

Community-level rapid vulnerability assessment for small-scale fisheries in Hondeklip Bay, Northern Cape, South Africa



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1. Introduction

Climate change is affecting many fishing communities along the west and south coast of Southern Africa, in an area known as the Benguela Current Large Marine Ecosystem (BCLME). This poses a threat to the marine resources that thousands of people depend on for their livelihoods. Changing weather patterns have made fishing more difficult, leading to increased conflict among fishers. Although small-scale fishers have contributed little to the causes of climate change, they will be among the first to feel its impacts. This research aims to understand these impacts better so that fishers can adapt to climate change in the future.

Direct adaptation to climate change is difficult because its impacts vary from place to place. The focus must therefore be on building adaptive capacity by improving the health of fish stocks, local ecosystems, and the wellbeing and resilience of fishing communities.

This case study reports on the community-level vulnerability assessment and adaptation planning process undertaken in 2018 in the traditional fishing town of Hondeklip Bay in the Kamiesberg Municipality of the Northern Cape.

2. Overview of Hondeklip Bay

Hondeklip Bay is a coastal town in the Namakwa district of the Northern Cape province of South Africa, approximately 95km southwest of the district capital Springbok. Hondeklip Bay was originally used as a harbour to export copper ore from the mines around Springbok but was later surpassed by Port Nolloth, which had a safer harbour as well as a railway line (www.hondeklip.com).

In 1925, a fish factory was established, and the community developed around the commercial fishing industry which was highly productive from the mid-1950s until the 1980s. At least two generations of fishermen were employed primarily as crew on the vessels and women were the core staff complement in the factory, processing West Coast rock lobster and a variety of line-fish species.

In the early 1990s, as stocks declined, the fishing companies operating in Hondeklip Bay brought in contract workers, predominantly from the Eastern Cape, as cheap labour in place of the local fishermen on the vessels. In 1992, as a protest action against this practice, the women who worked in the factory went on strike. Later that same year the last factory in Hondeklip Bay closed and many of the workers lost their jobs. Despite the onset of diamond mining from the mid-1970s until the early 2000s, Hondeklip Bay has had very little local economic development and the majority of the residents are unemployed.



As a relatively small town, the socio-economic divisions along racial lines clear in other coastal towns in South Africa are absent in Hondeklip Bay. The town has electricity, basic housing, sanitation services and a recently built health care facility, but there are no food stores or banks and the nearest fuel station is 26km away (www.kamiesberg.gov.za). The population of Hondeklip Bay is just over 1,000 residents. Of these, approximately 35 people are currently involved in the fishing sector as small-scale fishers. Twenty-eight of the fishers have been successful in their registration with the Department of Environment, Forestry and Fisheries (DEFF) as part of the new Small-scale Fisheries (SSF) Policy. These 28 fishers form one of the first co-operatives registered under the SSF policy receiving rights to a 'basket of marine resources' from the fisheries authority.

Small-scale fishers in Hondeklip Bay are involved in line-fishing and the harvesting of rock lobster. Some community members are recreational fishers catching similar resources to the small-scale fishers, but little to no collection of intertidal resources or post-harvest processing occurs in this community.

There were 20 participants at the workshop in December 2018, including members of the co-operative, retired fishermen, interested community members (mainly women) and the staff who manage the vmsTracker Safety at Sea system.

3. Methodology

A team of facilitators from UCT and ABALOBI utilized an eight-step participatory method called the Rapid Vulnerability Assessment (RVA) (see Figure 1).

Each step represents a building block in the vulnerability assessment and capacity building process and lays the foundation for adaptation planning and future activities. More specifically, the RVA is used to assess environmental and climate-related stressors and changes that impact community livelihoods and identify strategies that may be used to cope with and adapt to these changes and stressors. A two-day RVA workshop was held with small-scale fishers and interested community members from Hondeklip Bay to work through the RVA process. The workshop also aimed to help the fisher community to identify the socio- economic, governance and environmental stressors that impact their livelihoods, with a particular focus on environmental and climate-related stressors and changes.

