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Leveraging Lessons From the Caribbean to Enhance the Value-Chain Approach in Developing Sustainable Small-Scale Capture Fisheries

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ABSTRACT

Small-scale fisheries account for at least ninety-five percent of CARICOM's fisheries and are critical to the economies, identities, and resilience of its coastal communities. Despite their importance, small-scale fishery value chains are often poorly understood, which can lead to their unsustainable development, with limited investment and livelihood opportunities.

Participatory Value Chain Analysis (VCA) provides a structured approach to developing sustainable small-scale fishery value chains by engaging key stakeholders in identifying gaps and providing suitable solutions to add value and create livelihood opportunities along seafood value chains. When small-scale fishery VCAs are used to inform policy and evaluate investment opportunities, they can yield significant positive results for environmental sustainability, social benefits and socio-economic resilience to climate change and economic shocks. VCAs can also contribute to the achievement of important regional and global goals, including the CARICOM 25% by 2025 Reduction in the Regional Food Bill initiative, the Caribbean Regional Fisheries Mechanism (CRFM) Strategic Plan 2022 – 2030 and the United Nations Sustainable Development Goals.

This paper is novel in reviewing the recent application of VCAs in Caribbean small-scale fisheries for Queen conch in Grenada, Saint Lucia, Saint Vincent and the Grenadines; Caribbean Spiny lobster in Jamaica; Mahi-Mahi in Barbados and Seabob in Guyana in order to obtain lessons learned, identify best practices, and make recommendations for improving VCAs in small-scale fisheries. The review outlines criteria for selecting and prioritising species for VCAs, guidelines for applying VCAs in Caribbean small-scale fisheries using participatory and gender-sensitive methods, and strategies for identifying and engaging key stakeholders in VCAs. The paper also discusses how VCAs can be used to better position sustainable small-scale fisheries development in the context of the Caribbean blue economy and contribute to the success of important global and regional food security and sustainable livelihood initiatives.

KEYWORDS: *participatory value chain analysis, fisheries co-management, Caribbean small-scale fisheries, fisheries policy*

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1. INTRODUCTION

Fish provides more than 4.5 billion people globally with at least 15% of their average per capita intake of animal protein. Its distinctive nutritional properties makes it essential to the health of consumers in developed and developing countries. Through fisheries-related activities, fish contributes significantly to the income and food security of more than 10 % of the world's population, especially in developing and emergent countries. In spite of this, limited attention has been given to fish as a key element in food and nutrition security strategies at national levels and in broader development discussions and interventions. As such, the tremendous potential for enhancing livelihoods and food and nutrition security embodied in the strengthening of the fishery and aquaculture sectors goes untapped (Béné, et al. 2015).

In CARICOM/CRFM States, small-scale fisheries, which account for more than 95% of fisheries (San Pedro Sun 2018), make a significant contribution to food security, poverty alleviation, income generation, economic growth, and social stability. They also contribute to livelihood security for vulnerable members of society, including women and marginalized youth (CLME+ 2013).

In 2019/2020, the fisheries sector's contribution to gross domestic product varied from as low as 0.06% (Barbados 2019) to as high as 3.21% (Anguilla 2020). In 2019, the number of people engaged in direct production in the commercial marine capture fisheries and aquaculture sub-sectors was approximately 118,053, with indirect employment for an estimated 472, 212 people (particularly women) (GEF 2017), mainly involved in fish processing, marketing, boat construction, net repairs, and other support services. The annual average production for the period 2019 to 2020 was estimated at approximately 132,877 tonnes, with the 2020 production being 132,267 tonnes. The 2020 production is the lowest production since 2011, with most Member States attributing the decreases in production to the impacts and restrictions imposed by the COVID-19 pandemic (CRFM 2021).

In 2019, total exports of fish were approximately 67,824 tonnes, with a value of US\$292.5 million. In the same year, 98,566 tonnes of fish (including imports of fish for food, bait and live ornamental fish for breeding or rearing) were imported, with fish imported for food accounting for approximately 99.9% of the total. The total value of the fish imports was approximately US\$341.7 million (CRFM 2021).

Despite the importance of small-scale fisheries, their value chains are often poorly understood, which can lead to unsustainable development, with limited investment and livelihood opportunities. Participatory Value Chain Analysis (VCA) provides a structured approach to developing sustainable small-scale fishery value chains by engaging key stakeholders, from the inception, in identifying gaps and providing suitable solutions to add value and create livelihood opportunities along the value chains.

2. BACKGROUND

Fisheries value chains are the range of activities and actors that produce the goods and services necessary for the creation of a fisheries product, starting from inputs, moving towards use by the final consumer. Typically, fisheries value chains are separated into two parts- the harvest phase and the post-harvest phase. These phases are then further broken down to reflect the various steps involved in production of fish products in that specific case. Fisheries value chains may vary, but basically follow the format of inputs harvest processing wholesale retail final consumption, as illustrated in *Figure 1* of the queen conch value chain for Saint Lucia.

