OctoTest 2.0

Project Proposed for the CGP
05 September 2022

Summary

Poor harvest, storage, and transport of small-scale fisheries in Madagascar lead to substantial losses of catches, undermining quality and decreasing income throughout the supply chain. These losses and inefficiencies are particularly prevalent in octopus fisheries, the country's largest export-oriented small-scale fishery, which is of particular importance to women fishers. The project will use pre-existing, proven methods used in low income contexts to increase quality and reduce post-harvest losses: improve killing methods and handling of octopus, and establish grading by quality. This will enable value chain actors in southern Madagascar to increase their earnings by unlocking additional value lost within the supply chain.

Context

Octopus fisheries take place on coral reef habitats throughout Madagascar and are the main export-oriented fisheries targeted exclusively by small-scale fishers in the SW. The growing demand for octopus − which in Madagascar is predominantly *Octopus cyanea* − particularly for export to Europe, Asia, and the USA, has increased its value and intensified fishing pressure, without passing on the benefit to fishing communities. Southwest Madagascar produces an estimated 7,500 metric tonnes of *O. cyanea* annually, which in 2019 had a freight on board (FOB) value of 54 million USD[1]. Primary export markets are European, with nearly a third of the volume shipped to France. The fishery supports the livelihood of over 40 thousand traditional fishers, predominantly women, who glean or dive along the reef daily with spears. The fishery has been the focus of pioneering management efforts by communities for nearly 20 years focused on improving size and abundance of octopus.

The regional octopus management committee (CGP) in southwest Madagascar comprised of government, seafood buyers, research institutions, civil society organizations, and NGOs, launched a Fishery Improvement Project (FIP) for the region's octopus fishery in 2019. The FIP sought to improve market recognition of ongoing management improvements, eg. LMMAs and seasonal closures, within the southwest Madagascar octopus fishery, and assess that community-led fishery management against an international standard for seafood sustainability. Ideally, that market recognition would have supported improved earnings.

[1] "Freight on board" or "free on board" value reported from the COMTRADE database. The amount represents the value of processed octopus and the additional costs e.g. transport, insurance, manpower) required for it to reach the international market.

However, FIP benefits, such as price premium, have not yet manifested. This is due to several factors, including difficulties in aligning ongoing and projected actor projects in an extensive supply chain (Fig. 01) towards sustainability and the completion of FIP activities; and poor octopus quality, limiting ability to access higher-value markets. The average income per fisher varies between 0.84 USD/day and 14 USD/day depending on the volume and other species captured. Annual mean income for a fisher from *O. cyanea* was nearly $180USD in 2019. Income for intermediaries and mid-chain processors is unknown, but they frequently mention low price and revenue as a key barrier to engage in other conservation actions.

The CGP has supported coastal communities and local partners to establish multiple locally managed marine areas (LMMAs) throughout much of the southwest region. Throughout its existence the CGP has focused on coordinating stakeholders to organize temporary octopus closures as a marine resource management measure and to improve economic outcomes. However, many more opportunities for better management and improved economic outcomes have been identified including through quality improvements.

