CORAL TRIANGLE INITIATIVE

State of the Coral Triangle Report HIGHLIGHTS

TIMOR-LESTE

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Executive Summary

Timor-Leste is the youngest country in the Coral Triangle (CT), achieving 10 years of independence in 2012. It is located in an important transitional region of the CT, the Wallacea, which is between Asia and Australia, and is considered a biodiversity hotspot. Timor-Leste has several ongoing projects with the FAO (Food and Agricultural Organization) Regional Fisheries Livelihoods Programme (RFLP), Coral Triangle Support Partnership (CTSP), Arafura Timor Seas Expert Forum (ATSEF), Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), Charles Darwin University of Australia, and the U.S. National Oceanographic and Atmospheric Administration (NOAA), among others.

These initiatives have helped begin the work towards meeting the higher level goals of food security, sustainable fisheries, and securing critical services from coral reefs and related ecosystems. Knowledge gaps present challenges as evidenced in Timor-Leste's State of the Coral Triangle Report. It is expected that as Timor-Leste is able to more systematically establish and collect baseline datasets, tracking progress will become easier and more accurate.

The **National Plan of Action** (NPOA) is complete, with initial goals focusing on establishing key policy and legislative frameworks, collecting baseline data for ecological and socio-economic monitoring, and knowledge management.

Biophysical characteristics

Timor-Leste is a small island state of just about 14,874 km^2. Most of the country's land area is located in the eastern part of Timor Island, which is shared with Indonesia, in between the Timor Sea to the south and the Banda sea to the north. The two coastlines, measuring 706 km, are dramatically different in terms of oceanography and coastal geography and, therefore, support quite different marine habitats.

The Banda Sea to the north has the largest areas of coral reefs, seagrass meadows, and mangroves. The reef flats are narrow (20-100m), dropping off sharply to the deepsea. Species and habitat surveys are not comprehensive, and reports of the potential habitat area differ. The total fringing reef area is around 146 km^2. The reefs are likely to be rich in biodiversity, as with other reefs in

The morning sun and the low tide are this boy's best friend as he searches for small fish off the coast of Nino Konis Santana National Park, Timor-Leste. Located in the heart of the Coral Triangle region, Timor-Leste's coastline boasts some of the most valuable marine ecosystems in the world, all of which are currently threatened by overfishing, rapid development and climate change.
Photo by Matthew Abbott/CTSP

Key Statistics

BIOPHYSICAL AND DEMOGRAPHIC CHARACTERISTICS	
Total land area	14,874 km^2
Exclusive Economic Zone	77,256 km^2
Total coastline length	706 km^2
Total coral reef area	146 km^2
Total mangrove area	18 km^2
Total seagrass area	22 km^2
Population	1.1 million
GDP per capita	US$469

A young girl uses the low tide to search for small fish in Nino Konis Santana National Park, Timor-Leste. The people and Government of Timor-Leste are working together to protect the precious reef which supports the livelihoods of over thousands of people in this remote part of the country. Credit: Matthew Abbott/CTSP

the region, but little detailed data are presently available. Mangrove cover was around 18 km^2 in 2008, a steep decline from 90 km^2 in the earlier part of the last century.

Timor Sea to the south is shallower with wider coastal plains. This probably facilitates the retention of riverborne sediments and nutrients, stimulating pelagic and benthic productivity in an area adjacent to where most of the oil and gas of Timor-Leste is found. Timor-Leste has experienced few or no tropical cyclones since 1970, although its coral reefs in the south are exposed to heavy seas from frequent cyclones from the Indian Ocean and the Timor Gap. Mangrove forests on the south coast are sparse and small.

The country also has two islands: Atauro Island of about 144km^2 and the smaller uninhabited Jaco Island of 8 km^2. Seaweed culture in Atauro Island is the major income-generating activity, bringing in a total revenue of about US$19,130 from seaweed exports in 2009.

Governance

The State Government owns all natural resources in Timor-Leste. Fisheries and protected area management is the responsibility of the Ministry of Agriculture and Fisheries (MAF). A range of laws and policies to regulate fishing has been passed since Timor-Leste's independence in 2002. Timor-Leste plans to develop an integrated fisheries strategic plan to guide the sustainable development of fishing and aquaculture industries and increase livelihoods for coastal populations whilst conserving the biodiversity of coastal and marine species.

The constitution of Timor-Leste recognizes traditional natural resource management practices, such as *Tara Bandu* or the establishment of season taboos, which is part of the *Adat* system. Alongside the construction of state-based resource management, CTI development partners, such as the Coral Triangle Support Program (CTSP), are recommending a community-based framework for the management of Timor-Leste's proposed marine protected area (MPA) network, starting with Nino Konis Santana National Park, Timor-Leste's declared National Park.

Socioeconomic resources

Socioeconomic data on the contribution of coral reefs and fisheries to the livelihoods and food security are sparse.

Fishing and other marine activities were common from the earliest human settlements in Timor-Leste. Now, except for Dili, few urban settlements are on

the coast. Despite its long coastline and apparent abundant marine resources, the fisheries sector is still underdeveloped. Timor-Leste has no commercial fisheries, although a few semi-industrial licenses have been issued. In 2010, agriculture (including fisheries) contributed up to 94% of the income of communities dominated by subsistence farming systems (i.e., up to 85% of the total population). However, with the current population growth rates projected at 3-4% per annum, more pressure on the country's natural resources is expected.