VCA is an approach that aims to better understand a value chain by mapping and analysing the various actors and steps involved in production to generate recommendations on how to upgrade the value chain. VCA approaches and methodologies vary, but they typically use a mix of quantitative and qualitative tools to generate recommendations on how to improve economic and environmental functioning of a value chain to the benefit of those involved.

For this paper, we are promoting the use of participatory value chain analysis for small-scale fishery value chains, with the specific purpose of improving the socio-economic position of all actors in the value chain, while making it more environmentally sustainable and resilient. For a value chain analysis to be participatory, key stakeholders from the public and private sectors, including fisherfolk, and civil society must be involved in the analysis of the various steps along the chain.

These steps include the gathering of data and information for the VCA, the validation of the results of the VCA and the development and implementation of recommendations and next steps. Participatory approaches are particularly important in the context of conducting VCA in small-scale fisheries as they promote sustainability, equity and support sustainable livelihoods for vulnerable coastal peoples in the Caribbean and other small island developing states. Participatory value chain analysis can be used to promote sustainable small-scale fisheries development within the context of the ecosystem approach to fisheries.

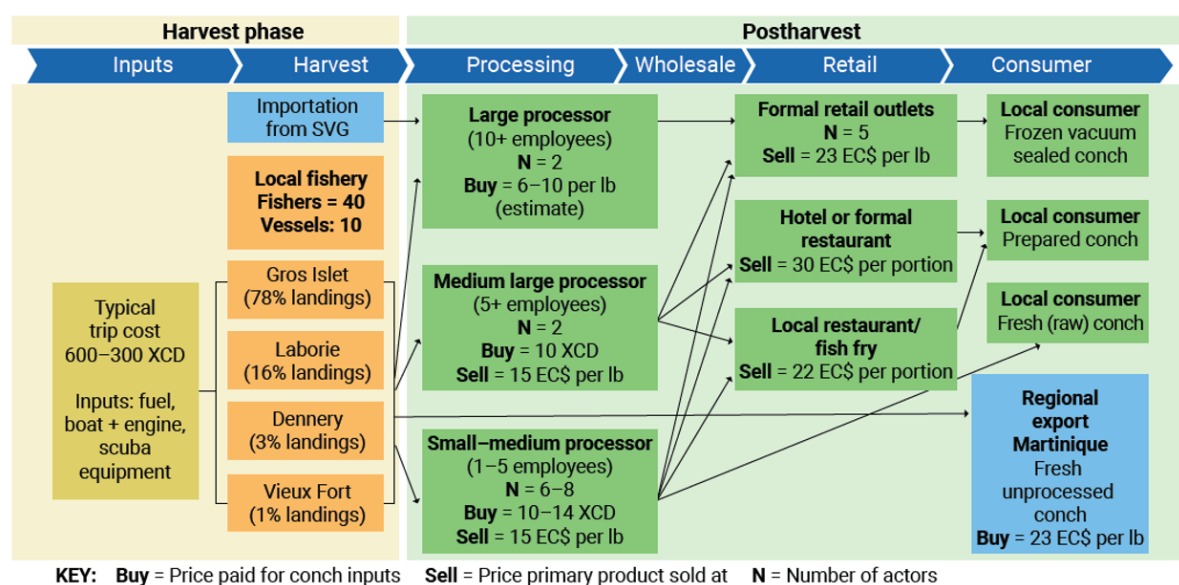


Figure 1. Overview of Saint Lucia's Queen Conch Value Chain (UNCTAD 2022b)

3. METHODOLOGY

Preparation of this paper involved a literature review of the seven reports of small-scale fishery VCA studies listed in [Table 1](#), that were conducted in the CARICOM region between 2021-2023. The purpose of the literature review was to obtain lessons learned and best practices as well as make recommendations for improving participatory small-scale fisheries VCAs.

The seven VCAs, which involved varying levels of stakeholder participation, were done under three Caribbean regional projects, namely the United Nations Food and Agriculture Organization's (FAO)/Global Environment Facility (GEF) Developing Organisational Capacity for Ecosystem Stewardship and Livelihoods in Caribbean Small-Scale Fisheries (StewardFish); United Nations Conference on Trade and Development (UNCTAD)/ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)/Organisation of Eastern Caribbean States (OECS)/European Union (EU) Promoting Sustainable Livelihoods and Conservation of Marine Biodiversity in the Caribbean Region (Blue BioTrade project); and Organisation of African, Caribbean and Pacific States (OACPS)/EU/ German Federal Ministry for Economic Cooperation and Development (BMZ)/FAO Unlocking the Potential of Sustainable Fisheries and Aquaculture in Africa, the Caribbean and the Pacific (FISH4ACP) – Atlantic Seabob of Guyana.

The studies reviewed were selected based on their recent application of VCA in the CARICOM region as well as the fact that the authors worked on these regional projects in varying capacities and contributed to the VCA studies either as primary authors, technical reviewers and/or researchers. It should be noted that these projects were implemented during or towards the end of the COVID-19 pandemic, which required virtual or blended approaches to implementing the VCAs, depending on the COVID-19 protocols in place at the country level.

