		
Other grants		
Ezinye izibonelelo		
Other income – e.g.		
payment of accounts		
Enye imali engenayo –		
umzekelo: ukubhatalelwa		
iiakhawunti		

OTHER SOURCES OF INCOME/Ezinye iindlela zokufumana imali

Source Apho ivela khona	When Last Received ? Ugqibele nini ukuyifumana?	Amount? Yimalini?	When Before That? Ubugqibele nini ukuyifumana phambi koku?	Amount? Yimalini?
Hawking Ukuthengisa				
esitalatweni				
Spaza shop				
Ukuthengisa evenkileni				
Other trade				
Olunye uhlobo				
lokuthengisa				
Agriculture: Crops				
Ezolimo/nemfuyo:				
Ukulima izityalo				
Agriculture: Animals				
Ezolimo/nemfuyo:				
Imfuyo				
Casual Jobs				

Imisebenzi		
engesosigxina		
Other sources of		
income/Ezinye iindlela		
zokufumana imali		

E) EXPENDITURE/ INDLELA YOKUSEBENZISA IMALI

- E1) Starting with the most expensive items, what are the main sources of expenditure in your household?
- E1) Qala ngeyexabiso eliphezulu kakhulu, zeziphi ezona zinto zibiza ixabiso eliphakamileyo ekhayeni lakho?

······

. . . .

F) LOCAL SOURCES OF FOOD /Iindawo zokufumana ukutya apha ekuhlaleni

- F1) What crops did you actually eat from your field and garden in 2011??
- F1) Sesiphi isivuno esisuka emasimini akho oye wasitya e 2011?

.....

. . . .

F2) Did your animals provide you with any food or money last year (2011)? Please explain.

F2) Ngaba imfuyo yakho iye yakwenzela imali okanye yakunika ukutya kulo nyaka uphelileyo? Ucacise.

F3) Did you obtain any food from fishing last year? (2011) Please explain.
F3) Ukhe wafumana ukutya ekulobeni kwakho kulo nyaka uphelileyo? Ucacise.

• • • •

- F4) What kind of fish did you eat last year?
- F4) Hlobo luni lweentlanzi oye walutya kulo nyaka uphelileyo?

....

F5) Did you obtain any money from fishing last Year? How much?

F5) Ukhe wafumana imali ekulobeni kwakho kulo nyaka nakulo uphelileyo? Ufumene malini?

Type (uhlobo)	Quantity (inani)	Value (ixabiso)

<u>G) PATTERNS OF FOOD CONSUMPTION and FOOD SECURITY/ IINDLELA</u> ZOKUTYA KWAKUNYE NOKHUSELEKO EKUTYENI

- G1) What are the main kinds of food that you/your family eat?
- G1) Wena nosapho lwakho nitya oluphi uhlobo lokutya?

.....

.....

G2) Which of these do you produce yourself?

G2) Kolu hlobo lokutya kokuphi okuyimveliso yakho?

.....

- G3) Which of these do you purchase?
- G3) Kokuphi ukutya okuthengayo?

....

- G4) Do you get any of your food anywhere else? e.g. from the river or the sea or the forest? Please explain.
- G4) Ufumana ukutya emlanjeni okanye elwandle, okanye ehlatini? Ucacise.

..... Which kinds of food do you eat most often? G5) G5) Kokuphi ukutya okutya kakhulu, phantse yonke imihla? G6) Does your household have enough food to eat? Yes=1 No=2 If NOT, please could you tell us in what ways you do not have enough food to eat? E.g. is it the amount of food, or the kind of food that is not enough, or that sometimes there is food and sometimes there is not? G6) Ngaba umzi wakho unako ngokwaneleyo ukutya? Ewe = 1 Hayi = 2Ukuba akunjalo, nceda usixelele ukuba akwanelanga ngayiphi indlela? Umzekelo: Ngaba ukutya kuncinci, okanye uhlobo oluthile lokutya alonelanga, okanye ngamanye amaxesha kukhona ukutya ze ngamanye kungabikho? G7) Please specify the times when you experience food shortages, e.g. 1)all the time 2)before month end 3)certain seasons 4) other timesspecify G7) Nceda uchaze amaxesha apho kuye kungabikho ngokwaneleyo ukutya. Umzekelo: 1) Ngalo lonke ixesha 2) phambi kokuba Inyanga iphele 3) ngamaxesha athile apha enyakeni 4) Ngamanye amaxesha - cacisa

