

TOOLS FOR UNDERSTANDING THE COMPLEXITIES OF SMALL-SCALE COASTAL FISHERIES ECONOMIES IN NORTHEASTERN BRAZIL: PARTICIPATORY VALUE CHAIN MAPPING AND ECONOMIC FEASIBILITY STUDIES

Macnaughton Alison, WFT (World Fisheries Trust), alison@worldfish.org
Rocha Ligia, UFRN (Federal University of Rio Grande do Norte, Brazil), ligiarochal@gmail.com
Wojciechowski M. John, WFT (World Fisheries Trust), john@worldfish.org
Carolsfeld, Joachim, WFT (World Fisheries Trust), yogi@worldfish.org

ABSTRACT

In developing countries the framework for institutional engagement in small-scale fishing communities needs to consider the regional, social, economic and environmental complexities of informal resource-based economies. The combination of socio-economic trajectory of artisanal fisherfolks, their relationship with the environment, the economic pressures and the public policy framework, which often regarded fishing communities as desolate and in a permanent state of deficiency, resulted in a paradigm that reinforced social exclusion and further degradation of the environment. This context is further aggravated by gender inequalities, which turn the role of fisherwomen in small scale fisheries and community development invisible. Within this negatively charged context, the challenge of fostering a socially just, environmentally sustainable and economically viable livelihood relies on institutional interventions that are able to identify the endogenous potential for change within the community. As such, a community-based development approach aims to build opportunities for multi-stakeholder engagement to socially embed the economic and resource-management tools. The paper describes the conceptual framework and the participatory methodology applied by the "Gente da Maré" (The People of the Tide) Project in Brazil. This methodology involves the participatory development of value chain mapping and economic feasibility study towards sustainable livelihoods for small-scale coastal fishing communities. A special focus is placed on the "marisqueiras" – shell fisherwomen that live from the extraction of clams and oysters in coastal communities spread across Brazil's North-eastern Region, as well as on the intervening institutions. The paper concludes with reflections on the community-based inter-institutional approach to participatory value chain mapping and economic feasibility studies, the challenges that lay ahead in the application of participatory economic development tools and on future directions for further research.

Keywords: small scale fisheries, institutional learning, participatory value chain mapping

INTRODUCTION

While sometimes appearing to be simple, informal resource-based economies, small-scale coastal fishing communities are in fact quite complex systems subject to social, economic and environmental pressures and uncertainties at a variety of scales. Because natural and social systems are complex, non-linear, and poorly understood (Holling and Meffe ,1996), social equity and conservation efforts need to account for such complexity and uncertainty. Moreover, social equity and conservation does not imply stasis; they must maintain the diversity of the ever-evolving variety of life on Earth (Knapp, 2003). An exacerbated attention to only natural systems is not adequate for conservation goals once conservation cannot be separated from social problems such as governance and equity. Ethics and social justice are needed to solve pervasive social inequalities as well as environmental problems (Costanza, 1996). These high levels of complexity and uncertainty in natural and socio-economic systems make managing for sustainability difficult (Ludwig et al, 1993).

In artisanal fisheries, the combination of socio-economic trajectory of fisherfolks, their relationship with the environment, the economic pressures and the public policy framework, which often regarded fishing communities as desolate and in a permanent state of deficiency, resulted in a paradigm that reinforced

social exclusion and further degradation of the environment (Medeiros, 2006). This context is further aggravated by gender inequalities, which turn the role of fisherwomen in small scale fisheries and community development invisible. To adequately address complexity and uncertainty in small scale fisheries we must adopt a multidisciplinary systems-based approach (Berkes et al. 2002; Gunderson and Holling 2002), that incorporates resilience (Berkes and Folke, 1998) and adaptive management perspectives (Walters, 1986). Moreover, for this approach to be effective in the real world, it needs to consider and incorporate tools for local engagement that promote understanding among and empowerment of local actors in the management processes. The challenge of fostering a socially just, environmentally sustainable and economically viable livelihood relies on institutional interventions that are able to identify the endogenous potential for change within the community. New institutions need to evolve and/or new institutional frameworks need to be developed to be capable of applying this multi-disciplinary, adaptive and participatory approach to understanding and promoting sustainable development of resource-based coastal community economies.