Table 1. The seven small-scale fishery VCA study reports reviewed for this paper

Report	Regional project
Barbados Mahi-Mahi Value Chain Analysis Report (Hutchinson, S.D., & Girvan, A.S.T. 2021a)	StewardFish
Jamaica Caribbean Spiny Lobster Value Chain Analysis Report (Hutchinson, S.D., & Girvan, A.S.T. 2021b)	StewardFish
Saint Vincent and the Grenadines Queen Conch Value Chain Analysis Report (Hutchinson, S.D., & Girvan, A.S.T. 2021c)	StewardFish
Blue BioTrade in Grenada: Developing value for the sustainable trade and production of queen conch in the Eastern Caribbean – Country Case Study (UNCTAD 2022a Blue BioTrade in Grenada: Developing Value for the Sustainable Trade and Production of Queen Conch in the Eastern Caribbean. UNCTAD/TCS/DITC/INF/2022/4. Geneva.)	Blue BioTrade
Blue BioTrade in Saint Lucia: Developing value for the sustainable trade and production of queen conch in the Eastern Caribbean – Country Case Study (UNCTAD 2022b Blue BioTrade in Saint Lucia: Developing Value for the Sustainable Trade and Production of Queen Conch in the Eastern Caribbean. UNCTAD/TCS/DITC/INF/2022/2. Geneva.)	Blue BioTrade
Blue BioTrade in Saint Vincent and the Grenadines: Developing value for the sustainable trade and production of queen conch in the Eastern Caribbean – Country Case Study (UNCTAD 2022c. Blue BioTrade in Saint Vincent and the Grenadines: Developing Value for the Sustainable Trade and Production of Queen Conch in the Eastern Caribbean. UNCTAD/TCS/DITC/INF/2022/8 Geneva)	Blue BioTrade
The Seabob Value Chain in Guyana: Analysis and Design Report (Duong, G., Rankin, M., Ahmed, G., Rice, J., Nguyen, H., Esnard, T., McFee, D. 2022. The Seabob Value Chain in Guyana: Analysis and Design Report. Rome, FAO.)	
Summary Report: The seabob value chain in Guyana (Duong, G., Rankin, M., Ahmed, G., Rice, J., Nguyen, H., Talia, S. & McFee, D. 2023. The seabob value chain in Guyana: Summary report. Rome, FAO.)	FISH4ACP

4. RESULTS

4.1 Guidance on the Selection of Small-scale Fisheries for VCA

VCAs are typically conducted for a particular species or harvest method, so deciding which small-scale fishery to focus on is a critical first step in the VCA process. Often, countries or projects undertaking VCAs are limited by the resources available and must prioritise which small-scale fishery value chains to analyse and strengthen. This usually requires setting out specific criteria for prioritisation and selection, ideally with input from a range of fisheries related stakeholders from the public and private sectors and civil society.

Under the FISH4ACP project, 12 fisheries and aquaculture value chains from African, Caribbean and Pacific countries, were analyzed with the aim of maximizing their economic returns and social benefits, while minimizing the detrimental effects on natural habitats and marine wildlife (FAO 2023). The 12 value chains were selected through a call for proposals by the OACPS in April 2019. The proposals were assessed through a series of four regional workshops utilizing selection criteria to gauge the economic, social and environmental potential for positive impact. The Atlantic seabob fishery of Guyana was selected, as the project had the potential to contribute to a more resilient, well-managed and inclusive shrimp fishery in order to strengthen its position as a leading exporter of seabob shrimp, while ensuring long-term stability of stocks and bringing more benefits to local fisherfolk, especially women (FAO 2023).

In the case of the Blue BioTrade project, the Queen conch was selected by the stakeholders of the OECS owing to its nature as a high value product with significant domestic and international demand, and environmental risks associated with its production. Selection of the Queen conch fishery was therefore seen to be a good opportunity, to evaluate the application of the revised BioTrade principles and criteria in the marine environment and to improve CITES compliance and share equitably the benefits from sustainable trade in CITES-listed species. Additional considerations in the selection of this value chain also included the involvement of significant numbers of small-scale fisheries stakeholders, and the ability to build on opportunities identified by previous work such as the StewardFish project.

Under StewardFish, resources were available to conduct three VCAs across seven project countries. This meant that the VCA team had to give careful consideration to not only which value chains would be selected, but also which three countries would be selected. A method was developed for the selection of the value chains for further analysis. This involved three broad steps that can be adapted on a case-by-case basis. Firstly, a shortlist of potential value chains for each of the seven participating countries was developed in collaboration with local project stakeholders. In this case, fisheries authorities were asked to identify three to five value chains that had potential for development using VCA. At this stage, local small-scale fisheries stakeholders (fishers and processors) should have been consulted, but this was not done because of the limited access to fisherfolk during the COVID-19 restrictions.

Following the initial shortlisting of value chains, a set of selection criteria for further scoring and eventual prioritisation was developed. Such selection criteria could be developed on a project-by-project basis and in consultation with key stakeholders and other knowledgeable resource people to reflect the relative importance of environmental, social, economic and governance goals. In addition to project objectives, selection criteria can consider national development priorities, regional development priorities and local stakeholder expectations. In the case of StewardFish, the goal was “to empower fisherfolk throughout the fisheries value chains to engage in resource management, decision-making processes and sustainable livelihoods, with strengthened institutional support at all levels”, which directly influenced the selection criteria, detailed in [Table 2](#).