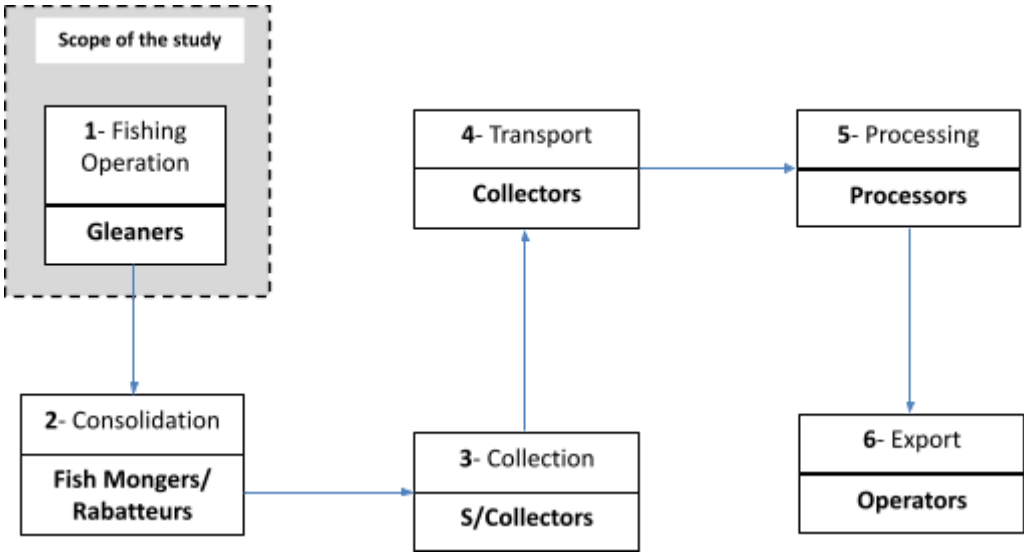


Fig.01 – Supply chain of the octopus fishery in southwest Madagascar. (*BlueYou, 2018)*

Problem Statement

Poor harvest, storage, and transport of octopus in the southwest Madagascar octopus fishery have led to poor quality and limited potential for market differentiation, decreasing prices and contributing to lost value and overfishing.

Proposed Solution

Systematically assess opportunities for improvement in harvest, storage, and transport technologies and practices for their potential return on investment for value chain actors engaged in the

southwest Madagascar octopus fishery to identify the most locally-relevant solution to reduce post-harvest losses and improve quality, when coupled with product grading.

Approach

Recognizing that further interventions beyond initial temporary closures were necessary to unlock lost value in the southwest Madagascar octopus export fishery, a value chain analysis was commissioned in 2018 to identify possible opportunities. The study found ten specific improvements that could be made to better align FIP products to market demand. It identified substantial quality issues, with surveyed processors reporting that 10% of catch arriving at plants is of insufficient quality for export into high-value European markets. The recommended actions were to improve quality, reduce costs for fishers and "first mile" actors, and increase market access through product differentiation. Specifically:

- **Harvest Method**- the killing method of spearing through the beak can sometimes result in punctures or tears, and alternative practices should be incentivized locally.
- **Initial Handling**- the treatment of raw material up until the first point of landing (at the beach) often involves dragging the dead animals along the reef flat, most likely causing additional physical damage to the product.
- **Storage and Transport Method**- poor condition of storage bins and transport equipment and lack of grading throughout the supply chain suggests that other product quality losses are unaddressed.

Testing of one technological improvement, cooler backpacks, has been underway by one CGP member since October 2019 with ten women gleaners in one community engaged in the FIP. The system consists of utilizing a small portable cooler carried by the fisher to store octopus immediately after its capture, reducing the likelihood of quality loss from physical abrasion, sun exposure, or cold chain maintenance. The device was crafted by local communities, made to withstand long exposure to environmental conditions to reduce depreciation costs. Materials were selected to be easily sourced and affordable for locals. These decisions have allowed the "OctoPacks" to be trialed in three other villages, engaging a total of 30 women gleaners and six quality monitors.

Analysis of preliminary data suggests that quality improvements from OctoPack use could allow 12% more landed product meeting quality standards. Further integration of this or other technology and improved handling techniques presents a cost effective, immediate opportunity to unlock trapped value within the fishery.

