Strengthening Capacities for Marine Conservation and Livelihood Development in Timor-Leste

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Key Message

• Application of integrated coastal management (ICM) principles and practices in developing nations such as Timor-Leste not only helps to avoid (or at least minimize) social and environmental risks during the process of economic development but also provides a step-wise approach to sustainable development across the multiple levels and sectors of government in the early phase of nation building.

• The lack of capacity in integrated planning and implementation is a challenge in developing countries. At the start-up of ICM programs, external assistance in building local capacity has proven to be effective. Over the longer term, capacity building is an integral part of ICM sustainability.

Abstract

Timor-Leste was established as a new democratic country in 2002 after over two centuries of colonization. During the period of political, administrative, socioeconomic, and physical rebuilding, the identified priorities of the country were food security, institutional strengthening, and technical capacity building.

Timor-Leste joined PEMSEA as a country partner in 2006. The ICM program was focused on developing individual and institutional capacity for marine and coastal management, with special attention on development of alternative livelihood programs to improve living conditions and incomes of local people.

In collaboration with the Ministry of Agriculture and Fisheries (MAF), two districts, Manatuto and Liquiça, were selected to demonstrate: (a) ICM institutional arrangements, taking into consideration the existing administrative structure of the government with central line agencies having responsibility for project/program implementation at the national and local levels; (b) alternative livelihood development while protecting and conserving natural resources; and (c) capacity development at the national and local level.

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Background

The Democratic Republic of Timor-Leste has a land area of 14,874 km² covering the eastern half of Timor Island, including the nearby islands of Atauro, Jaco, and Oecusse on the western side of the island (Figure 1). Its 735 km coastline is richly endowed with living resources, including fish, coral reefs, mangroves, and seagrasses as well as oil, minerals, and gas. The population of the country was 925,000 in 2007, and increased to 1.6 million in 2016.

The country has been in a state of administrative, economic, and physical rebuilding since 1999 following centuries of colonization and armed conflicts that destroyed much of the country’s infrastructure, and financial and administrative systems.

The government structure in Timor-Leste consists of: national, district, subdistrict, and village (suco). There are 13 districts, including an enclave (Oecusse) in the Indonesian territory of West Timor. The government system as established in 2002 was centralized, and environmental management at the local level was the responsibility of district offices of the concerned ministries, in coordination with the local (district/subdistrict) administration offices.¹

The majority of Timorese depend on subsistence agriculture and fishing and continue to face extreme livelihood challenges in meeting their basic needs. Rugged landscapes, an inadequate road network, and limited transport services have made it difficult for most local workers to secure a stable source of income.

Figure 1. Map of Timor-Leste showing the district boundaries and the general location of Timor-Leste in the East Asian region.

¹ With the approval of Decree Law No. 3/2016 on the Statutes of the Municipal Administrations and Municipal Authorities, Timor-Leste is currently in the process of establishing the local government system.
The 2007 National Development Plan identified poverty reduction and promotion of equitable and sustainable economic growth as priority focus issues, and included provisions on improvement of people’s health, access to resources, and enhancement of livelihoods for the poor communities, particularly in rural areas. The 2001 strategic plan for fisheries in East Timor identified capacity building of staff, meeting basic human needs, legal and administrative framework for fisheries, baseline studies, database development, and developing partnerships within communities as among the priority needs of the country.

Although the country was receiving significant support from the United Nations, donors, and international and local nongovernment organizations (NGO) for various aspects of nation building, particularly with regard to providing basic services, health and sanitation, education, and livelihood, fewer on-the-ground support was being received for environmental and resource management. The lack of baseline information was a major challenge in order to undertake appropriate planning and management of on-the-ground projects.

In addition, local communities were unorganized and not well-coordinated. Having traditionally worked within the family unit rather than as a community, getting members of a community to work together was a challenge.

Following a series of consultations at the national and local levels, an ICM project was formulated. The thematic focus of the ICM project was community development and livelihood improvement using the districts of Manatuto and Liquiça as pilot sites.

Liquiça District

Liquiça is located in the northern coast, about 32 km west of Dili, the capital of Timor-Leste. Its three subdistricts are Liquiça, Maubara, and Bazartete (Figure 2).