Table 2. Value chain selection criteria and ranking used for the StewardFish VCAs

Criteria	Positive impact on artisanal fishers (numbers, employment and income)	Potential for market development	Environmental sustainability	Level of private sector involvement	Socio-economic and institutional framework	TOTAL
Criteria Weight	0.25	0.25	0.15	0.1	0.25	1.0
	5=Very significant engagement 4= significant engagement 3=Fair engagement 2=Poor engagement 1=Very poor engagement	5=Very significant market potential 4= significant market potential 3=Fair market potential 2=Poor market potential 1=Very poor market potential	5=Highly established sustainability 4= Well established sustainability 3=Fairly established sustainability 2=Poorly established sustainability 1=Very poorly established sustainability	5=Very significant engagement 4= significant engagement 3=Fair engagement 2=Poor engagement 1=Very poor engagement	5=Excellent frameworks 4= Good frameworks 3=Fair frameworks 2=Poor frameworks 1=Very poor frameworks	

Finally, using the selection criteria developed, the researchers used desk study findings and expert opinions to score each value chain in each category to give an overall total. This approach was based on the experience and knowledge of experts familiar with the value chain and the availability of basic information on the various value chains, therefore some external review of the scoring was necessary. To reflect the relative importance of each criterion based on project goals, they were individually weighted when totals were summed. In keeping with the project goal above, the criteria related to supporting it (positive impact on artisanal fishers, potential for market development) and socio-economic institutional frameworks received the highest criteria weight (see “criteria weight” in [Table 2](#)). In the case of this project, private sector involvement was not a specific project goal, but was still viewed as an important enabling condition for a productive value chain. Therefore, it received a comparatively less weighting. This weighting can be adjusted on a project-by-project basis to reflect overall goals.

For StewardFish, the prioritisation and selection of value chains was conducted during COVID-19 lockdowns across the project countries, which meant that researchers could not facilitate broad in-person stakeholder engagement, as planned. Under normal circumstances, and provided that sufficient funding and time are available, other methods for scoring and prioritisation which are more participatory, such as focus groups or multi-stakeholder workshops, can be used to obtain perspectives on criteria and value chain scoring from a range of stakeholders across the value chain.

While the criteria used in these projects may not be applicable to every case of selecting or prioritising fisheries value chains for VCAs, there are some general principles which can assist in screening out value chains which may have potential to be unequitable or negative environmentally, if further developed. (The authors note that these principles cannot always be satisfied as positive outcomes for all stakeholders are not guaranteed, due to environmental, regulatory, or economic challenges.) These principles include:

- The outcomes of the VCA should promote equity along the small-scale fishery value chain, including for women, and youth.
- The outcomes of the VCA should ideally generate pareto efficient outcomes i.e. the improvement in income of any one actor in the value chain should not come at the expense of other actors.
- The outcomes of the VCA should aim to improve the environmental functioning of the value chain and contribute to its long-term environmental sustainability. That is improving

income should not come at the expense of the environment, promote unsustainable harvesting practices, or jeopardize the health of the fish stock.

In addition, gender sensitive criteria should be addressed, which could include the potential for empowering women and strengthening their livelihoods along the value chain.

4.2 Guidelines for Conducting Participatory, Gender Sensitive and Sustainable VCAs

Once a value chain is selected for VCA, adapting frameworks for fisheries value chain analysis such as “Guidelines for a Methodology to Support Value Chains for BioTrade Products” (UNCTAD 2009) or “FAO Guidelines for Value Chain Analysis” (FAO 2006) typically enable a sound VCA to be conducted. However, conducting a small-scale fishery VCA, particularly in Caribbean SIDS, would require that attention be placed on participatory approaches to maximise the potential of positive outcomes. Below, we outline some key guidelines for conducting participatory, gender sensitive and sustainable VCAs.

4.2.1 Conduct a Comprehensive Stakeholder Mapping

Conducting a comprehensive stakeholder mapping is a key first step in a participatory VCA. Starting with available databases and information, researchers should establish a detailed understanding of the various stakeholders or actors involved in the value chain, including their relative position in the chain, geographic location and role in the production of the fish products (Duong et al 2022). Stakeholders should also be clustered based on areas of commonality. Value chain structure and stakeholders do vary significantly, therefore some characterisation/grouping of actors in the harvest and post-harvest stages is necessary. In the papers reviewed, these stakeholders typically included, but were not limited to:

- Input providers, e.g. boat builders, suppliers of bait, fuel suppliers, ice suppliers;
- Harvesters, e.g. subsistence, artisanal, industrial;
- Processors, e.g. small-scale, industrial;
- Distributors, e.g. transportation companies, food suppliers, marketing cooperatives and associations;
- Retailers, e.g. supermarkets, speciality seafood retailers;
- Consumers/ export, e.g. local direct-to-consumer, restaurants, regional export, extra regional export; and
- Governance, policy and environmental actors, e.g. fisheries authorities, non-governmental organisations.