G8)	How many times a day does your household eat meals? 1)one 2) two 3) three 4) it varies				
G8)	Usapho lwakho lutya kangaphi ngemini 1) kanye 2) kabini 3) katathu 4) kungxomekekile				
G9)	If your household has less than three meals a day, or it varies, why is this the case?				
G9) ngosi	Ukuba emzini wakho kutyiwa ngaphantsi kunesitathui ngosuku okanye nakangaphina uku, yenziwa yintoni loo nto?				
 <u>H) A</u>	 CCESS TO WATER/ UKUFUMANEKA KWAMANZI				
H1)	Where do you get water for drinking?				
H1)	Niwafumana phi amanzi okusela?				
H2)	Is the water clean enough to drink? If not, what is the problem?				
H2)	Amanzi acoceke ngokwaneleyo ukulungiselela ukusela? Ukuba akunjalo, yintoni ingxaki?				
H3) certa	Is the supply of water for drinking reliable? If not, please explain. Is it more reliable at in times of the year?				
H3) Ngab	Ngaba ithembakele indawo eniwafumana kuyo amanzi? Ukuba akunjalo, nceda ucacise. wa le ndawo niwafumana kuyo amanzi ithembakele ngamaxesha athile onyaka?				
 H4)	Where do you store water?				
H4)	Niwagcina phi amanzi?				

..... . . . Where do you get water for other purposes? E.g. washing H5) Niwafumana phi amanzi okwenza ezinye izinto ezifana nokuhlamba? H5) H6) Where do you get water for your livestock? Uwafumana phi amanzi okuseza imfuyo yakho? H6) H7) Where do you get water for your a) garden b) fields Uwafumana phi amanzi okunkcenckeshela a) isitiya b) amasimi akho? H7) Have you noticed any changes in the availability, reliability, cleanliness of water over the H8) last number of years? If so, what changes have you noticed? Ukhe waqaphela utshintsho kwindlela afumaneka ngayo, indlela asoloko efumaneka H8) ngayo kwakunye nokucoceka kwawo amanzi? Ukuba kunjalo loluphi utshintsho oluqapheleyo? H9) Why do you think these changes have happened? Ucinga ukuba olu tshintsho lwenziwa yintoni? H9)
I<u>) ENVIRONMENT AND CLIMATE: PERCEPTIONS OF CHANGE</u> I) FUMMANDLA KWAKUNYE NEMOZULU: OKURHANELWAYO MALUNGA NOTSHINTSHO

I. 1) Over the last number of years, have you noticed any important changes in the environment, like i) the vegetation or ii) the wild animals, or iii) the fish, or iv) the climate/weather ?

I.1) kwiminyaka eliqela edlulileyo, ukhe waqaphela utshintsho kummandla, ngokuphathelene i) notyani, ii) amarhamncwa,okanye iii) iintlanzi okanye iv) imozulu?

I. 2) What kinds of changes have you noticed?
I. 2) Uqaphela tshintsho luni?
I.3) Why do you think we are seeing these changes?
I.3) Ucinga ukuba olu tshintsho lwenziwa yintoni?

I.4) Have some plants, fishes, animals become scarcer or more abundant over the last number of years? If so, which ones? Why do you think this has happened?

I.4) Ngaba izityalo, iintlanzi, kwakunye nezilwanyana ziye zanqaba okanye zanda kule minyaka idlulileyo? Ukuba kunjalo zeziphi ezo zinqabileyo? Ucinga ukuba oku kwenziwa yintoni?

6.1.3. Hamburg Community Meeting and Report Back Session

This workshop was a feedback to communities on all aspects of the START Programme, but with an emphasis on the questionnaire findings as more community members had participated in this aspect of the project than in any other.