The proposed pilot site was Suco Ulmera in Bazartete subdistrict, particularly the lowland/coastal area. Traditional lowland livelihood activities were saltmaking, fishing, seaweed culture, small milkfish ponds, animal raising (cattle, pigs), and sometimes crops. Saltmaking was extensive and had been done for generations using firewood to heat filtered seawater. This practice was resulting in forest and mangrove depletion. The ICM project was focused on the development of community-based alternative livelihood programs including seaweed farming and coastal resource conservation.

Manatuto

The district of Manatuto is located at the central part of Timor-Leste, east of Dili. It has six subdistricts, namely, Barique, Laclo, Lacublar, Laleia, Manatuto,
and Soibada. It is the only district that traverses the entire width of the island with both northern and southern coastlines (Figure 3). Manatuto has a large catchment area, with permanent freshwater, and drains a large interior basin. It has coral reefs, mangroves, seagrasses, and associated fauna. The main economic activity was agriculture (fishery, forestry, and livestock). Fishing was primarily through hook and line, gill net, and spear. There was also small-scale saltmaking, some freshwater fish culture, and various donor-supported irrigation and rural development projects. The district was considered a traditional subsistence community. Manatuto was considered as a potential location for establishment of a marine protected area (MPA) and for ecotourism development. The proposed ICM project was the development of a habitat conservation program for the northern coast, particularly in Suco Maabat and the development of alternative livelihoods.

**Approach and Methodology**

Considering the lack of data and technical capacity on coastal and marine resources management in Timor Leste, capacity building on ICM and alternative livelihood development were implemented in parallel. Furthermore, capacity development activities were undertaken jointly at the national and local levels. The following were key stages in the ICM and alternative livelihood development process:

1. **Preparatory stage**

   **Initial project coordination and management mechanism.** Three technical staff were assigned from the Fisheries Resources Management unit of the National Directorate for Fisheries and Aquaculture (NDFA) to initiate and support the project. Two task teams composed of NDFA staff and the district fisheries officers of Manatuto and Liquiça were organized to support project implementation at the district level.

   **Initial training on livelihood development for communities.** Both task teams, upon being organized, initiated consultations with the local administration offices and communities in the identified pilot sites to introduce the project, identify priority concerns and needs, and build consensus on ways to address these needs.

   From June to August 2009, training was conducted at both sites, aimed at establishing additional seaweed farms to increase current production, and improving methods of salt production that do not require the use of firewood (PEMSEA, 2010; Figure 4).

   The training was provided to 33 participants in Suco Ulmera, and 50 in Maabat.
2. ICM capacity development

ICM capacity development was first organized and conducted for the core staff (seconded from NDFA) of the Project Management Office (PMO) headed by the director of NDFA, district ICM coordinators, and key project participants/contributors at the national and local levels. This included regional, national, and on-site training/orientation and internships at the PEMSEA Resource Facility (Box 1).

Following initial training in 2009 and 2010, ICM Site Management Offices (SMOs) were established in the districts of Manatuto and Liquiça. ICM task teams composed of representatives from various agencies were established. These local task teams were coordinated by the district fisheries officers of MAF serving as ICM coordinators.

3. Baseline scoping for sustainable livelihood development

A baseline scoping for the development of sustainable alternative livelihood programs was conducted in 2011 (PEMSEA, 2011, 2013), which generated a preliminary list of livelihood possibilities in the pilot areas, as well as a list of capacity building needs for task teams/working groups and the community groups/people’s associations.

In consideration of local resources and skills, and the socioeconomic situation of Liquiça, Manatuto, and of Timor-Leste in general, livelihood possibilities were identified that were specific to each district as well as common to both. Longer-term possibilities and more immediate ones related to food security were also identified.

