Community-level rapid vulnerability assessment for small-scale fisheries in Humansdorp, Eastern Cape, South Africa

Food and Agriculture Organization of the United Nations

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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 2019 in Humansdorp, a community on the south coast of South Africa where fisher folk have long-standing ties to the semi-industrial squid fishing industry and are now transitioning into the small-scale fishing sector.

2. Overview of Hondeklip Bay

Humansdorp, a town in the Sarah Baartman district of the Eastern Cape, is surrounded by a number of seaside and informal settlements including at St Francis Bay. The heart of the fishing industry in the St Francis Bay area is commercial squid or chokka fishing with multiple fleets operating in the area (www.portstfrancis.org). Starting in the 1960s, the fishery was initially dominated by ski boats doing daily trips. However, the fishery expanded rapidly to meet the demand, and by the 1990s the first freezer boat, the most common chokka vessel in operation today and capable of housing up to 24 fishers for a 21-day journey, was introduced. Historically, fishing rights in this fishery were almost exclusively held by the white-owned, commercial entities. However, in the latest Fishing Rights Application Process 'FRAP 2020' the Department of Environment, Forestry and Fisheries (DEFF) has proposed a 75/25 split in the squid quota, with 25% going to the successful co-operatives recently formed under the newly implemented Small-scale Fisheries (SSF) Policy.

The population of Humansdorp itself exceeds 24,000, while the nearby settlement of Cape St Francis and St Francis Bay, where several of the fishers reside, has just over 5,000 residents (Census 2011). There is a clear socio-economic divide based on racial lines in the Sarah Baartman district. Most of the Xhosa fishers live in the informal settlement in Humansdorp, while many of the coloured fishers live in St Francis Bay. While Humansdorp has established infrastructure and several functioning services, the same cannot be said about the informal settlement. Fishers stated that residents have no sanitation

services and still make use of the bucket system. Refuse removal is intermittent and the living conditions for people in the settlement is generally poor and overcrowded. The situation in St Francis Bay is less desperate, some basic services, including sanitation and refuse removal, are provided in that area. Other services such as ATMs, postal services and health care are centred in Humansdorp.

The economy of Humansdorp and the surrounding settlements are primarily linked to the chokka fishing industry and tourism. During the closed season in 2016, DEFF started the call for fishers to apply for fishing rights under the new SSF policy and several chokka crew applied hoping to move to the more consistent income source that small-scale fishing represented. The 30 fishers of the Elinye Co-operative, all of whom were or still are commercial chokka crew, were the successful applicants in the small-scale fishing registration process in 2017. They are awaiting the awarding of their fishing rights, unsure of which of the several varieties of fish (abalone, chokka, line-fish, hake longline and sardine) that they have applied for will be given to them.

There were 25 participants at the workshop in April 2019, most of them were members of the Elinye Co-operative. Other members included fishers who were unsuccessful in getting recognition as small-scale fishers, retired and still active chokka fishermen. There were no women in the meeting.

3. Methodology

A team of facilitators from the University of Cape Town (UCT) and ABALOBI ICT4Fisheries 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. This eight-step process can be supplemented by focus group discussions. A two-day RVA workshop was held with fishers living in Humansdorp and nearby Cape St Francis in April 2019 to work through the RVA process.

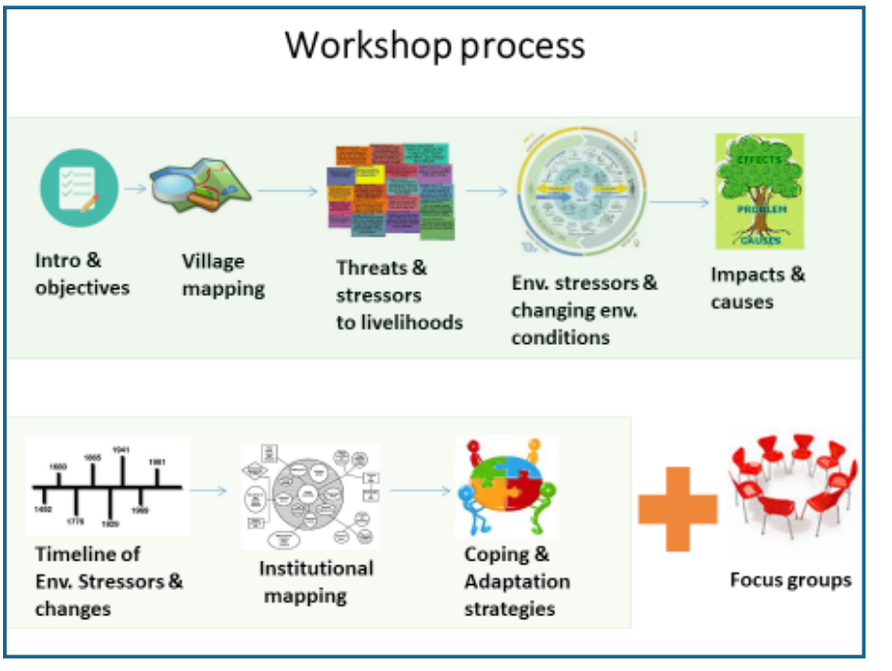

Figure 1: RVA Process

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.