This paper describes a practitioner's perspective of small-scale coastal community development used in the People of the Tides Project or "Gente da Maré (GDM)". GDM is a bilateral (Brazil-Canada) CIDA funded initiative under the Knowledge Exchange for Equity Program. The GDM Project attempts to foment an institutional framework capable of sustaining a multi-disciplinary, adaptive and participatory approach to understand and promote sustainable development of mollusc harvesting, processing and farming through technical and extension assistance and capacity building.

METHODOLOGY

The GDM project promotes inter-institutional and equitable dialogue within and between regions, training on participatory research and resource management approaches, and the use of participatory tools to identify the economic feasibility and sustainable economic potential of the local value chains and new technology for economic diversification including value-added processing and small-scale native shellfish aquaculture. It is active in seven regions across four coastal States in Brazil's North-eastern Region: Rio Grande do Norte, Paraíba, Pernambuco and Bahia (Fig. 1). A variety of Federal, State and local government agencies, Federal Universities, NGOs, private industry and local fishing associations and community groups are involved in each region.

The Project's interventions are based on the Participatory and Action Research Methodology (PAR) (Thiollent, 1996; Morin, 2004) from the initial appraisal of the current situation to the definition of the problem and in the elaboration and management of project interventions. Not only can this methodology be seen as a strong mobilization and emancipation tool, but it can also act as a bridge between research, community outreach, learning and action. At the center of this methodology the "researcher" is seen as an active stakeholder and agent of change within the process: "the objective of the action research methodology is to emancipate the stakeholders' ability to transform or improve reality, through a social learning and capacity building process based on the creation of spaces of social interactions, democratization of information, building the awareness of interdependence and multi-stakeholder dialogue" (Morin, 2004, p.55).

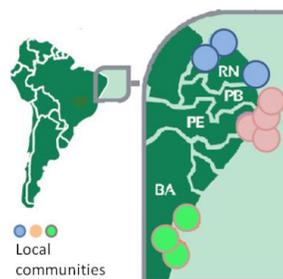


Fig. 1: Brazil and the territoriality extension of "People of the Tide" Project (GDM).

As such, GDM's participatory action research methodology to small-scale coastal fisheries community and economic development translated the application of two economic development tools (value chain analysis and economic feasibility studies) for use and development by the community. In this approach, the practitioner (or intervening agent) is no longer seen as a neutral specialist who collects data, analyzes the results and suggests recommendations for change, but rather is an agent that presents and discusses with the community the economic development tools and facilitates their understanding of their role in changing reality through a social learning process.

SMALL-SCALE CLAM HARVESTING IN NORTHEASTERN BRAZIL

Shellfish harvesting occurs along all of Brazil's 8,000 km of coastline and is one of the most accessible food sources that small coastal communities in the Northeast depend on for their subsistence, as well as a primary source of income for many families. It is estimated that at least 50,000 people live exclusively from local resources of clams and mangrove oyster (FAO, 2007). Shellfish harvesting of "tiny venus clams" (*Anomalocardia brasiliensis*), the most abundantly occurring and easiest to harvest clam in Brazil, is traditionally performed by women (called "marisqueiras"), even though men may also participate. Our preliminary observations indicate that mollusc harvesting in the Northeast of Brazil involves largely informal subsistence-level value chains whose principal actors are primarily female headed households in small rural communities that are not adequately recognized or served by current public policy programs and interventions. There is a social stigma in Brazil associating shellfish harvesting as one of the "lowest" forms of artisanal fishing, which is itself often considered an undesirable, or "predatory" activity. Harvesters typically work 10 – 14 hour days, collecting, processing and selling an average of 3kg of product per harvest (45kg raw, in the shell) for a profit of less than \$ 2 USD/kg, if they manage to sell it. The same product, purchased off the beach by distributors and sold in supermarkets, without additional processing, is usually priced at \$8 USD/kg. While shellfish harvesters have been recently legally recognized as professional fisherfolks and encouraged to register as such with the federal fisheries ministry, there is little incentive to do so. There are currently no existing regulations in Brazil governing the harvest of shellfish resources and limited regulations concerning sanitation in processing, distribution and sales of shellfish. These factors contribute to difficulties in gathering accurate and complete information about the activity. The application of participatory analysis tools aims to better understand productive processes which in turn can improve public and institutional recognition and visibility of the livelihood activity, thus securing long-term institutional commitment towards social and economic support services to sustain small-scale, mollusc based fishing communities. Box 1 details the extraction process for clams.