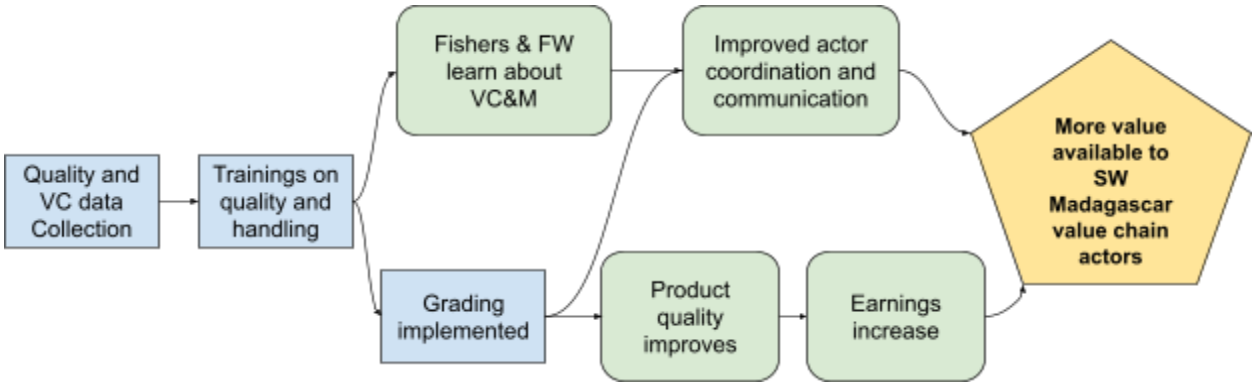
The CGP plans to adapt pre-existing, proven methods used in low income contexts with small holders to increase quality and reduce post-harvest losses. We will engage the local community, intermediaries, processors involved in the FIP to:

(1) define a quality standard for *O. cyanea* and value for each quality grade;

(2)	establish a protocol and data collection method for achieving and monitoring quality;
(3)	implement pilots in fishing communities to test the impact of selected interventions and grading on octopus quality;
(4)	assess grading impact on actor revenue and product quality, communicating results with project partners and communities to demonstrate proof-of-concept;
(5)	support decision making to scale-out grading and technologies within the octopus fishery supply chain

The project will be conducted in communities in the southwest of Madagascar. Where possible, communities will begin to collect baseline data on quality as defined in the protocol developed in (2) and report changes in quality to communities and CGP members over the course of the project. In four select communities, specific interventions will be trialed. One will only have grading by quality standard put in place, another will receive grading and handling training, another will have grading and a changed killing method, and the final will receive grading, handling training, and a changed killing method.

Theory of Change



Expected Project Timeline (8 months)

Actions needing assigned budget in blue and italics

Phase 0: Launch ToR with CGP, Recruit Full time short-term consultant to lead the project (1 month)

- Draft Octotest 2.0 project Description
- Draft Terms of Reference for consultant to execute project
- Create presentation outlining the project to be shared with CGP members
- Translate and share Project Description and ToR with CGP members, achieving sign-off
- Publish position and recruit consultant

- *Onboard consultant and the consultant develops project workplan, with deadlines, based on the project description*

Phase 1: Define a quality standard for *O. cyanea* and value for each quality grade, (1 month)

- Consultant reviews past reports and projects by CGP members within the SW Madagascar octopus value chain
- *Consultant drafts a list of quality control gaps, shares with CGP members, and secures their information to close those gaps*
- Consultant drafts initial quality standard, receives feedback from CGP members and fishing communities
- Consultant finalizes quality standard and list of indicators/variables, secures approval from CGP members, intermediaries, and fishing communities

Phase 2: Establish a protocol and data collection method, (0.75 month)

- Consultant secures the participation of fisher associations and CGP members in pilot
- *Consultant reviews and assesses fisheries data collection methods and M&E in use within SW Madagascar fishing communities by CGP members*
- Consultant develops a data collection and verification protocol that integrates with ongoing data collection methods and M&E, and incorporates feedback from CGP members and fishing communities
- Consultant finalizes protocol and secures approval from CGP members, intermediaries, and fishing communities
- Consultant guides the identification of communities to monitor quality of landings as a baseline and control during project implementation
- *Consultant trains community data collectors to monitor quality data, and begins monitoring with CGP members*
- Consultant guides the identification of communities to receive each OctoTest 2.0 intervention (grading, grading + handling training, grading + killing method training, grading + handling training + killing method training)

Phase 3: Pilot grading and quality improvement interventions, (4 months)

- Consultant with each community and relevant CGP members develops a work plan with clear RACI roles, timeline, and assigned budget; secures approval from relevant actors
    - Grading
        - *Actors convened to explain purpose of grading project and results of quality indicators over the initial monitoring period*
        - *Consultant facilitates a meeting with stakeholders to set quality grades based on quality indicators measured in protocol*
        - *Consultant facilitates a series of meetings with stakeholders to define process for setting price (if future change) and prices over course of pilot for each quality grade*