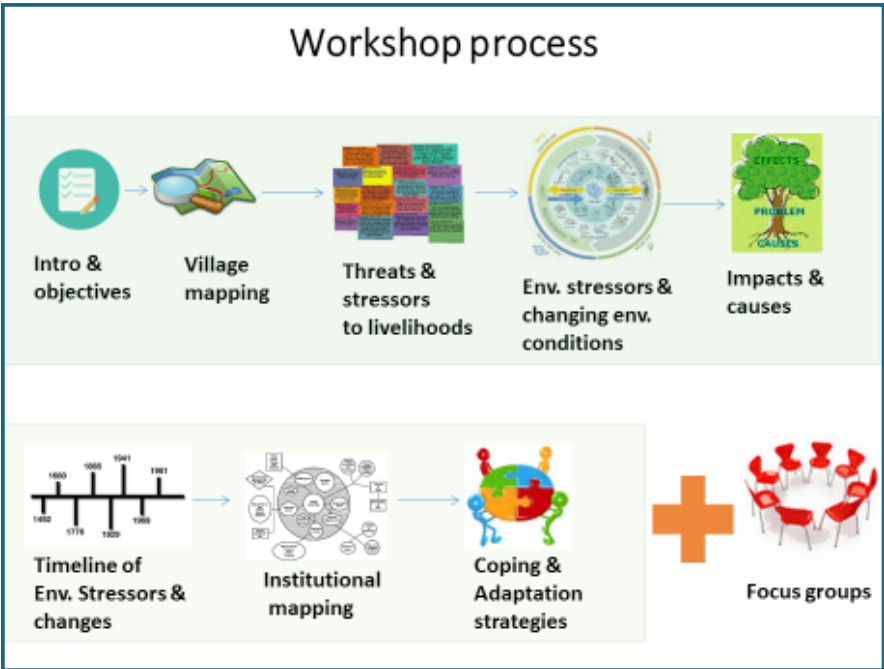


Figure 1: RVA Process

Step 1: Village mapping

The first exercise focuses on preparing a village map. Participants are divided into small groups and given a blank sheet of large paper, on which they are asked to draw a map of their community, highlighting key assets, resources, infrastructure and facilities important to their livelihoods. Each small group then reports back to the plenary. This allows other participants to validate or interrogate the map and gives the facilitation team an overview of the socio-ecological system and its main characteristics as perceived by the participants.

Step 2 and 3: Identification and ranking of key threats/stressors

During exercise 2 each individual is given five cards and asked to identify threats or stressors linked to their livelihood in terms of three main categories, namely environment, socio-economic and management/governance. Participants are not required to indicate stressors for all three categories, but rather to identify the top five stressors overall. Each stressor is summarized in a few words on a card and then posted on flip-chart paper under the relevant category. During a break the facilitator organizes the cards, removing duplicate stressors and grouping similar ones together. Participants are asked to review the organization of stressors, seek clarification on any stressors, and add new stressors that may have been overlooked. In step 3 the stressors are then ranked by the participants which facilitates the prioritization of issues for further discussion and, through colour coding according to gender, enables all participants to see which stressors are of particular concern to men and women respectively.

Step 4: Identification of key events and changes linked to top stressors

The six highest-ranked issues (two from each category) are then explored further in Exercise 4. Participants are divided into groups and asked to identify key changes observed or events experienced related to a high-ranked stressor/threat. Participants are asked to discuss key events and changes that they have experienced or perceived and how these changes may be linked to stressors identified.



Step 5: Mapping of institutional dimensions and relationships

In exercise 5, participants are asked to identify the main governance actors and institutions (government agencies, NGOs, research institutions etc.) relevant to livelihoods and the fisheries sector in particular, and to map the relationships among these actors and institutions from the perspective of the fishers.

Step 6: Identification of impacts associated with changing environmental conditions attributed to climate change

On the second day, the focus is on the environmental stressors and environmental changes observed or perceived by fishers over time and how these have impacted livelihoods. In plenary, the facilitator lists the key environmental stressors that have

emerged from day 1, and begins to explore direct and indirect impacts, and how these have contributed to local vulnerabilities. Having explored impacts, participants then consider possible causes of these stressors and changes. This exercise allows the gathering of more in-depth information on the participants' perceptions or experiences of changing environmental conditions and how these changes affect their lives and livelihoods. These discussions also encourage consideration of how various impacts on livelihoods are linked and how a particular change in the environment can produce multiple impacts that may affect individuals, households or the community at large.

