



SHMRC Coastal Fisherfolk Entrepreneurship

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Coastal Fisherfolks Entrepreneurship Program. Uplifting marginalized fisherfolks from poverty through sea farming enterprises.

1.0 Introduction

For millennia the sea provides a bountiful harvest of marine plants and fishes to sustain fisherfolks along the coastal communities around the world. One billion people rely on fisheries as the main source of protein and 35 million worldwide are directly engaged in fishing activities. Yet, today the fisherfolks represent a major segment of the world's population considered among the poorest of the poor. They are marginalized from the mainstream economy with little access to education, social services, infrastructure and markets. Although the consumption of fishes continues to grow with the world's increasing population, the growth in the market does not affect the sad situation of the fishing communities. Organized commercial fishing has devastated the world's oceans leaving 75% of the fish stocks depleted. For the larger species, such as tuna, the stocks are close to 90% depleted. This, coupled with degradation of the coastal environment by pollution and illegal fishing practices, simply created more havoc on the livelihood of the fishing communities. Marginalized fishermen need to go farther out to sea and for longer periods to catch enough fish to sustain the family and create income for basic needs.

Aquaculture has been on the rise since the 1970's and today accounts for 40% of the total fish landings. Marginalized fisherfolks do not benefit in this sector because of the lack of capital, the infrastructure to bring products to market and the lack of knowledge to participate in this economy. Fish farming still remains reserved to the wealthy individuals and organized companies, some of which have interest in commercial fishing as well. However, recent advances in fish farming technology can now make it possible to develop aquaculture programs that will be pro-poor. Through integrated operations from education, seedstock supply, coastal community based production and marketing of higher value marine species, it is now possible to make substantial contributions to uplift the plight of the fisherfolks.

This concept is described here as the Coastal Fisherfolks Entrepreneurship Program.

2.0 The Problem

The concept of Integrated Coastal Resource Management is not new. It has been tried and implemented with marginal success in many countries with vast coastlines, such as the Philippines. The lack of success in uplifting the poverty of the fisherfolks communities was not

the failure of the concept but due to the way such programs are implemented.

Local programs are funded through countrywide development grants implemented mainly by bureaucracy-laden government entities. These programs, though comprehensive on paper, were rarely properly funded enough to cover all the aspects of building a successful, self-sustaining program. Moreover, the sea farming operations employed very low technology, sea products (such as milkfish) that are too low in commercial value and easily displaced by organized aquaculture ventures. Because fisherfolks must be active in an employment on a daily basis to support the family, there was no incentive to stay in the educational or training programs long enough to learn all aspects of sea farming entrepreneurship. Lastly, the financial support to make a successful program at the local level was either inadequate or misdirected.

3.0 The Solution

The success of the Coastal Fisherfolks Entrepreneurship (CFE) Program depends on a combination of technology, education, effective management, adequate financial capacity for implementation and self-sufficiency. CFE Program intends to accomplish these objectives by using the model of the “business incubator” or “science park” concepts to fully support all aspects of the business enterprises by the marginalized fisherfolks. Strong educational and training programs are integral to the success of the CFE concept.

3.1 Technology and People

Aquaculture requires a great deal of knowledge and training that are not easily accessible to fisherfolks whose educational level is typically inadequate for such endeavors. The technology component of CFE would focus on education of the fisherfolks enrolled into the program in the proper management of fishes in captivity, the process of maintaining ecologically friendly approaches to fish farming, fund management and all other aspects of this enterprise. CFE envisions each fisherfolks team will comprise the heads of household (typically the man and wife). Both must be enrolled into the program. A teaching module that can be understandable at the level of the fisherfolks will be used for this training. Only those teams that successfully complete the program will then be enabled to enter the entrepreneurship phase of the program.

Special effort will be made to recruit women into the program. The social transformations envisioned in the CFE needs the participation of women, who remain even more marginalized than the men due to local customs leaving them with less opportunities and lower expectations. The women of the fisherfolk community are typically relegated to taking care of the home and to more menial tasks. They represent a poorly utilized work force that can contribute significantly to the success of the CFE Program. By gainfully participating in the economic survival of the family, CFE envisions women to gain stature and participatory role in the decision making process within the family and the community. Through education and demonstrations of the benefits of active participation by women, CFE will attempt to gradually change the local norms without creating a conflict with the traditional values of the society. As the major influence on their children, a better educated,

3.2 What and how to grow

financially capable women enrolled in the CEP will be able to impart the same value of education and enterprise to the children and others in the community.

The fisherfolk enterprise team lives in limited space by the sea. Land-based operations can be used only for support functions, such as storage of equipment and supplies. The commercial operation will have to be at sea where space can be expansive. Grow out culture technologies must target higher value species to offset the limited manpower available and the cost of offshore facilities.