In terms of immediate livelihood possibilities related to food security, the following options were proposed for both districts: cacao production through intercropping; vertiver cultivation; livestock production; moringa cultivation for its numerous medicinal benefits; processing of root crops and peanuts; marine aquaculture; village-level eucalyptus oil production; tamarind processing; ecotourism; and nonproduction activities like trading and operation of a common service facility, e.g., shredding services for organic farms.
A Training Workshop on Ecosystem Approaches to Managing Marine and Coastal Resources was conducted in Dili in 2010, jointly with the US Coral Triangle Initiative/Coral Triangle Support Partnership (US-CTI/CTSP), National Oceanic and Atmospheric Administration (NOAA), US Navy and MAF (PEMSEA, 2013; Figure 6). The training focused on ICM applications for sustainable fisheries management, and participated by representatives from the districts of Manatuto and Liquiça.

In view of limitations in available baseline data/information, and technical support needed in preparing SOC reports, a Training Workshop on Rapid Appraisal and State of the Coasts Reporting was organized in Dili in August 2011 for representatives from PMO and SMOS, SOC Task Teams in Manatuto and Liquiça, ATSEA Project, CTI Project, and national agencies with mandate and information related to sustainable marine and coastal management (i.e., MAF, National Directorate for Environmental Services – Ministry of Economy and Development, Planning, Health, Tourism, Public Works, Education). The training was followed by hands-on application of the tools at priority sites in Manatuto and Liquiça. Community consultations and field validation surveys generated outputs that were incorporated into preliminary SOC reports for both districts.

ICM orientation of local leaders and ICM Task Teams were held in Manatuto and Liquiça in March 2012 (PEMSEA, 2013). A major outcome of the orientation was the agreement to develop integrated action plans for the pilot sites to demonstrate interagency and multisectoral collaborations.
For Manatuto specifically, enhancement of existing production of fermented shrimp (balisaun) (i.e., improvement of the fermentation process) was popular nationwide. The small balisaun thrives only in Manatuto.

4. Training on alternative livelihood development

Based on the results from the livelihood development baseline scoping, an internship program was organized by PEMSEA. The program was conducted in the Philippines and focused on key aspects and approaches for the development of sustainable livelihood programs in local areas. Livelihood options and technologies were concentrated on the application potential in Timor-Leste and the two local sites. During the 10-week program in 2012, two ICM site coordinators and two PMO staff underwent orientation and hands-on training and exposure to:

- development and management of social enterprises, including social preparation, organizational development, business skills development, financial management and bookkeeping, savings and capital buildup mobilization, and community-led credit operations; and
- village-level production, value-adding, and enterprise operations related to saltmaking, seaweed farming and processing, fish and shrimp paste processing, and food processing for various fruit and root crops (mango, banana, taro, sweet potato, cassava, peanuts, and moringa) (Figure 7).

Livelihood and coastal conservation development in Manatuto and Liquiça

With the support of MAF, coordination by the interagency ICM task teams, and support of the district administrators and various partners, the following activities were undertaken:

(a) Seaweed cultivation and seaweed and fish processing in Ulmera. Training on processing and diversification of fishery products in Suco Ulmera in 2013 (PEMSEA, 2015; Figure 8) was conducted by the Fisheries Technology Unit of MAF, with 30 people coming from

Figure 7. Examples of products prepared by the interns during the food processing training.

Figure 8. Training on seaweed and fish processing in Liquiça (from left to right): orientation by the Fisheries Technology Unit of MAF, hands-on training on seaweed processing, and training on fish processing.
two community groups, each consisting of 15 members (13 women and 2 men). The training covered processing of seaweed into gelatin (agar-agar) and ready to eat and drink products, as well as fish drying and preparation of fish powder for condiments. The community groups were also trained on packaging, labeling, and hygiene and sanitation in food preparation, and provided with basic equipment including pots and pressure cookers.

Following the training, a facility was built in Suco Ulmera in 2014 to serve as common processing, packaging, storage, and marketing area for seaweed and fish products. This was aimed at further development of seaweed and fish processing as additional sources of livelihood for the community groups and their families, aside from selling unprocessed seaweed harvested from the farms.

(b) Coastal rehabilitation through mangrove planting and improving saltmaking methods in Ulmera. A community group in Liquiça, consisting of eight members (including four women), and those who were involved in traditional saltmaking were trained in mangrove rehabilitation (Figure 9). More than 1,000 seedlings were planted near the area in 2013 and 2014 (PEMSEA, 2015).