Within each of these stakeholder groups, further categorisation is typically required to reflect the size, level of organisation or other characteristics of the stakeholder group. For example, at the harvest phase, categories may include different harvest methods or gear types for the same species, scale of harvest and/or landing site location. Socio-economic data, including data on gender and vulnerable groups, should be collected for each stakeholder group.

Throughout the stakeholder mapping process, a database of contacts should be compiled for later use in the VCA, particularly for identifying stakeholders for focus groups, multi-stakeholder workshops, interviews/surveys, validation of research findings and participatory development of next steps. For the Blue BioTrade project, a comprehensive stakeholder mapping was conducted for the queen conch value chains of Grenada, Saint Lucia, and Saint Vincent and the Grenadines prior to the initiation of the value chain analyses for the countries.

This mapping allowed researchers to identify key data and information gaps which then helped them to tailor their research methods and approach to the VCA.

4.3 Use Qualitative and Quantitative Research Methods to Maximise Stakeholder Participation

In data scarce environments, as is the case for small-scale fisheries in Caribbean SIDS, VCA research methods such as semi-structured interviews, surveys, focus groups and multi-stakeholder workshops are important for gathering data and information. These methods also allow for the active participation of stakeholders in the research process, their engagement in the analysis of the value chain, and the incorporation of their local knowledge in identifying challenges and developing solutions for the sustainable development of the value chain.

Here we advocate for the use of a variety of methods, each targeted at a different stage in the VCA process. While these can be used concurrently, we advocate for the sequential use of the following methods based on our experience for best outcomes of a VCA. These are key informant interviews, surveys, focus groups and multi-stakeholder workshops.

Key informant interviews

From the VCAs reviewed, for example those under the StewardFish, Blue BioTrade and FISH4ACP projects, key informant interviews served a critical role in gathering data and information on value chains. They also helped identify knowledge and information gaps to be filled by subsequent research methods, particularly surveys and focus groups. Interviews generally followed a semi-structured format, with standard questions for all interviewees, and with specific questions for each stakeholder type depending on their role and position in the value chain. Data and information should be gathered on:

- Stakeholder relationships in the value chain;
- Volumes of product flows;
- Prices of product flows;
- Challenges faced within the value chain, e.g. bottlenecks, social, economic and environmental challenges; and
- Opportunities to improve value chain functioning.

Key informant interviews are an important opportunity to interview stakeholders who are involved in production, but also stakeholders who are not directly involved in production but have an influence on production outcomes. This can include, fisheries authorities, maritime policing forces, health inspectors, custom officers, export support agencies and non-governmental organisations. Perspectives from these stakeholders can identify important challenges, opportunities and ways in which value chain functioning can improve. Using key informant interviews with these stakeholder types allows perspectives to be drawn from the widest possible audience, as conducting more in-depth research activities with non-production stakeholders would likely be too research intensive.

Surveys

Surveys with actors directly involved in value chain production are an essential tool and approach particularly for gathering quantitative data. Information gaps identified from initial desk research and key informant interviews that require good quantitative understanding should be a focus of surveys. In the Blue BioTrade project, surveys allowed for a detailed understanding of prices paid for inputs at each stage of the value chain such as scuba gear and

maintenance costs, and sale prices to each subsequent actor in the post-harvest segment of the value chain. They also helped determine the sale prices of secondary and rare products from the value chain such as operculum and conch pearls, for which limited market data were available. Price data across the value chain are essential for assessing the distribution of benefits between actors and tend to be lacking in small-scale fisheries (Wamukota, Brewer and Crona 2014). In the FISH4ACP project, there were surveys of consumers, workers and small fishers (Duong et al 2022), which collected data on consumer preferences, product prices, fisher and worker experiences.

Additionally, surveys are important for understanding the volumes of product flowing between stakeholder types (Duong et al 2022). These quantitative details are important for understanding the extent to which value can be added to the chain. Without a proper understanding of prices and volumes it is extremely difficult to determine what additional value will be created for actors by reducing input prices, improving final sale prices (through value addition), generating value from current volumes of 'waste'/by-products, or by re-directing production volumes to new end markets. This information, combined with market research, can be used by VCA researchers to develop recommendations to address challenges faced by actors owing to value chain underperformance, and identify opportunities such as new products, technologies or end markets.

Focus groups

Focus groups allow for organised discussion with a selected group of individuals to gain information about their views. It helps researchers to draw upon respondents' attitudes, feelings, beliefs, experiences and reactions in a way in which would not be feasible using other methods (Gibbs 1997). In the VCA process, focus groups are an important part of validating research findings and refining recommendations as it creates a space to get a more nuanced understanding of stakeholders' perspectives on potential opportunities for value chain improvement. Understanding potential challenges from stakeholders who would have to pursue new opportunities is essential for VCA success. Focus groups are also an important way to increase stakeholder engagement in the VCA process, as it provides a space where respondents can provide a greater range of information and opinions (relative to surveys) and provide recommendations which can be refined jointly by researchers and stakeholders, increasing ownership of VCA results.