CFE proposes the grow-out culture of spiny lobsters, and finfishes to maximize the use of the fish pens. High value finfishes, such as caranx and siganids, will occupy the water column while the lobsters will occupy the bottom substrate, thus maximizing full utilization of the sea cage. The spiny lobsters will consume those foods that the finfishes do not consume so that the pollution caused by uneaten food is minimized. The demand of spiny lobsters is increasing in China because of the increasing affluence of the people, the high volume needed (30,000 tons of lobsters annually) to sustain this market segment and the declining harvest from the wild. Spiny lobsters are shipped live to the Asian markets and with landed prices five times that of other lobsters, such as the American lobster. This price difference is due to the culinary tradition of China that prefers the colorful spiny lobsters as centerpiece of any dining event. Sea cage aquaculture systems, methods and training shall be provided through the technology partners of this Consortium.

3.3 Where to get the fingerlings

CFE will establish a central facility that will produce the fingerlings of finfishes to supply the farmers from hatchery facilities. Although the technology for spiny lobster hatchery has yet to be developed, a technology for collection of the pueruli (lobster larvae) from the sea has been developed. Typically in nature, less than 1% of the pueruli survive to mature adults. Technology has progressed to the level where the pueruli can be grown to juveniles with at much as 80% survival. Since females grow slower than males, females will be identified as early as possible and will be returned to the sea thereby contributing to the restocking program. Males will be grown to commercial size at a value of as much as \$ 25 per kg. A family plot can be established that can grow up to 500 kg of lobsters per year providing a gross annual income of \$12,500 per family, without accounting for the revenue from finfishes being co-cultured in the same space. The estimated annual combined income from finfish and lobster culture will be \$15,000, with a profit estimated at \$4,500. This level of income is 3 to four times the income derived from marginal fishing alone.

3.4 How to sell the products

Each team of fisherfolk entrepreneur becomes a member of a CFE Cooperative. By themselves, each fisherfolk unit produces a small volume of products, but combined with others in the same community they represent a large volume. By combining resources, the Cooperative can obtain volume discount for supplies, synchronize their commercial production and sell at a time when the market prices are favorable. CFE shall have an experienced cooperative trainer who will

3.5 Funding the start-up enterprise

train the managers of each cooperative, coordinate the purchasing of supplies and market products until such time that the Cooperative can sustain itself at a profitable level. CFE shall establish a marketing team that will screen buyers and promote the products developed by each cooperative to domestic and international buyers.

CFE shall organize a loan program within the Cooperative that will provide the funding mechanisms to sustain the business until harvest. The procedures shall follow methods that have been shown in the past to be effective. The fisherfolks enrolled into the training program shall receive a modest stipend to sustain them through the training phase. Fisherfolks live a day to day existence so that the extra income given as they pass each stage of the training provides an incentive to learn and enables them to segregate the time for learning, yet afford the extra time for fishing activities. Once they receive certification from CFE, each fisherfolk team enters the Cooperative as members.

A CFE manager will be hired for each five fisherfolk team who will provide hands-on guidance throughout the commercial phase of the enterprise program, monitors compliance and secures the facilities provided to each team. CFE shall provide a ready-to-use sea based aquaculture system that will be used for the commercial operation. CFE shall provide the culture system, a stipend to the team during the non-income producing period of the start-up operation and the necessary materials as a loan to the fisherfolk team. CFE recovers the loan by deducting a small percentage of the sales generated by the team. After a successful harvest, the team will then be able to finance the next production operation from the revenue generated. At this time, stipends will cease since the profit from the first successful production will be adequate to support ongoing operations. The key to the success of this effort will rely on the CFE team manager who will be available to provide ongoing technical/management/oversight through successive productions, while training new groups of fisherfolk entrepreneurs. CFE anticipates full recovery of the investment within five years, thus making the funds available for expansion of the program to new coastal areas.

4.0 CFE as a business enterprise

The goal of the CFE program is to create a system that will be self-sustainable and sufficiently profitable to enable expansion of the program without the need for further external funding. To make this possible, CFE itself must be viewed as an enterprise that must make a profit to sustain its infrastructure and expand its program to other communities.

4.1 CFE Management

The CFE Program will be established and managed through the auspices of the Sacred Heart Marine Research Centre (SHMRC) located in Tuticorin, India. SHMRC was founded in year 1991 by Sister Avelin Mary, PhD as an independent non-profit organization for the purpose of marine research and conservation. Among its programs include discovery of marine natural products for biomedical and industrial applications that specifically target the replacement of toxic chemicals affecting the ocean environment. More information about SHMRC can be found in <http://www.poseidonsciences.com/shmrc.html>.

Funding for this research comes from private international donors. Corporate support comes from Poseidon Ocean Sciences (New York).