Box 1: The extraction process of clam by local communities on Brazil's Northeastern coast

The extraction of the clams occurs at low tide. The marisqueiras go to the beach at various hours of the day depending on the distance of the sandbanks, which vary seasonally. The extraction occurs preferentially during the morning tides and is made by hand or with the use of rudimentary tools, the production is collected in a bucket or a large 40kg mesh bag. The processing is usually done on the beach or at home and consists of washing, boiling, and separating the shells from the meat. Mangrove wood or wood debris found in the community is used as fuel (Figure 2). Children may be involved in the harvesting activity. There are some evidences of collective organization of the activity, (through associations or cooperatives) but most of the harvesting is carried out individually. Once the product has been processed and packaged it is sold through a number of non-exclusive commercialization channels including the beach tourist, local bars and marketplace, neighbours and to the middle-man which distributes the product in large urban centers. The weekly frequency that women go to the tide varies according to lunar system, the existing needs of each family and the number of people in the family. This variation impacts the monthly production volumes of each family.



Figure 2: The various stages of harvesting and the women that carry out this activity.

An example of the product flow from harvest, processing to commercialization can be seen in diagram 1. The diagram was created with the “marisqueiras” during the value chain mapping sessions developed in the local communities. An example of a value chain map as understood by the clam harvesters can be seen in diagram 2. It was produced during a one-day workshop in the State Sustainable Development Reserve Ponta do Tubarão (RDSEPT) in the State of Rio Grande do Norte. The harvesters drew the maps identifying their role on the value chain, as well as: the inputs used in harvesting, processing and distributing the clams, the perceived role of support institutions, the positive and negative linkages between the various phases of the value chain, and information and financial flows. The exercise identified the key bottlenecks of the value chain, as perceived by the fisherfolk community. This was the key step in collaboratively defining actions to obtain ‘quick-win’, increasing ownership of the economic development tool, and perceiving its use in obtaining concrete change. In this case, the community chose to focus on a set of actions that would alleviate the transportation and displacement challenges during clam harvesting.

Gender Dimension in small scale shellfish harvesting

Basically there are three degrees of extraction in the communities: women may completely depend on the extraction and sale for survival, others may use shellfish gathering as food and income supplement or may gather only for consumption few times in a month. These groups are not fixed: the women that may be in a better condition of life may have been an arduous shell fisherwomen for more than a decade, and similarly, a women who never had to extract shellfish may come to engage in the activity as a source of food supplement (Rocha, 2008). In general the shell-fisherwomen have learned to extract shellfish with older women in their families. They started at an early age tagging along with their family members on the extraction and processing phases. By the age of seven or more they began to assist in the commercialization of the product and continued this activity into adulthood. Due to the long work hours, physical hardship implied and daily activities regulated by the sea tide, most shell-fisherwomen couldn’t attend school. Most of them did not finish their elementary education (Rocha, 2008). In addition to the educational deficit, the labour intensive activity has a general negative impact on the health of the marisqueiras.