While focus groups can be used with almost any type of stakeholder, they are especially useful for fisherfolk or vulnerable stakeholder groups who may feel less comfortable in the setting of a multi-stakeholder workshop, where power dynamics may limit their meaningful engagement and honest feedback. The FISH4ACP project utilised focus groups for consumers, workers and artisanal fisherfolk (Duong et al 2022), which supplemented data obtained from surveys of these groups.

Multi-stakeholder workshops

In the VCA process, multi-stakeholder workshops help bring together a range of stakeholders from the public and private sectors, academia and civil society to validate VCA findings and recommendations and collectively plan next steps for action. Since multi-stakeholder workshops are typically more costly than other participatory methods, owing to having to fund the cost of a venue, catering for participants and fees for professional facilitators etc., it is often best to convene these events when they will have the most impact. Multi-stakeholder workshops are therefore most useful near the end of the VCA process where stakeholders can use the validated VCA findings and recommendations to produce a participatory plan of action. A participatory plan of action builds, in collaboration with all stakeholders, a series of next steps to be taken by actors to implement the recommendations for value chain improvement

developed by the VCA. Implementing value chain improvements often requires cooperation from various actors, who prior to the VCA, may not have acted in cooperation with each other. Thus, a participatory plan of action increases the likelihood of recommendation success by allowing stakeholders to take ownership of their individual role, while recognising the contributions of other actors to the collective success of the value chain. In this regard, developing a participatory plan of action can also assist in resolving stakeholder conflicts that may exist in the value chain.

For the Blue BioTrade project, a multi-stakeholder workshop was held to prepare a participatory plan of action, which articulated next steps for value chain improvement and financial requirements for each recommendation. In this case, the process was led by the relevant fisheries authorities, in collaboration with fishers, processors, exporters, trade agencies and regional cooperation agencies. Guided by the participatory plan of action, the work on the Blue BioTrade VCA has continued with funding obtained for subsequent projects related to conducting stock assessments and improving stock health through aquaculture and improved management coordination.

4.3.1 Apply Gender-Sensitive VCA Methodologies

Both men and women are actors in Caribbean small-scale fisheries value chains. The harvest segment of many Caribbean small-scale fisheries value chains, which often receives significant attention via training, subsidies and other incentives, is comprised almost entirely of male actors. Women, on the other hand, are mostly present in the post-harvest segments of small-scale fisheries value chains, playing roles as processors, traders, retailers and consumers. Though women participate in small-scale fisheries value chains, their contributions are often poorly recognized.

Gender equality, which includes supporting women's participation and empowerment in fisheries value chains, is a goal of many development organizations, including the CRFM. However, while gender considerations are slowly being mainstreamed into Caribbean regional and national fisheries policies, their application in practice is lagging. This is most evident in the dearth of gender disaggregated socio-economic fisheries data and information collected by many countries.

One way to help fill these information gaps is by applying gender-sensitive methodologies to VCAs. This allows researchers and policymakers to better understand men's and women's roles along all segments of small-scale fisheries value chains, identify barriers to their effective participation in the fishing industry and create gender-responsive policies, programmes and initiatives to enhance economic opportunities and ensure decent working conditions for both men and women.

In conducting gender sensitive VCAs, it is important to recognize that women's roles tend to be 'invisible', i.e. under-recognized. For example, in the processing and marketing segments of small-scale fisheries value chains, small and micro enterprises led by women may be overlooked as merely domestic or informal operations with low technology input (Simmions and McConney 2022) (This may lead to the perception that these enterprises are irrelevant to development and as such they may be ignored in stakeholder mapping exercises (Sender, et al. n.d.)

Even in recognising the marginalisation that women in small-scale fisheries face through the invisibility described above, it is just as vital for VCA researchers to be mindful of the challenges that men face along small-scale value chains. For example, men in the harvest segment of Caribbean small-scale capture fisheries often work under dangerous conditions with limited support (e.g. inadequate access to social security arrangements, inadequate search and

rescue systems, inadequate fisheries monitoring, control and surveillance systems) to mitigate risks associated with serious injury, piracy and other such hazardous events. Using a gendered-lens, VCA researchers may ask “To what extent is this inadequate support linked to harmful gender stereotypes which portray men as strong, brave and capable of defending themselves and what can be done to overcome this?”. In both examples, if these gender barriers are not recognised and addressed, they can lead to inefficient small-scale fisheries value chains and stymied development.

Of the seven VCA studies reviewed for this paper, the Guyana Seabob VCA study was the only one that gave significant attention to gender, by identifying gender-based advantages and disadvantages in the seabob value chain and making gender specific recommendations (Duong et al 2022). The study also specifically engaged the expertise of a social analyst, to examine various social components of the value chain including gender, in conducting the VCA, which should be adopted by future VCA initiatives as a best practice, where resources allow. Of the remaining six VCA studies, only one briefly highlighted the different contributions of men and women along the value chain studied and none identified gender specific barriers or made recommendations specific to enhancing women’s participation or empowerment. Improving the application of gender-sensitive methodologies in Caribbean VCAs is therefore a critical gap that must be addressed to ensure sustainable development of Caribbean small-scale fisheries value chains.