SHMRC's director, Sister Avelin Mary, currently runs the institution on a full time basis. Previously, she was principal of Saint Mary's College, a Catholic institution for higher education for women (founded in 1948) in Tuticorin, a coastal city in the Indian State of Tamil Nadu, by the Servants of Mary. During her tenure as principal, Sister Avelin had expanded the Ford Foundation funded Campus Diversity Initiative (CDI) whose goal was to help the women of the coastal communities of Tuticorin. More information about Sister Avelin can be found in <http://www.poseidonsciences.com/sisteravelin.html>

Sister Avelin Mary shall serve as the project director for CFE. Sister Avelin is ideally suited for this task, drawing her close association with the two communities and the College to begin the arduous task of initiating this novel enterprise program. Her extensive research background in marine biosciences, her postdoctoral work on lobster biology at the New York Zoological Society (Osborne Laboratories of the NY Aquarium), her management experiences in running a college and a research institute, and her ongoing international collaborations all combine to enable the successful development of this program. Sister Avelin has assembled the expertise of various private and non-governmental institutions that can support the various aspects of the CFE Program and continuing to build upon this consortium.

5.0 The Consortium

In the aquaculture technology areas, SHMRC shall draw from the resources of Poseidon Ocean Sciences, Inc. (USA), Nova Pacific Research Institute (Philippines) and In Vivo Aquaculture (Canada).

Poseidon is a private company whose area of expertise is in spiny lobster aquaculture. The company has developed lobster pueruli collection techniques and culture technologies to bring the larvae to juvenile stages. Equally important, Poseidon has proprietary technologies for inexpensive feed systems that would enable higher profitability and assured supply of lobster feeds that utilize renewable resources. Poseidon agrees to transfer such technologies to SHMRC in support of the CFE Program.

Nova Pacific is a non-profit Philippine institution that has developed aquaculture techniques to grow lobsters from juvenile to commercial size both in land-based and sea based systems.

In Vivo Aquaculture is a private company with vast experience in development of sea cages for small scale aquaculture of finfishes. In Vivo shall provide technology and know-how in production techniques and the mechanics of maintaining a sea ranching operation, with significant experience in doing such operations in Asia.

Other members of the consortium are still being evaluated for contributions in financial management, training and marketing operations. The final list of consortium members shall be determined at a later time.

6.0 Operational Phases of CFE

6.1 Location of the CFE Program



The state of Tamil Nadu is selected for this program not only for the presence of SHMRC on site but also because of the impact of the tsunami that devastated the area. Besides the loss of thousands of lives among the coastal communities, the tsunami also destroyed thousands of fishing vessels, gear and homes. The fishery was dramatically affected after the tsunami and drove the fisherfolks in these areas deeper into poverty. The pilot program to test this concept is being planned in the hamlet called the 'Fishermen Colony', a traditional fishing village with 250 families. As a poor fishing village and with a monthly income from fishing at US \$60 per family, the people of this hamlet lacks access to technology and basic social/educational services for its 2,000 residents. Although tsunami damage was minor compared to other Tamil Nadu villages, the decline in the fisheries are affecting the already marginal livelihood of the people of this hamlet.

6.2 Phase I

This shall cover a period of one year that will involve the mobilization of the resources of the consortium to build the CFE Program. SHMRC already has a building that will house the research and management offices for CFE that was built through donation from Poseidon Ocean Sciences. This facility by the sea shall serve as the operational base during Phase I. An area of land adjacent to the coastal community of Inigonagar will be leased or purchased to house the CFE Marine Aquaculture Center that will serve as facility for production of the lobster seedstocks, as a support facility and as a training center for the fisherfolk teams entering the program. Phase I will also cover the period during which CFE team managers are recruited and trained for the tasks of the CFE program, especially the technologies that will need to be mastered to support the CFE plan. A pre-operational assessment of the environmental conditions, income level, the local customs and many aspects of the social fabric of the community will be undertaken to serve as a baseline from which to gauge the impact of CFE in each target communities.

6.3 Phase II

This period shall cover the establishment of a pilot program in both communities wherein the fisherfolks are enrolled to participate into the CFE. Training facilities and trainers are already ready for the CFE by this stage. Also, several land based and ocean based production sites

will already be operating within the CFE facility and offshore that will have validated the growing technologies adapted to local conditions. This demonstration site will become the integral part of the CFE training program. At the end of this Phase, which will cover a period of 8 to 10 months, CFE shall have the first group of graduates that has completed the training cycle and ready to start the entrepreneurship program, with one new group entering the CFE training program.

6.4 Phase III

This period represents the actual enterprise program in operation. Village scale cultures systems will be installed for each of the fisherfolk team and the commercial production will commence under guidance of the CFE managers in the field. The first harvests will occur during this period, with the CFE Cooperative system already in full operation. Phase II will also see the extension of the CFE program to 3 more coastal communities in the same area following the experiences garnered from the earlier phases of the CFE Program.

7.0 The long term vision of CFE

CFE recognizes that the force for positive changes must first come through economic empowerment of marginalized fisherfolk communities. From this come enthusiasm, hope and creativity to create sustainability and progress for the next generation. By demonstrating that the CFE program can be successfully established to promote these positive changes in Tamil Nadu, SHMRC plans to expand to other areas by provide training to other institutions who can then promote the same concept and methods in their own countries, with priority to those areas affected by the tsunami.

8.0 Selected references

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