Venue: Hamburg Community Hall

Date: 15 May 2012

Time: 1800 (early evening was chosen so that working people could attend).

Participants: Aspire, Community members, Keiskamma Trust, NMMU, Rhodes University, SST, and UFH.

Programme

- Dr Ribbink to welcome people, introduce the evening and encourage participation and indicate that he was representing the marine and estuarine team members.
- Prof de Wet to report on the questionnaire
- Dr Zhou to report on the agricultural findings
- Open discussion chaired by Dr Ribbink
- Tea and coffee

Minutes of the Meeting

Introduction – Tony Ribbink

After welcoming everyone, Dr. Ribbink described the project and purpose of the meeting. He explained the focus on food security, climate change and sustainability. He indicated that while the future is uncertain with regards to climate change there is a need for people to work together to ensure sustainability and improved livelihoods. He told the attendees that the evenings discussion was to revolve around the research that had been conducted in the area over the last few months by the START team and that Chris de Wet from Rhodes University would talk about the questionnaire survey that as carried out within the Hamburg community and Dr. Leo Zhou, from University of Fort Hare, would talk about the findings of the agricultural survey.

Dr Ribbink encouraged participation and invited people to ask questions at any time, not just at the end of a presentation.

Prof Chris De Wet – Anthropology Department, Rhodes University

Prof Chris De Wet highlighted that the researchers are trying to understand how the community makes a living in Hamburg and that they want to know three things specifically:

1. How the Hamburg community interacts with the environment and how the environment influences how the community makes a living;

- 2. What the problems are that the community finds in trying to make a living in Hamburg; and
- 3. What the good things are that can be taken further and improved. What the resources are in terms of skills, tools and environmental resources that can be built upon to improve the living of Hamburg residents.

Prof De Wet indicated that the research team takes their findings, after discussing them with the community, to the Eastern Cape government. He indicated that the process is ongoing but emphasized that the research team cannot promise jobs coming into Hamburg as a result of this process. He emphasized that the team is not government or business and therefore cannot help in this way but *does* want to contribute knowledge and understanding and can direct people in the community to the right people who they can talk to. He made it clear that it is important for the *community* to take the knowledge that the research team provides forward to improve their own lives, and that to achieve this everybody needs to work together.

Findings of the Questionnaire Survey

1. Many people do not cultivate their fields/ gardens and when the fields/ gardens are cultivated the yields are low and not much is produced.

It was understood that some people do not have the resources to cultivate such as fertilizer, seeds, tractors, water etc but it was pointed out that in spite of this some people still do manage to cultivate. It was pointed out that although the government may fail to provide support, some people still manage to plant crops and cultivate. The community was asked whether it is only the government's fault that people are poor, or if we, as members of the community, can do things better. In this regard, the people of the community were challenged to think about they can do better. "There are some things that government must do but there are some things that we can do."

- 2. Livestock production is low and very few people sell their livestock.
- 3. For some people fishing is important for their livelihood.

It was asked if there was something that the community can do to make fishing and fishing yields better for everyone. "Are there enough fish/mussels for everyone or will they run out?" It was asked how the community should plan to ensure that there is enough fish for the future.

4. Changes in the environment, in plants, in animals and in fish have been noticed in the area.

It was asked why the community thinks this is happening, what the community can do about it. It was highlighted that the community needs to think about what it will be like for their grandchildren when they grow up and it was again asked how the community could plan for the future.

5. In January 2012 during the survey, people said that their cattle were dying because of the drought.

It was pointed out that droughts also happened in the past and that if people were to ask their elders they would tell you that the droughts in the 1980s were bad, and that the droughts in the 1960s were even worse. It was asked if the rainfall has really changed and if it has, what can we, as the community, do about it?

6. Many said that it is difficult with the government pension and needing to get transport to Peddie in order to go to the bank to draw the pension.

As a result of this, people end up spending much of their pension on transport to and from Peddie rather than on the more needful things. Thus, the lack of services in Hamburg was highlighted as a problem. It was asked what we, as the community, could do about the lack of services and how we could go about getting those services in Peddie.