Step 7 and 8: Identification of current coping mechanisms, adaptation strategies and support required

Exercise 7 aims to identify and assess the nature and effectiveness of current coping mechanisms and adaptation strategies in relation to the main environmental stressors associated with climate change. In plenary, participants identify what coping mechanisms and strategies are helping them address vulnerabilities and whether the broader community has adopted these strategies. Participants are then asked to identify other strategies or actions that they believe could assist them adapt to changes identified. The purpose of the final exercise 8, is to identify existing and additional adaptation strategies that can reduce vulnerability and identify support required in order to develop and implement these strategies. Participants are also asked to identify government agencies, NGOs and other stakeholders that would provide this support. Consideration of what they can do as a community to develop capacity to better respond to changes and challenges, is key to this discussion. Emphasis is also placed on identifying new or additional partnerships with local, provincial and national agencies mandated to support fisher communities.

4. Outcomes of the Rapid Vulnerability Assessment

4.1. Environmental, socio-economic and governance stressors impacting livelihoods of small-scale fishers in Hondeklip Bay

High levels of unemployment and poverty leading to increased crime, and high levels of drug and alcohol abuse particularly amongst the youth, the latter inevitably linked to the former, were among the main socio-economic stressors identified by the participants. In terms of management and governance stressors, fishers claim that they get no assistance from government, there is poor communication, delays in issuing permits and they have no voice against the mining activities and the continued encroachment of their fishing areas which affect their livelihoods.

Several environmental stressors were identified, and fishers highlighted these stressors together with changes in environmental conditions, that affected their livelihood. In particular, they highlighted reduced diversity in line-fish species and overall reduction in their catches attributing it to the negative impact inshore dumping and beach mining has had on their fishing area. Fishers noted that Hondeklip Bay was impacted by a severe storm in the early 2000s which destroyed their jetty and flooded some homes in the town. They also highlighted changes in the seasons and weather patterns including unpredictable wind and fog conditions all of which they attributed to climate change. The environmental damage caused by mining activities and plastic pollution both on land and at sea was another major concern for this community (see Table 1 and 2).

Table 1: Socio-economic, governance/management and environmental stressors

Environmental	Socio-economic	Governance/Management
• Dumping sites below standard (health risk) • Plastic pollution at sea and on the coast • No snoek in 2018 season • Climate and seasons changing • Mining has a negative impact on the environment and no rehabilitation is happening • Inshore dumping and beach mining is impacting on lobster and fish habitats	• Limited access to fuel • Shops in the village are expensive and poorly stocked • Youth substance abuse • High cost of transport to clinics • Poor infrastructure e.g. roads in bad condition • High school is far from town and expensive • High levels of unemployment leading to crime • Social grants not enough to afford healthy food like vegetables and other nutritious items • Neglect of children • No access to markets • Factories closing led to loss of jobs and income • Not enough boats and those that are there are not maintained • Cellular and internet network poor • Lack of leisure activities aimed at youths	• General lack of government support - lack of basic services, public transport • Diminishing fishing area as a result of mining activities* • Communication with DEFF is poor • Delays in permitting (no fishing for lobster last season) • No clarity on lobster transport and holding permit needs • Lack of cooling infrastructure especially for lobster holding • Unclear ownership of boats (NC Department of Agriculture donated) • Un-surveyed boats (determining who pays) • Poor public participation process regarding mining activity • No recourse for complaining about mining • No data capturing on fish stocks • Access to bait limited • No lifeguards/safety signs at the beach • No toilets at beach/harbour

*Accessing restricted areas (i.e. mining areas) is considered poaching of resources.

4.2. Impacts associated with environmental stressors and changes and the possible underlying causes

The workshop provided an opportunity for fishers to reflect on the impacts that they have experienced due to environmental stressors and changes in environmental conditions. The most significant concern for the fishers was the unpredictable and changing environmental conditions (changing seasons, unpredictable weather patterns particularly fog and wind, etc.) which led to less days at sea which negatively impacted food security and income and exacerbated their poverty.

Fishers are often put in danger by the onset of sudden fog while out at sea making the navigation back into the harbour near impossible without the aid of the Safety at Sea system. Inshore dumping from mining activity has impacted the migration pattern of key species such as snoek according to fishermen. Highly sensitive to its environment, fishers report that when beach mining commenced the water quality around Hondeklip Bay deteriorated and the snoek run by passed the area.