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 Humansdorp

Poor working conditions, seasonal employment, poverty and substance abuse, the latter inevitably linked to the desperately poor circumstances of the fishers, were among the main socio-economic stressors identified by the participants. Fishers reported a lack of consistency and clarity regarding the tax deductions on their take home pay and felt their employers did not communicate well with them. This situation is compounded when there is poor fishing as fishers are paid per kilogram of squid they have landed. Many fishers said the lack of alternative opportunities for employment kept them going back to work on the chokka boats despite the difficult circumstances and uncertainty in wages.

In terms of management and governance stressors, fishers felt that they get no assistance from government, particularly DEFF, there is poor communication between DEFF and the co-operative and within the co-operative itself. Similar to other coastal communities the fishers in Humansdorp reported feeling as though they have no voice or say in the process and the awarding of fishing rights is taking too long which affects their livelihood.

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 squid catches in the last period, with 2018 being a particularly poor year. The fishers also recalled a severe storm in the late 1990s with huge swells where around 20 fishers drowned. They also highlighted changes in the summer winds roughly four years ago, but in general the fishers felt there were no clear trends but there was a great deal of seasonal variability with seasons coming later than usual and impacting the line fish (see Table 1 and 2).

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

Environmental	Socio-economic	Governance/ Management
• Weather and (chokka) catch unpredictable • Rough seas linked to increasingly strong winds • Wind directions are unpredictable, but this is normal • Drop in water temperature	• No basic salary • Not paid for all work done • High tax deductions • Very poor working conditions • Cost of fishing gear high, so working with inadequate gear • Poor communication between employers and employees • Separation from families is painful • Lack of services • Health risks associated with work • Poor living conditions • No sea allowance to cover no catch days • Poverty makes fishers more vulnerable to health, social ills • Limited skills amongst women • Lack of employment opportunities • No alternative work opportunities • Problem of seasonal work • Drug and alcohol abuse • No formal payment documentation	• Poor communication/ interactions with DEFF • Lack of organizational structure also leads to conflict • Heavy DEFF enforcement and control on fishing along coast • Voices not heard by government • Processing time for SSF application is too long

Table 2: Impacts and Causes of Environmental Stressors and Changes

Key Environmental Stressors/Changes	Impacts	Causes
Unpredictable chokka catch, lower sea surface temperature	• No income • Lower sea surface temperature reducing the chokka catch • Impact on geelbek (line-fish)	• Unsure, could be climate change • Could also be linked to winds • More boats/people fishing
Changing seasons impacting some line-fish species	• Geelbek reduced in abundance over last three seasons, coming in later in the year	• Unsure of the reason for this change, could be linked to lower sea surface temperature
Changing wind patterns, increasing strength	• Easterly wind makes water cold reducing chokka catch as chokka prey less mobile • Change in summer winds since 2015 • Low/no catches result in loss in income	• Natural causes • Spiritual reasons – Xhosa culture places importance on honouring the sea and industry doesn't share this respect for nature • Potentially climate change

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, changing wind patterns in the last few years, and colder water etc.) which led to less fishing days and impacted their income and consequently exacerbated the poor conditions under which they live. The catches in the last few years have been variable and fishers considered the variability to be linked to the drop in sea surface temperatures in the last few seasons. Fishers reported that colder waters negatively influenced the movement of sardines, the preferred prey of squid, and in their experience the sardines move inshore, away from their usual fishing grounds, in response to cold bodies of water. The fishers also reported that catch rates are further negatively impacted by the limited mobility of squid in cold waters; suggesting that the squid do not respond as strongly to their luring methods (i.e. using lanterns at night to draw squid to the surface) in these conditions.

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

Strong institutional partners play a pivotal role in supporting development in communities. For a newly formed fisher co-operative, like the one in Humansdorp, having a solid, reliable partner network is vital to ensuring its success. As part of the RVA workshop participants were asked to identify institutional partners from whom they can seek assistance in the development and implementation of their proposed strategies. This exercise highlighted the isolation of fishers in this community from valuable support networks. The only institutional partner Humansdorp fishers identified was DEFF and several of the participants reported a mistrust in DEFF's ability to meet the commitments already made to the co-operative.