ANALYSIS: APPLICATION OF PARTICIPATORY DEVELOPMENT TOOLS

Understanding participation in value chain mapping

The GDM Project has been developing and testing tools to qualify and quantify the existing mollusc value chains, as well as techniques for developing and implementing sustainable improvements. The principal objective is to increase awareness of the inter-dependence of the socio-economic, environmental and socio-political factors along the value chain, and thus identify the critical points, set priorities and identify resources to increase positive aspects and overcome bottlenecks.

Both academic research and development practitioners have for a number of years been addressing “value chains”. To some extent it was driven by practitioners’ insight in the need to connect producers to the market, and indeed understanding and verifying the target market before engaging in upgrading activities

with all the stakeholders that comprise the value chain. Development practitioners have observed this process and spotted an opportunity seeing that value chain promotion can integrate the producers with the market and thus have a direct pro-poor effect. As such, the value chain issue has been taken up by donor agencies, which perceive them both as a risk and an opportunity to local community and economic development (Lastres et al 2003; Caporali and Volker 2004; BNDES, 2004; SOLTEC, 2008).

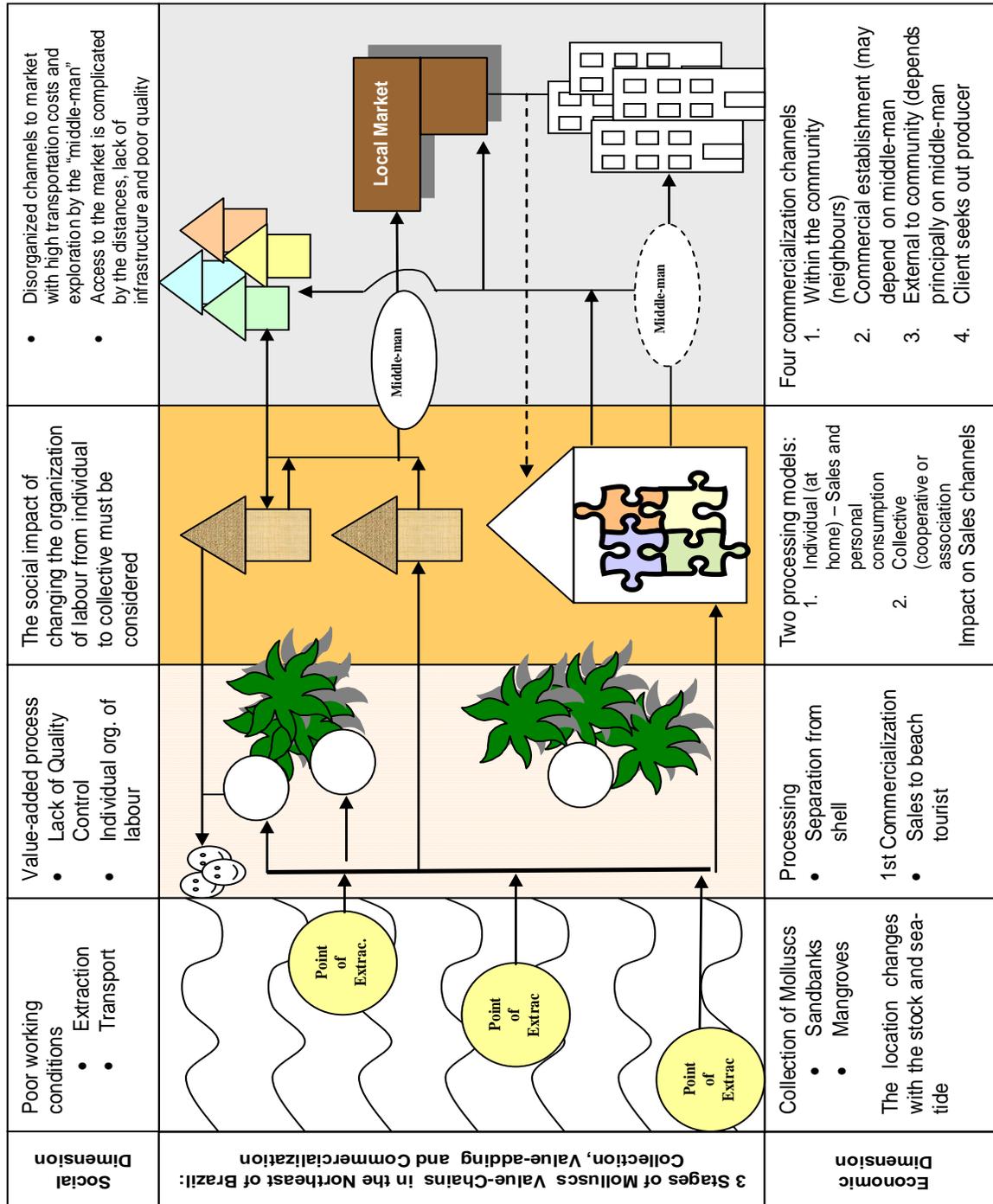


Diagram 1: The product flow from harvest, processing to commercialization.