Salt farming was a challenge in the area due to frequent flooding from the river. After several consultations, the community group agreed to convert the traditional saltmaking area to saltponds, which will be operated with the support of the private sector (Figure 10).

Other livelihood and conservation initiatives in Timor-Leste are presented in Box 2.
Mangrove crab rearing in Suco Ulmera. As part of the integrated implementation of marine and coastal management projects, Ulmera was also selected as pilot site for the ATSEA Project being implemented by MAF. Five project staff from MAF and one coastal community leader received training on collection of crab seeds from nature, and mangrove crab culture and harvesting. Fifteen fishers representing three community groups in Ulmera were then trained on crab cultivation. Around 40 cages were deployed in the area. Support is needed by the groups working with the ATSEA Project to construct more sturdy cages and ponds. Mangrove rehabilitation efforts also need to be further intensified. (Lenoci, 2014).

Mangrove crab and milkfish rearing were introduced earlier in Ulmera by a project supported by the United States Department of Agriculture and implemented by the Agricultural Cooperative Development International-Volunteers in Overseas Cooperative Assistance (ACDI-VOCA) in collaboration with MAF. The project is working with 20 community groups (Lenoci, 2014).

Ecotourism resort run by a youth group. In Suco Vatuvou in Maubara subdistrict, a youth group called Haseko was guided and supported in developing the Hatuker, an ecotourism resort (PEMSEA, 2015; Figure 11). The youth group was established in 2013, composed of 10 members (3 women, 7 men), with ages ranging from 18 to 29 years old, coming from 10 families in the village. The youth group is registered in Liquiça district and Maubara subdistrict.

As the youth in the area have difficulty finding employment but wanting to be productive, they requested support from MAF and were assisted in developing the resort with one room that can be rented at US$ 15/day, three open cottages, and a separate restroom. Construction was completed in 2014, with prospects to include additional cottages, a training/function room, and to develop a vegetable plantation and fishpond within the area. The youth group takes care of the maintenance and security of the resort. The district administrator provides support in kind, like food supply.

The resort has the potential to be an alternate destination for tourists, although it will need support from various partners to.

Coastal improvements to support ecotourism. Other villages near Suco Ulmera were also involved in coastal conservation and improvement activities. In Suco Maumeta in Bazartete subdistrict, tree-planting activities were undertaken to improve coastal vegetation. With the support of an NGO and partner from the private sector, huts were built along the coast to attract visitors and support ecotourism development in the area.

Elsewhere, mangrove rehabilitation was done by another group in Suco Tibar also in Bazartete subdistrict.

Box 2. Other livelihood and conservation initiatives in Timor-Leste.

**Figure 10. Conversion of the traditional saltmaking area to commercial-scale saltponds (from left to right):**
Consultation with a saltmaking group; local ceremony/ritual to prepare for conversion; and flattening of traditional saltmaking area to create saltponds.

**Figure 11. Seaside huts in Hatuker resort.**
Box 2. Other livelihood and conservation initiatives in Timor-Leste. (continued)

promote the area. There is potential for further improving the resort’s facilities, and with additional attractions that feature local or traditional activities that may attract tourists.

**Coastal and upland reforestation in Manatuto.** The Suco Maabat seaweed farm initiated in 2009 was not sustained due to strong wave action. Saltmaking using firewood for fuel continued since this produced salt faster than solar drying. In order to minimize the environmental impacts of saltmaking, tree planting was introduced to the local communities in Maabat to rehabilitate some portions of the area and develop vegetation to support the saltmaking operations. In 2012, 500 casuarina trees were planted in Balak, while tree planting is being continued in adjoining areas (Figure 12). To ensure a sustainable source of firewood, tree species that grow faster than casuarina are being considered. Rehabilitation of mangrove areas was undertaken by Santalum, a local NGO.

In a village called Beheda in Laclo subdistrict in Manatuto, people sell firewood for a living, but they cut these from the mountains. They were guided into developing tree nursery and plantation to help reforest areas where firewood was being obtained. In 2014, a local NGO, also called Beheda, was established to develop and maintain the nursery (PEMSEA, 2015). The 16-member group received initial support from Santalum to procure materials, plastic bags, and seeds for the nursery. Technical assistance was given by a member of the ICM task team from the Forestry agency.