Dr Leo Zhou – Fort Hare University – Agricultural Component

Dr Leo stated that it is desired that this area should produce more food for its residents and that in order to do that the reasons for current low yields need to be determined. The Agricultural Component of the START project collected soil samples from 18 areas and conducted soil testing to determine chemical content and structure of the soils, specifically looking at nitrogen, potassium and phosphorous levels. If soils lack these minerals then fertilizer needs to be added.

It was noted that the main field crop in Hamburg was maize and the main garden crop was cabbage.

Soil samples were sent for laboratory analysis. The results found that the soils in Hamburg vary in nutrient composition but that none of them are too acid or alkaline which means that they are good for crop production and that there is no need to add lime to the soils before planting. This reduces the costs of crop production. It was highlighted that soils do vary from household to household and that recommendations for each household exist which can be interpreted for community members by an Extension Officer.

General Question and Discussion Session

A general discussion session followed were concerns, comments and questions were raised and discussed amongst those present at the meeting.

• The first question dealt with crop rotation and asked whether this is a viable solution to increase yields and production in Hamburg. It was highlighted that each year people plough, plant and repeat the next year and it was asked if this affects production.

It was answered that mono-cropping is bad and suggested that crops are interchanged. It was highlighted that planting different crops can restore nutrients to the soil, for example, planting soya beans in between will replace nitrogen in the soil.

• It was asked whether the researchers took into account that soils in Hamburg vary from place to place and that this affects the successfulness of growing certain types of crops.

It was stated that it was taken into account that soils vary and that the results of the tests confirmed this. It was pointed out that before people plant they must talk to the extension officers as they would be able to tell people what to plant.

• It was pointed out that although there are extension officers in Peddie, they will not come out to Hamburg to help the community and stated that now there are results to the tests

that the government needs to send agricultural officers to the community. It was highlighted that they used to come in the past and were very helpful but that they no longer come to the community.

It was also highlighted that if people go to the extension officers, they tell the people they will come, but they never do. It was responded that in a situation where the government officials cannot be relied upon that the people need to plan their own futures. It was the asked what we, as the community, could do to work on the results that we have because if we can't rely on the government then we have to rely on ourselves. "So what can we do?"

It was asked that if we have to make a plan without government we need to think about how we can make a plan to improve our futures without the help of government. "How do we plan as if government isn't going to help?" It was stated that if we do this then we would be able to think clearly about how we, as the community, are going to move forward.

• The next community member thanked the researchers for doing the research and stated that the children of the community might not see agriculture as an attractive future but asked if there was a possibility of sending children to some sort of agricultural school for training after which they could come back and help the community.

It was suggested that as part of an environmental education program a short course was run over a weekend in Hamburg to train and teach both adults and children more successful ways to manage their land.

• It was pointed out that government won't come to individuals but perhaps they would help co-operatives.

It was stated that as government is the official custodian of all people and natural resources, you can never leave government out of the equation. The best scenario is not to leave it all up to government but rather to get the government, businesses, academia, non-profit organisations and communities to all work together. It was pointed out that in order to get government to help communities, they first need to show that the communities are worthy of being helped. It was then asked what we as the community of Hamburg can do to make the government want to help Hamburg.

• A very limiting problem was highlighted and it was the problem of water. It was pointed out that old people in the communities are really interested in cultivating their land and people want to grow vegetables but that water is lacking and that the people NEED the government to help with water provision and that as much as it might be up to the community, the government is always needed to help with water provision.

It was responded that we can't just say "government help us" because clearly this doesn't work and that first the community needs to do something about it and then the results of that can be taken to the government to show them what has been done and to encourage them to help the community. An example was given of an old system where for every R1 that the community provided, the government would provide R1 for some project. It was questioned whether the community could do the same for wind pumps and dams, or for water provision.

• It was questioned whether all the different organisations and programmes in Hamburg were working together and it was pointed out that these organisations need to be made aware of one another and they need to work together so that they can help each other and prevent overlap.