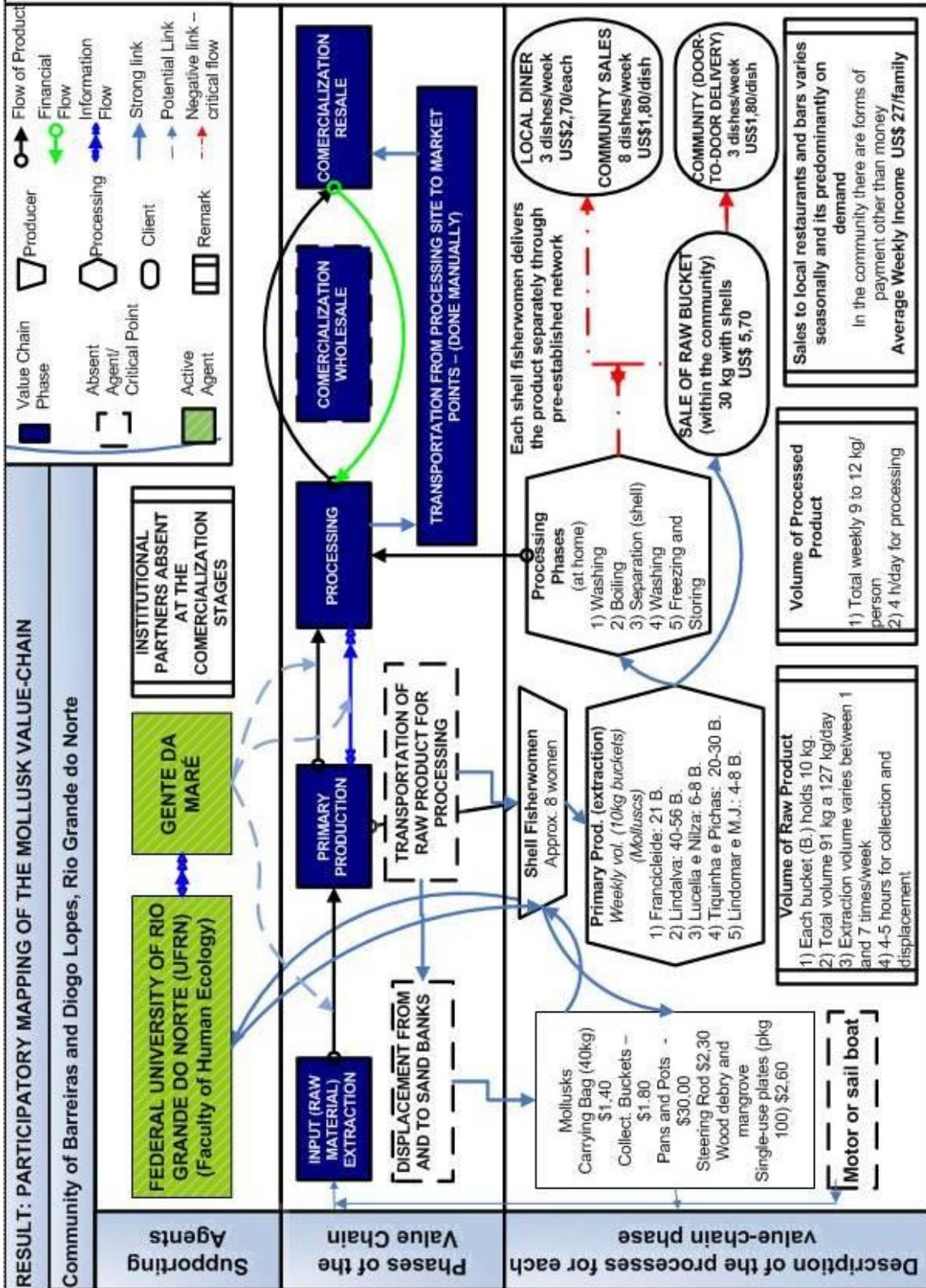


Diagram 2: An example of a value chain map as understood by the clam harvesters.

The careful selection and participation of key informants determines the quality of the value chain analysis. The number of people interviewed will depend on many factors including the time and funds available and logistical constraints. Although the key objective of a participatory approach is not intended to have certain statistical significance, the participants should be representatives from each level of the value chain and others who understand trends in the end markets. As the key constraints to end market opportunities become clear, the selection of informants will become increasingly biased in favour of those likely to benefit from the removal of these constraints. Stakeholder participation at this stage should go beyond the provision of information to involvement in value chain mapping or the formation of interest groups to lay the groundwork for participation in other stages of the project cycle. The information gathered from the value chain mapping exercise should be analyzed collectively by a broad representative group of stakeholders. This can occur through a series of meetings with key stakeholders or through a structured, interactive event that brings together recognized key players in the value chain.

In these group settings, constructing visual images can be a non-threatening exercise that offers a way to break the ice in initial contacts. By encouraging diverse stakeholders to collaborate in the development of a value chain map, a shared understanding of the value chain can be reached. Together, stakeholders learn how a value chain functions and their role within it. Collaborative development of the map also increases the sense of “buying in” to the participatory approach.

Ensuring that the implementation stage continues to be participatory requires project implementers to take on the role of a facilitator—guiding and supporting stakeholder action rather than directly driving change. With short project timeframes and donor pressure to produce quick results, it can be difficult for facilitators to resist jumping in when things are not going fast enough or in the direction they expected. However, taking back control from stakeholder during implementation is likely to dis-empower and demotivate the participants and contribute to a dependency culture.