Local capacity for integrated crop management using industrial trees, industrial crops, and perennial crops was also being developed through the Rural Development Project Phase 4 (2012-2017) under the German International Cooperation (GIZ) and MAF, which provides technical and material support for developing community nurseries, and processing and marketing of selected products (PEMSEA, 2015).

**Marine conservation area in Lamsana, Manatuto.** A 10 ha locally managed marine area (LMMA) was established in Lamsana Bay with support from the CTI Project and managed by a local community committee. Considering relevant national regulations, and those developed under the traditional system called “Tarabandu,” a fishing ban is being enforced in designated “no-take” zones in Lamsana Bay (PEMSEA, 2015).

**Seawall in Maabat, Manatuto.** Flooding is a problem in Suco Maabat. In 2013, the ICM task team in Manatuto collaborated in preparing a proposal to repair a damaged seawall, which was submitted for funding under the integrated district development plan (PDID). The PDID was a new funding mechanism for the district at that time, as funds for local activities used to come directly from concerned national agencies. A budget of over US$ 4 million was approved for the repair of the seawall, including construction of a floodway.

Figure 12. Coastal and upland reforestation in Manatuto (from left to right): mangrove nursery, upland reforestation, and community participation in reforestation activities.
5. Learning from other ICM experiences

Study tours were organized and conducted in ICM sites in other countries for the ICM task teams and representatives from national agencies and institutions to cultivate appreciation and encourage learning on how ICM programs were developed and implemented.

In 2013, members of the ICM task teams of Manatuto and Liquiça, together with representatives from Dili district, national agencies, and academe visited Batangas, Philippines (Figure 13). They were oriented on the ICM framework, process, and tools and how these were applied in the development and implementation of the ICM program in Batangas Province. They visited various sites that showcased good practices, including MPA management; ecological solid waste management; seaweed farming; and food processing.

In 2015, Timor-Leste representatives visited Bali, Indonesia, to learn from experiences in developing ICM programs and applications to sea turtle and mangrove conservation, mangrove crab culture, beach restoration and protection, and home (cottage) industries, among others (PEMSEA, 2015).

In 2017, representatives from the three municipalities and MAF visited Sukabumi Regency in West Java, Indonesia. There, they learned about governance mechanisms in place that are sustaining ICM programs despite changes in political leaders and agency heads as well as the empowerment of communities to participate in environmental protection and resource conservation.

6. Establishing capacity building and technical support network at the local level

In the course of implementation of ICM capacity building and development activities in Timor-Leste, collaboration with two national universities, UNTL and UNITAL, were enhanced. In November 2015, the two universities were designated as PEMSEA ICM Learning Centers in Timor-Leste (PEMSEA, 2015). They were organized with a core team of specialists. The core team underwent ICM and special skills training-of-trainers programs organized by PEMSEA. The core team then was tasked with providing technical and scientific advice and assistance, as well as training in ICM development and implementation to the local ICM task teams.

Figure 13. Visit to a mangrove conservation area in Batangas, Philippines.

Results

In line with priorities on developing local livelihoods and capacities for natural resource conservation, local livelihood from fishery products was developed alongside habitat rehabilitation efforts. Coastal conservation and improvement initiatives to support ecotourism development were developed. These initiatives have provided additional sources of income for the community groups, opened opportunities for further enterprise development, and enhanced their awareness and participation in natural resource conservation and their sense of responsibility in improving livelihood and environment (Box 3).

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1 With the development of the local government system in Timor-Leste, the districts are now called municipalities.
The gradual but continuous capacity building on ICM at the national and local levels in Timor-Leste, in parallel with alternative livelihood development and natural resource conservation activities, strengthened the ICM mindset among people involved in various development and implementation activities from national agencies, local governments, universities, and other stakeholders. People who have been involved in the ICM programs are sharing their knowledge, skills, and experiences with others.

Measures are currently being undertaken to enhance interministerial coordination and collaboration at the national and local levels to support stronger ICM implementation in the country.