Table 2: Impacts and Causes of Environmental Stressors and Changes

Key Environmental Stressors/Changes	Impacts	Causes
Increased plastic pollution at sea and on the beach	• Kills sea life • Negative impact on human health	• Human behaviour
Badly-managed landfill sites	• Affects water quality • Smoke causes air pollution	• Poor quality of management/local municipality • Limited distribution of plastic bags for household garbage
Change in weather conditions	• Life threatening (panic), difficult navigation, shorter fishing days (fog and currents)	• Climate change
Change in weather conditions - fog & currents, wind, storms	• Less fishing days, more difficult to plan fishing activity • Less predictable winds • Loss of life and infrastructure (jetty) from storms • Loss of income	• Industrial development • Human behaviour • Infrastructure loss due to age and climate change (owned by local municipality)
Impacts of mining activity on land, beach and sea	• No chance of rehabilitation; too expensive • Area unappealing to tourists • Roads destroyed and dangerous • Restriction of access to areas i.e. the beach • Air pollution and dust negatively impacts health • Less resources (fish/lobster) in area and restricted access • Loss of income from fish as resource declines • Less food available for community market	• Profit driven, economic and political influence
Reduction in line-fish & rock lobster abundance	• Loss of jobs • People leaving to find other sources of income (ghost town)	• Mining activity • Foreign industrial fishing activities
Reduction in diversity of line-fish	• Less food	• Mining activity • Foreign industrial fishing activities

4.3. *Developing partner networks and practical, actionable climate change adaptation strategies for Hondeklip Bay small-scale fishers*

While the initial exercises in the RVA workshop place emphasis on understanding the environmental stressors and changes impacting the lives and livelihoods of fisher folk, the later exercises use this information as a platform to build on current coping mechanisms and discuss additional strategies that can build resilience to climate change. Key to developing a plan for adaptation is identifying and engaging with partner organizations who might be able to assist communities in the implementation, and long-term sustainability, of their proposed adaptation strategies. In Hondeklip Bay, the community identified the Department of Environment, Forestry and Fisheries (DEFF), the local and district municipality and non-governmental/not-for-profit organizations as major role players in their institutional support system. It was clear from this exercise that the community, and particularly the co-operative members, considered the NPOs and NGOs active in Hondeklip Bay to be integral partners in continued capacity building and future organizational development plans.

The last step of the RVA is designed to draw on the existing strategies communities use to deal with the impacts of climate change on their day to day lives, building on the information participants provided through the previous exercises to develop adaptation strategies. The participants in this community approached this exercise with some hesitance initially. Some participants expressed despondency around the perceived disinterest from local government to engage with fishers on matters such as clarifying boat ownership and general improvements to infrastructure in the town. Despite their hesitancy, the community was able to identify several strategies to strengthen their resilience to the



impact climate change has on their livelihood and their town, including options that would allow them to manage the impact of climate change and diversify their livelihoods through alternative resource use (see Table 3).

Table 3: Adaptation strategies and needs for Hondeklip Bay

Potential Strategies/Solutions to address vulnerabilities	Support needed	Support from whom
- Start a coast care clean up - Each community member to take personal responsibility for sorting and recycling - Engage the local municipality about new arrangements for waste collection and disposal	- Assistance with getting additional recycling bags and bins - Protest action directed at the local municipality	Local and/or district municipality
- Engage with the local NGO who has taken the mine to court - Connect with other communities on how they tackle mining impacts on their area - Seek compensation for loss of resources and habitat damage	- Assistance with building communication channels with other mining-affected communities - Professional assistance from researchers, scientists and lawyers to seek compensation	- Legal Aid - Local universities
- Taking on other work opportunities in mining, odd jobs, etc. - Use the Safety at Sea system and cell phones to go out in unfavourable weather (taking more risks) - Access alternative coastal resources such as kelp that are less weather dependent - Manage the income from fishing to last for the year	- Acquiring additional radios and long-range radios - Training in radio operations - Getting solar power for the Safety at Sea system to come back online - Training in financial management to learn how to cope through the year	- TechAF (Safety & Tracking Systems service provider) to look into radios - Benguela Current Commission (fund radio training)
- Continue collecting oyster and abalone as a food source - Apply to DEFF for access to other coastal resources - Data collection of catches to assist with management especially for the new co-operative	Technical support and training on the ABALOB I Fisher app for data collection	ABALOB I ICT4Fisheries