It was pointed out that a coordination committee would be needed in Hamburg to make this happen. This committee could make sure they are aware of all the programmes happening in Hamburg and could help to make sure that the different programmes were aware of each other.

Conclusions

In concluding, it was asked what sorts of things need to be done that researchers can possibly help with and what sorts of things would the Hamburg community like. An important concluding remark was made by one of the community members that a Forum is needed and should be set up within the community. This forum could be used to drive the future of the community. It was pointed out that although the researchers and other projects are willing to help, they cannot guarantee any change. It was also commented that although the community might try to be environmentally friendly, ultimately they need to be able to live and to save money. The idea of attracting infrastructure into Hamburg was discussed and the improvement to people's lives that even something as simple as a bank would make was noted. It was noted that if banks were brought into Hamburg and if people did not have to travel to get their pensions then money would start to circulate within Hamburg instead of simply spending it in Peddie. A forum would be instrumental in starting this process off.

6.2. Funding Sources

START	USD 45,000 represents and actual cost, all the remaining costs are in-kind and as		
such they are estimates.			
ННСТ	USD 5,500 in kind in terms of assisting with filming, production and editing		
RAVAC	USD 5,000 in kind by meeting most of the agricultural costs.		
NMMU	USD 2,000 in kind by providing scientific and field services below cost		
RU	USD 1,500 in kind by hosting meetings, including catering and making facilities		
	available at no cost		
SST	USD 6,200 in kind by meeting all administration and financial costs at no charge.		

6.3. Acronyms and abbreviations

AEDA	Amathole Economic Development Agency.
AEU	Adult Equivalent Units
AIDS	Auto Immune Deficiency Syndrome
CAADP	Comprehensive African Agricultural Development Program
DAFF	Department Agriculture Forestry and Fisheries
DEAT	Department of Environmental Affairs and Tourism
DIN	Dissolved inorganic nitrogen

DIP	dissolved inorganic phosphorous
DoA	Department of Agriculture
DOC	Dissolved organic carbon
DWAF	Department of Water and Forests
EMB	Eosin Methylene-blue Lactose Sucrose Agar
EPA	Environmental Protection Agency
EPWP	Expanded Public Works Program
FAO	Food and Agriculture Organization
GCMs	General Circulation Models
GIS	Geographic Information System
GPS	Geographic Positioning System
HDI	Human Development Index (economics chapter)
HIV	Human Immuno Virus
IFSS	Integrated Food Security Strategy
IPCC	Intergovernmental Panel on Climate Change
KZN	KwaZulu-Natal
LSCC	Local Subsistence Co-management Committee
MAR	Mean Annual Runoff
MCM	Marine and Coastal Management
MDGs	Millennium Development Goals.
MLRA	Marine Living Resources Act
MSE	Mariculture Suitability Evaluation
NGO	Non-Government Organization
NOAA	National Oceanic & Atmospheric Administration
NRF	National Research Foundation of South Africa
NMMU	Nelson Mandela Metropolitan University
POC	Particulate organic carbon
POEs	Permanently open estuaries
PSC	Project Steering Committee,
PGDP	Provincial Growth and Development Plan
RAVAC	Risk and Vulnerability Atlas Centre
RDP	Reconstruction & Development Program
RU	Rhodes University
SAIAB	South African Institute for Aquatic Biodiversity
SCA	Seaweed Concession Area
SRI	Social Responsibility Impact

SEACC	South East African Climate Consortium
SEACC SF	South East African Climate Consortium Student Forum
SRP	Soluble Reactive Phosphorus
SRL	Sustainable Rural Livelihoods
SST	Sustainable Seas Trust
STFG	Subsistence Fisheries Task Group
START	Global change SysTem for Analysis, Research & Training
TOC	Total Organic Carbon
TSS	Total suspended solids
UFH	University of Fort Hare
UNEP	United Nations Environment Program
USEPA	United States Environmental Protection Agency
WHO	World Health Organization
WMO	World Meteorological Organization
WSU	Walter Sisulu University

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