4.3.2 Consider Sustainability

Fisheries globally face multiple environmental threats and pressures, from unsustainable harvesting practices, overfishing, land-based sources of pollution and climate change (CLME+ 2013). Additionally, consumer awareness of the environmental impacts associated with harmful fishing practices has recently improved, creating the risk of rapidly declining consumer demand if a value chain has negative environmental publicity. Therefore, participatory VCA should always aim to improve the long-term sustainability of small-scale fisheries and have outcomes that leave the value chain better off than it was before. For participatory VCA, we advocate for increasing value earned and retained from existing harvest levels and not on increasing production volumes by increasing harvest. In the literature review, three main approaches to maximise value retained from existing catch emerged - generating value from waste, reducing losses, and creating new end markets for value added products.

Generating value from ‘waste’ or underutilized by-products from processing emerged as an important opportunity to exploit following analysis of the Queen conch value chain under the Blue BioTrade project, and mahi-mahi and Caribbean spiny lobster value chains under the StewardFish. In these VCAs, a small set of actors in the value chain were seeking out or creating value for underutilized products: operculum, fish silage and lobster heads respectively. Other actors were informed of these opportunities related to the creation of value from these products, and begun piloting their collection and sale.

Losses across fisheries value chains are often due to poor cold chain management and quality control which results in spoilage of the fisheries product. This can result in a smaller proportion of harvested seafood being sold to final consumers as well as reduced sale prices for retained product due to reductions in quality. Improving management of the cold chain, including starting the cold chain earlier in the harvest process, is one direct way of reducing volume and quality losses of seafood products. In the value chain studies reviewed, improving cold chain management emerged as an opportunity to access high-value export markets (e.g. for Caribbean spiny lobster in Jamaica) and high-value domestic markets, particularly restaurants (e.g. for mahi-mahi in Barbados).

Creating new product and end markets was found to be another approach to maximise value from existing catch. Provided that there is improvement to cold chain management, small-scale fisheries actors can access direct-to-consumer channels using information technology and higher value domestic and international markets. Through processing and value addition, new products which simplify at home and restaurant preparation, such as dolphinfish fingers and conch samosas and fritters, allow the creation of new end markets and capitalize on growing demands for seafood products.

The ecosystem approach to fisheries is another important lens through which participatory VCA in small-scale fisheries should be conducted. Participatory VCA tends to focus on a single species, but small-scale fisheries in the Caribbean are typically multi-species. Using the ecosystem approach when developing recommendations protects against the risk of developing one value chain at the expense of other elements of the ecosystem (Morishita 2008). Additionally, the ecosystem approach is useful in stakeholder engagements, particularly multi-stakeholder workshops as they can help individual value chain actors understand the aggregate effects of the entire value chain (and proposed changes) on the entire ecosystem not only the value chain under analysis.

5. DISCUSSION

5.1 Role of Small-Scale Fisheries VCAs in Informing Policy

Having evidence-based policies and plans that are developed and implemented in collaboration with stakeholders is fundamental to good fisheries governance. The major benefit of participatory VCA is that it uses a holistic, multi-stakeholder approach to examine all segments of small-scale fisheries value chains including the socio-economic, environmental and institutional factors that impact their sustainable development. Thus, participatory VCA can be used to identify areas of potential improvement for small-scale fisheries value chains which can be introduced by means of public policy measures (Bellu 2013). It can also be used to assess the likely socio-economic, environmental and institutional impacts of available policy options (e.g. expanding international trade or introducing new technologies) (Bellu 2013). Participatory VCA is therefore a powerful tool for policymakers and a key resource for informing regional and national small-scale fisheries policies and plans based on the ecosystem approach to fisheries principles.

A good example of how VCAs were used to inform small-scale fisheries regional policy comes from the Blue BioTrade project, which was implemented by UNCTAD and the OECS Commission in collaboration with CITES. Under this project, VCAs were conducted for the Queen conch fisheries in Grenada, Saint. Lucia and Saint Vincent and the Grenadines. The analyses revealed a number of common challenges related to sustainable harvest, trade, data collection and management, livelihoods and human wellbeing which further reinforced the need for collaboration among the countries. Within this context, the project was able to garner support for the participatory development of the “Blue BioTrade Regional Plan of Action for the Eastern Caribbean Queen Conch Value Chain”. The action plan sets out strategic biodiversity, socio-economic and institutional strengthening actions and resource mobilisation needs to support the sustainable development of the Queen conch value chains in the three target countries.

Of course, given their scope, the data and information generated from small-scale fisheries VCAs are not only useful in guiding the development of fisheries sectoral policies and plans, but also in informing other related instruments such as those on rural and small and micro enterprise development and on broader issues relevant to the Caribbean such as poverty reduction, blue economy development, climate change and food and nutrition security.