For participation to gather momentum and acquire depth, implementers should use the result of one action to pollinate subsequent action. Initially stakeholders should be encouraged to prioritize activities that lead to results in the short term. In many cases, new issues or interests will emerge as these activities are implemented successfully. Eventually stakeholders gain trust and become comfortable with the participatory process.

Discussing the value chain and involving the stakeholders in the overall analysis promotes: a) stakeholder empowerment to participate in the management of the value chain; b) synergy between the various stakeholders or `actors`; c) contributions to resource conservation through identification of better practices and understanding of their impacts on livelihoods; d) employment and income; e) potential alternative sources of income through value-added or alternative engagement points in the value chain; f) educational and professional opportunities for women and youth; g) affirmation of the historical and cultural values of the activity in the region; and h) opportunities for endogenous technological innovations to emerge.

Participatory Economic Feasibility Study: Going Beyond Numbers

In addition to understanding the inter- and intra-relationships of the value chain's critical points and actors, one must also have a good understanding of the intricate day-to-day activities and associated costs of the production and commercialization processes. An economic feasibility study (EFS) identifies numbers to make up the cost/profile relationship of an economic activity. But to promote social justice and development, it is necessary to go beyond numbers. Within the GDM Project, training on participatory feasibility studies for mollusc chains is being carried based on a methodology developed by CAPINA (Bezerra et al 2010), a Brazilian NGO. Social learning and knowledge development processes regarding the activity, and the various tasks that comprise it, are shared by all stakeholders through participatory meetings.