5. Adaptation strategies and recommendations

A reduction in catch and diversity of line-fish coupled with rising costs in fuel and basic goods has been the catalyst for many small-scale fishers to look at alternative coastal resources such as kelp to supplement their income. As one of the first communities to form part of the implementation of the new SSF policy, the co-operative in Hondeklip Bay can access a basket of species. Hondeklip Bay's basket includes kelp and the co-operative has engaged with a vendor to action their permit to harvest fresh kelp and collect beach cast kelp. This arrangement proved to be an important cushion for the

fishers as the co-operative experienced detrimental delays in receiving their rock lobster permit in the 2018/2019 season and to date have not received their line-fish permit from DEFF.

Several of the fishers in the community already log their catches with the help of the Safety System Officer on ABALOB Fisher as a means of collecting and storing their fisheries data. On the 25th and 26th March 2019, fishers in the community were given a refresher course with ABALOB staff members on logging their catch data in ABALOB Fisher in a dedicated workshop. Several fishers used the training opportunity to log demo catches, testing the process and building confidence. Fishers were left with a step-by-step by manual for any new fisher to learn the process, accessible from the safety system office. The fishers also receive continued technical support from ABALOB staff, and their devices were updated to the latest version ABALOB Fisher in a recent visit.



The intermittent power supply to the vmsTracker Safety at Sea system office, as a result of poorly maintained connections, was a major obstacle impeding fishing activity. When the system is offline most of the fishers opt to stay ashore rather than risk being caught in the sudden fog that occurs along the Northern Cape coast, losing out on potential income. Together with representatives from Coastal Livelihoods Foundation, the NGO who installed and continues to service the system, the Hondeklip Bay community discussed the possibility of sourcing funding to install a solar power system for the safety system office which was put forth to funding agencies. The community, represented by the Safety System Officer, also engaged with the district municipality on this matter. With input from TechAF on the power supply needed for the proper function of the system, the district municipality opted to repair the electrical connections restoring power to office and installed a pre-paid power meter in the first week of June 2019. Fishers in the community, all of whom use the locators linked to the safety system, attended a workshop held on the 24th of May 2019 in Hondeklip Bay where a maintenance plan for the safety system was co-developed, including covering electricity costs to keep the system online.

Fishers also attended a one-day course in Personal Financial Management in the last week of May 2019 held in Hondeklip Bay. The course, conducted by an experienced trainer (from Avocado Vision) in Afrikaans, covered several topics including understanding your needs versus wants, goal-setting, budgeting and saving. The trainer used contextual examples to convey the financial management principles and fishers were highly engaged with the material presented. Several of the fishers had expressed in the RVA the importance of having adequate and accessible training to manage their personal finance and eventually, with additional training, the financial aspects of their co-operative. This training provided the fishers with the building blocks necessary to make sound financial decisions and laid the foundation for additional training in the future, a request several fishers made after the course.

6. Conclusion and follow-up activities

The Hondeklip Bay fisher community is vulnerable to the impacts associated with climate variability and change. This community already faces significant socio-economic challenges and climate change appears to exacerbate their already vulnerable situation. Vulnerability assessments that adopt a holistic, socio-ecological approach and involve local communities in all aspects of the assessment, including the identification of locally appropriate adaptation strategies, are gaining importance in the climate change arena.

The RVA is a collaborative process that draws on local perceptions and community-level knowledge through a process of social learning. It provides a quick method to gather socio-economic, ecological and governance information and improve understanding of the vulnerability context of small-scale fishing communities. It facilitates the identification of coping mechanisms and locally appropriate adaptation strategies, as well as the support required to enhance the adaptive capacity that allows communities to overcome their vulnerabilities.

The adaptation strategies identified through this RVA workshop process should not end with this report but should be the beginning of an ongoing process of engagement and action with relevant government departments and other organizations to support the further development and implementation of the adaptation strategies identified. The adaptation strategies identified require further exploration to determine concrete actions including roles and responsibilities, funding required, timeframe and potential risks and challenges.

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