5.2 Role of Partnerships in Conducting Participatory Small-scale Fisheries VCAs

As can be seen from the three regional projects reviewed in this paper, partnerships can play a significant role in conducting a participatory VCA. Through partnerships, multiple organisations can leverage their individual strengths to make a participatory VCA have more lasting positive economic, environmental, governance and social outcomes. In the case of the GEF-funded StewardFish, the Caribbean Natural Resources Institute (CANARI), in collaboration with FAO, undertook the activities to set up the criteria for identifying the three value chains and conducting the VCAs using a participatory approach. Under the Blue BioTrade project, UNCTAD provided knowledge on blue BioTrade, CITES provided its capacity to identify threats and means of improving management of Queen conch, the OECS provided resources and its network to enable access and promote cooperation amongst the actors in the value chain and the EU provided resources to conduct the VCA. In relation to the sustainable development of the Queen conch value chain, the Blue BioTrade project can be seen as building on the work initiated for queen conch under StewardFish. In relation to FISH4ACP, the combined global reach of the FAO, OACSPS and EU was utilized in identifying suitable value chains for analysis and promoting a very detailed VCA instrument that would assist in developing sustainable, resilient and well-managed value chains, with opportunities for sharing lessons learned and best practices.

5.3 How Participatory Small-Scale Fisheries VCAs can Contribute to Important Regional and International Goals

When conducted in a participatory manner, small-scale fisheries VCAs can contribute significantly to important national, regional and international goals related to the sustainable development of fisheries resources and the blue economy.

Thus, developing or strengthening sustainable and resilient small-scale fisheries value chains for key commercial, underutilized and unutilized fish species is critical, since it involves gap analyses, policy interventions and capacity building, including accessing funds targeted at men, women and youth. Such an approach would significantly contribute to the achievement of regional and global strategies and plans, such as those outlined in Table 3.

Table 3. How VCA can contribute to important regional and global goals related to fisheries

Goal / Policy	How participatory SSF VCAs can contribute to achieving goals or policies
Regional	
CARICOM 25% by 2025 Reduction in the Regional Food Bill	Identifying opportunities for the utilization of fish waste in animal feed or in fertilizer (promoting circular economy).
	Developing value-added products in keeping with CARICOM demands, including for the tourism sector and local consumption.
	Reducing extra-regional imports of fish and fish-products.
CNFO/CRFM Small-Scale Fisheries Action Plan 2023 – 2025	Facilitating the assessment of small-scale fisheries value chains, including for key species, underutilized and unutilized species, small-scale aquaculture, and identifying the gaps (e.g. policy and capacity) and opportunities for market driven value-added fish and fish products.
Third CRFM Strategic Plan 2022 – 2030	Strengthening fisheries value chains by diversifying and creating value-added products to improve monetary value of catches, and expanding trade and market access, while satisfying the necessary sanitary and phytosanitary standards, sustainability and traceability requirements.

Goal / Policy	How participatory SSF VCAs can contribute to achieving goals or policies
Global	
SDG 14 (Life below water)	Improving value retained from current catch, to reduce fishing pressure.
SDG 1 (No poverty)	Contributing to the reduction of poverty in fishing/coastal communities.
SDG 2 (Zero hunger)	Improving access to nutritious animal protein by local populations.
SDG 5 (Gender equality)	Improving equity along small-scale fisheries value chains, with particular attention to women and youth.
SDG 8 (Decent work and economic growth)	Encouraging inclusive and sustainable development, employment and decent work for fisherfolk along the small-scale fisheries value chains.
SDG 13 (Climate action)	Building resilient small-scale fisheries value chains.

6. CONCLUSION

Participatory VCA represents an important approach to improving the social, economic, and environmental performance of small-scale fisheries in the Caribbean. By using participatory approaches, VCAs can achieve a greater level of shared responsibilities of various actors, better clarify dependencies and identify often hidden interconnections among actors and processes. This approach involves the study of value chains that key stakeholders identify as important for their regional or national development. Using stakeholder-agreed criteria for value chain selection allows more engagement and commitment in scale-up, commercialization or sustainability-enhancement opportunities along the value chain. Using varied qualitative and quantitative tools simultaneously can be costly and time-consuming. Focus groups and key-informant interviews can be used when financial and time resources are scarce, as they can offer rapid and in-depth views of information and product flows along the value chains, in addition to rapidly identify potential risks, challenges and opportunities. Finally, participatory VCAs should include gender mapping and offer gender analysis to allow recommendations for the value chain development to be more inclusive, which would support its potential growth and sustainability. If sensitive to environmental and gender issues, VCAs can improve environmental management, resilience to economic and environmental shocks, and advance the roles of women and other vulnerable groups in Caribbean fisheries.

Additionally, participatory VCA can support improved governance arrangements for regional fisheries by advancing partnerships across agencies and organizations in the regional and global private and public sectors. Through partnerships, economic and environmental outcomes can be advanced simultaneously in participation with local stakeholders by leveraging individual organizational strengths, for example in trade, international environmental regulation and regional cooperation. Lessons learnt and best practices from conducting participatory VCA outlined in this paper can hopefully inform a growing practice of VCA in SIDS, particularly in the face of multiple environmental threats and a growing blue economy.

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