        - Consultant drafts document explaining gradings and prices, receives sign off from pilot participants
        - *Consultant or relevant stakeholder creates infographics on quality grades for use in fishing communities*
        - Consultant develops logistics plan with processor, intermediaries, and fishers for gradings pilot that ensures product traceability and sorting by grade within the community
        - *Consultant or relevant stakeholder provides capacity training to collecteurs, sous-collecteurs, and fishers on grading process and prices in identified communities*
        - *Consultant supports implementation, and monitors project with regular updates and data feedback to the CGP and participants*
    - Handling training
        - Consultant identifies relevant training needs on fish handling and hygiene to be provided to fishers, sous-collecteurs, and collecteurs based on previous value chain analyses and Octo-test 1.0
        - Consultant works with government and value chain actors to identify relevant guidelines and training materials within Madagascar
        - *Consultant leads the creation of outreach materials, training materials, and communications (radio, film etc...) with CGP members*
        - *Training is conducted in the relevant communities for the pilot by the consultant or other actor*
    - Killing method training
        - Consultant identifies potential octopus killing methods based on previous value chain analyses, Octo-test 1.0, international cases, and interviews with fishers, processors, and other CGP members
        - *Consultant leads a co-design workshop to select one new killing method that is feasible for fishers to implement, but also would meet quality needs of processors*
        - Consultant identifies relevant training needs on selected octopus killing method, *leading the creation of outreach materials, training materials, and communications (radio, film etc...) with CGP members*
        - If necessary, *tools for new killing method are procured*
        - *Training is conducted in the relevant communities for the pilot by the consultant or other actor,* and killing tools distributed
        - *Consultant supports implementation, conducting periodic check-ins to ensure that new killing method is being used*
- Consultant with communities and relevant CGP members implements workplan, verifying collection of quality data

Phase 4: Assess impact of grading and tests, (0.75 month)

- Consultant plans data feedback sessions every other month with villages and community actors involved in the pilots
- *Consultant and relevant CGP stakeholders conducts data feedback sessions*
- Consultant develops a profit and loss model and future projections for fishers, sous-collecteurs, and collecteurs, based on data collected during the project
- Consultant analyzes and writes a report on how octopus quality changed over the course of the project

Phase 5: Establish process to disseminate impacts and scale intervention, (whole project)

- *Consultant leads with CGP partners on the creation of outreach materials and communications for the pilot, ensuring that participants and other communities are up-to-date on progress and results*
- Consultant works with Blue Ventures and relevant CGP members to develop e*xternal communications materials* such as a film, news articles, blog posts, or a photo essay
- Consultant leads the planning and *implementation of a workshop to wrap-up project and present results of profit and loss model and impact of project on octopus quality with relevant CGP members*
- In the workshop, stakeholders define how they intend to scale grading to other communities, which interventions they would like to continue, and which interventions they would like to test in the next iteration of the project
- Consultant drafts new project description and submits to CGP

Budget Estimate

List expected costs required for successful project implementation, detailed budget and accurate costs to be determined with other stakeholders.

Item	Estimated cost (USD)
Phase 0	
Short-term consultant to oversee project (8-months)	5000
Phase 1	
Field visits (1) (Transport, perdiem, accommodation)	~400
Phase 2	
Field visit (1)	~400
Data collection training workshops ()	~600
Data collection enumerators (Indemnities * 5 months)	~600
Data collection materials (balances, thermometer, paper/phone, cuvettes, entry)	~1500
Phase 3	
Meetings and/or workshops with CGP participants (5)	~300
Infographics and outreach material development ()	~1200
Field visits (5)	~1800
Trainings of fishers, sous-collecteurs, and collecteurs (4)	~1500
Tools for new killing method (100 at $5/knife)	~500
Materials for grading and sorting octopus (12)	~900
Phase 4	
Data feedback sessions	~600

Phase 5	
Infographics and outreach material development ()	~600
External communications material development ()	~600
Closing workshop (1)	~500
Total	~$20,000