Besides demystifying the numbers and creating ownership of the tool, the EFS is primarily a means to catalyze reflection on opportunities to do things differently. The participatory approach of the study can build democratic working relations, through: a) a continuous discussion process, b) demystification of the numbers, c) access and ownership of information, c) appreciation of each actor and their role in the production process, d) strengthening the capacity of intervention beyond the boundaries of the enterprise. In this case, a technical assistance or extension agent (someone whose job it is to work with the community, but not themselves a member of the group) plays a strategic role. He/she is permanently placed at the crossroad between maintaining the status quo and the movement of social change. This role can open channels for institutions to rethink their role, approach and learning process about community-based economic development initiatives.

LESSONS LEARNED AND FUTURE DIRECTION

During the two year period of GDM's project implementation, multi-stakeholder involvement in the action-research approach increased the likelihood of success and development. Similarly the application of economic development tools in a participatory approach, such as value chain mapping and the elaboration of economic feasibility study increased the ownership level of the information generated and its sequential use in decision making. With broad participation, solutions to value chain constraints are generally more appropriate to the local setting, and when stakeholders understand and take ownership of the value chain and the economic feasibility development process they are more likely to remain actively engaged beyond the life of the project.

Even the traditional approach to value chain mapping and economic feasibility studies necessitates consideration of all actors in a market system — from the producers/harvesters in the value chain to end market retailers, service providers, and public and private decision-makers in the enabling environment — and is therefore intrinsically participatory to some degree. However, the experience of the GDM Project attempts to portray a more progressive approach to value chain development recommending a greater level of participation: explicitly engaging key actors from different levels of the value chain throughout the project lifecycle and devolving to them a high level of goal setting, decision making and responsibility for action.

In this context, both a participatory value chain mapping and an economic feasibility study focus on relationships, behaviour and management rather than simply on tangible solutions to technical constraints. Participation of multi-stakeholders in the chain, ranging from the local community harvesters to the final consumers as well as the institutions that support or define the regulatory framework of the value chain, is fomented. Further, because the value chain map and the economic feasibility study seek to facilitate change rather than directly intervening, analysis of the incentives of the various actors is essential: Why do we behave in the way we do, and what is needed to motivate change in behaviours or approaches? To identify, understand and use incentives to drive the process of social equity and local sustainable economic development requires active engagement with the community stakeholders. A truly participatory approach to value chain development, therefore, moves beyond extractive or consultative interactions with stakeholders to an engagement that challenges behaviour and stimulates collaborative governance to identify the solutions to value chain and the economic feasibility study constraints (Cattani, 2003).

Over the last two years, the GDM Project engaged in the four states more than 500 community and institutional stakeholders in a wide variety of action-oriented and capacity building activities. Participatory value chain mapping was carried out with more than 120 local and regional stakeholders. Participatory EFS are currently being carried out with the same partners. Due to the complexity of the

relative socio-economic and ecological dimensions, it is too early to assess final results of the processes. Nevertheless the rich experiences favour the identification of a number of lessons learned for future application:

- *Be explicit about how the participatory approach will be applied*
- *Ensure that donor support is appropriate*
- *Gain the interest and buy-in of key actors*
- *Identify common interests to facilitate the development of trust*
- *Develop a communication strategy*
- *Build the capacity of facilitators.*

Moreover, support institutions - academic research centers, development agencies, NGOs, unions and other representative labour organizations, state agencies and local governments – need to engage in continuous cycles of capacity building, to foster spaces for collaborative governance, dialogue and social inclusion. This is perhaps the greatest challenge that lies ahead for sustainable livelihoods for small-scale fishery economies: the ability to move away from a strictly research-based approach to an action-research paradigm. In such new stage, outreach and social learning form the foundation for interaction between the various stakeholders, thus bridging the divide between knowledge and decision-making, in search of ecological sustainability, economic development and social justice.

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