The local administrators (mayors) in Liquiça, Dili, and Manatuto acknowledged ICM and its potential applications in strengthening the capacity of governments to manage their local areas in light of recent government decentralization. The concept and processes of interagency coordination mechanisms and integrated planning and implementation have been welcomed as good practices that can be applied in the municipal systems (Box 4).

Partnerships with universities (ICM Learning Centers) were established, and provide a mechanism for accessing scientific and technical support. A technical support network was created, trained and mobilized to advise and assist national and local stakeholders in ICM development and implementation.

Partnerships are also being developed with other agencies, programs/projects, and NGO to demonstrate collaboration in achieving common objectives.

Lessons Learned

ICM principles and processes can deliver outputs and outcomes that help address key challenges to sustainable development.

The introduction of the ICM framework and processes in Manatuto and Liquiça, was timely as the local governments were developing capacities and mechanisms for sustainably managing their local areas and resources.

As food security was a priority of the government, alternative livelihood development served as an entry point for introducing ICM to local areas.

**Box 3. Livelihood and enterprise development opportunities.**

Following a training in 2009, initial seaweed harvests within a two-week period generated 50 bags of seaweeds sold at US$ 0.50/bag, for a total income of US$ 300 by community groups in Liquiça; and 40 bags of seaweeds sold at US$ 0.60/bag, for a total income of US$ 288 for community groups in Manatuto. Saltmaking within a one-week period generated 35 kg of salt sold at US$ 1/kg for a total of US$ 35 in Liquiça, while groups in Manatuto reportedly earned around US$ 175. Communities also provided feedback on further needs to improve their operations, and MAF continued to facilitate the needed support (GEF Evaluation Office, 2012).

The MAF also made arrangements with the Ministry of Commerce and Industry and a grocer to support marketing of the food products. Schools near the area were also contacted as a potential market.

There is a need to continue improving facilities and the training of communities on various aspects of livelihood development, including food processing to enhance the attractiveness and competitiveness of their products in the market. In Ulmera, an existing problem on water supply also needs to be addressed in collaboration with concerned agencies.
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Capacity development on ICM concepts and applications was carried out simultaneously at the national and local levels, concurrent with capacity building on alternative livelihood development for government officers at those levels and communities.

Activities were conducted and adjusted considering available data/information, human resources, and capacities. As such, support provided to community groups in further developing their livelihood programs was in pace with the capacity building of implementing teams.

Coordination was a big challenge, involving regional, national, and local levels. In addition to developing interagency coordination and cooperation at the local level, the centralized government system also required intensive coordination between local and national levels. In view of limitations in the communications system in the country and various factors, coordination was not always optimal.

Budget allocation was also centralized, and local administrations and other agencies depended on funding from their national offices.

Various factors constrained faster implementation of activities in the districts, but the consistent strong support from the top leadership of MAF, dedication shown by the local interagency ICM task teams and district administrators, the continuing interest of the community groups to be part of the program, and ongoing capacity building on ICM and livelihood development kept the programs moving forward, albeit at a slower pace.

Due to the centralized government system, a national policy and a national interagency coordinating mechanism to support and guide ICM development and implementation at the local level were necessary. A national ocean policy to guide integrated management of marine and coastal areas in the country has been prepared and submitted to the
Council of Ministers for review. In conjunction with the development of the national ocean policy, establishment of an interministerial coordination mechanism to support marine and coastal management programs is under discussion.

The experience in Timor-Leste has shown that effective implementation of ICM at the local level requires addressing priority needs of local people.

Continuous engagement and encouragement of people who have worked with the ICM programs are important in order to develop program ownership and enhance their confidence to defend and promote consistently what they have learned. There is, however, a further need to develop systematic capacity development and information, education, and communication system on the importance of managing coastal and marine resources in an integrated manner, and to continue developing leaders/champions at the national and local levels.

The ICM programs in Timor-Leste need to further develop, considering the continuing priority for food and nutrition in the country; the lack of a national fisheries strategic plan; and the forthcoming economic and infrastructure developments in the local sites, such as a port in Tibar, Liquiça, and a special zone for social market economy in Atauro Island.

Further development of ICM programs also need to take advantage of the increasing recognition of the importance of sustainable utilization of marine and fisheries resources and the development of ‘blue economy’ in the country taking into account the process of government decentralization.

References