The last exercise of the RVA is designed to identify strategies communities can use to deal with the impacts of climate change on their day to day lives building on information participants provided through the previous exercises in the RVA process. For Humansdorp fishers, the development of their adaptation strategies was a vital exercise as it highlighted some of the potential operational and environmental barriers the co-operative might face in starting their new small-scale fisheries operation and aided them in identifying institutional partners who could play a significant role in helping them to develop the strategies/solutions proposed (see Table 3) for realizing the fisheries rights they are likely to be granted.

Table 3: Adaptation strategies and needs for Humansdorp

Potential Strategies/Solutions to address vulnerabilities	Support needed	Support from whom
• Developing alternative livelihoods through accessing SSF rights • Developing the co-operative	• Information on costs, equipment, training needed to develop alternative fisheries • Assistance with a business plan for the co-operative • Opening a bank account for the co-operative • Organizing and holding regular meetings • Getting a tax certificate for the co-operative	• Local universities • Experts in different fisheries • DEFF • Local university business school student • Kouga municipality
• Accessing funds to kick start business operations	• Assistance with accessing loans or financial support for boats, gear, etc.	• DEFF in securing funds • LOTTO • SASSA • Financial institutions • Department of Trade and Industry (DTI)
• Training to equip the co-operative board and members with necessary skills	• Financial management training • Skipper's training • Co-operative management training	• Siyaloba and Sea Safety Training Group • SETA • SAMSA • DEFF
• Developing and operating chokka and line-fish fisheries	• Purchasing boats, engines, fishing equipment • Paying for mooring costs • Identifying a market and vetting buyers	• DEFF • DTI

5. Adaptation strategies and recommendations

Given the majority of the participants were members of the Elinye Co-operative, identified adaptation strategies focused on developing the co-operative as an operational business and developing alternative livelihoods through accessing SSF rights. Much of the initial support required relates to assistance with administrative processes to formally establish the co-operative as well as skills training to operate the co-operative. These actions require access to funding and the fishers also highlighted the need for support in accessing finance for purchasing boats, engines and fishing equipment. The Department of Environment, Forestry and Fisheries, Department of Trade and Industry and the Kouga Municipality are key government partners, together with other identified partners including local universities, SAMSA and SETA.

The workshops demonstrated the need to develop these adaptation strategies further and not just leave them as proposals in a report. Fishers emphasized the value of the facilitating role played by external stakeholders, such as researchers and community

development workers. These agencies could bring together the relevant government departments and other stakeholders to turn proposals into action plans, ensure validity based on correct information and obtain buy-in. Support from international development and funding agencies would be needed to roll out such strategies in Humansdorp.

While the fishers in Humansdorp are still actively engaged in commercial squid fishing, they have formed a small-scale fishing co-operative and are waiting for their fishing rights (a basket of species) to be awarded by DEFF. In discussion with the fishers present the team took the fishers through a costing exercise in which the start-up costs for the chokka and line-fish fisheries were identified. Table 4 looks at the cost of purchasing a boat once-off and the other costs e.g. food, fuel and skipper hire for a single trip.

Fishers spend roughly 21 days at sea in a freezer boat searching for squid, while fishing for line-fish is a day trip. When working through the numbers several of the fishers became despondent as the costs associated with starting a business in the chokka fishery, the fishery in which all the fishers had the most experience, seemed outside their reach. The team explored three possible options they should consider should they receive a chokka fishing right.

Option 1:

Develop a business plan for the chokka quota allocated to the co-operative and apply for a loan with a financial institution or approach government for seed funding to purchase a boat and the necessary equipment to run the boat. Hire a skipper and initially, two members of the co-operative attend skipper training.

Option 2:

Approach an existing company to form a joint venture where fishers from the co-operative would fish for the squid and share in the profits equally. Fishers have had poor experiences with a joint venture in the past and stated that any partner would need to be vetted before a contract was signed.

Option 3:

Lease the quota to a commercial chokka company, in effect becoming 'paper quota holders' and receive an agreed upon proportion of the value of the quota. However, this option does not comply with the intention of the SSF policy which seeks to redistribute resources and empower traditional fishers to run their own enterprises.

Table 4: Comparison of some costs for starting out in the chokka and line-fish fisheries

	Chokka	Traditional line-fish
Boat (one)*	Approx. R 12 million	R750 000 (new)/R300 000 (second hand)
Fuel (per trip)	R 60 000	R 10 000
Food	R 40 000	Brought from home
Skipper hire	not known	R 3 000 p/d
Uniform & gear	R100 000	R100 000 (includes tackle)
Safety equipment	R30 000	R10 000
Port fees	not known	not known

6. Conclusion and follow-up activities

The Humansdorp 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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