Estimates of the number of artisanal fishers in Timor-Leste have fluctuated widely. A 2002 study estimated 20,000, whereas recent surveys calculated 5,415 fishers nationwide, although it is possible that including the number of part-time subsistence fishers would increase the latter figure. In addition, women and children collect juvenile fishes, crabs, molluscs, and sea urchins through shoreline activities known as "*meti*" or use of rotenone-based pesticides derived from derris root. Catch from artisanal fishers is usually sold in roadside markets at an average price of U$5 per kg.

(above) **The Coral Triangle Support Partnership (CTSP) provides training to stakeholders including government representatives and communities. Here, participants in Timor Leste conduct a ground-truthing exercise to identify areas of biological significance.** Credit: Conservation International/ Asril Djunadi

(below) **Typical CTSP classroom setting.** Credit: Rui Pinto

Despite the lack of commercial fisheries and the prohibitive prices of seafood in local markets, fisheries probably play a critical role in food security for subsistence households. Even so, with about 30% of the Timor-Leste population experiencing hunger and nearly half living in poverty, according to international standards, it is likely that poverty and hunger exist at relatively high rates in fishing communities.

Aquaculture and associated activities are beginning to take hold in Timor-Leste. CTI projects, such as the FAO's RFLP, are helping with livelihood diversification in coastal communities. Seaweed culture is playing an increasing role as a result of a successful project of the National Directorate for Fisheries and Aquaculture (NDFA). Other seafood products are also being tested through a US Government-funded project. In addition, The WorldFish Center is assisting Timor-Leste in devising a national aquaculture strategy and action plan for the development of sustainable aquaculture.

The CTI is the first program to introduce the concept of payment of ecosystem services (PES) in Timor-Leste as a means of managing and generating incentives for the management of the country's marine and coastal resources.

Threats, vulnerabilities, and emerging issues

Erosion resulting from deforestation, particularly of mangroves and riparian vegetation, has impacted many of Timor-Leste's tropical marine ecosystems. Mangroves continue to be harvested for fuel and food, despite some localized attempts at rehabilitation.

Illegal fishing is another major threat to Timor-Leste's fishstocks, particularly from encroaching fishers using destructive techniques such as blast fishing. Estimates of the loss to the Timorese economy from illegal fishing may reach US$40 million a year. Monitoring and surveillance levels are very low.

Transmigration in Timor-Leste is part of the policy of the Indonesian Government to "go east." Transmigrants brought with them various fishing practices. Fisher communities close to main fishing ports have linked the arrival of transmigrants to the introduction of blast fishing, cyanide fishing, use of compressors for *Trochus* (top shells), and sea cucumber harvest.

Population growth and density along the north coast, where the largest areas of coral reefs and associated ecosystems are found, is an emerging issue. Over time, this will exacerbate pressure on marine resources, either directly, through increased harvesting, or indirectly through increased erosion resulting from peasants moving to steeper and more marginal land.

The impact of these threats is likely to be difficult to contain, given the limited management capacity to implement the programs and policies devised under the National Plan of Action (NPOA).

National Plan of Action

Timor-Leste's responses to date fit in with the overall goals of establishing baseline data and key policies and legislation to support fisheries and protected area management. Ongoing mapping and habitat assessment exercises, which are being carried out in conjunction with international scientific institutions, will also provide Timor-Leste with invaluable baseline data to assess its progress in future State of the Coral Triangle Reports. Assessment of threatened species and the formulation of fisheries policies and management plans for the proposed MPA network are also in progress. Implementing these policies and plans is the next big challenge for Timor-Leste.

Signs of overfishing, including low abundance of valuable commercial and upper trophic-level species like snappers and groupers, as well as the emergent threat of destructive fishing, mean that effective management is vital to the protection of Timor-Leste's reefs through fishing regulations and the proposed MPA network. Similarly, managing upland threats through integrated catchment management and the rehabilitation of mangrove forests are emergent priorities for Timor-Leste.

Food security for coastal populations as well as for the general Timor-Leste population is an ongoing concern. As mentioned earlier, about 30% of the Timor-Leste population is experiencing hunger, and many live in poverty. Small site-based projects, such as PEMSEA's integrated coastal management demonstration sites and other livelihood projects, will provide valuable lessons for rolling out more systematic measures to sustainably and inclusively manage Timor-Leste's rich marine resources, both for sustainable fisheries and improved food security.

Priority Research Issues

- ☑ Stock assessment for in-shore and off-shore fisheries
- ☑ Baseline data collection especially related to research on biodiversity in Timor-Leste waters
- ☑ Research into fishing patterns and fish consumption across Timor-Leste in a National Fisheries Census

Participants to the ADB Knowledge Management workshop in Dili discussing the mechanics for preparing the State of the Coral Triangle Report (above left). Credit: ADB KM Project

Ernesto De La Cruz, 65, dives in search of sea cucumbers off the coast of Com, a town located within Timor-Leste's first and only National Park (above right). Credit: Matthew Abbott/CTSP

Seizing opportunities to derive payments for ecosystem services from offshore oil resources should be considered to help fund resource management and enhance access and use rights by the impoverished sectors and make food available as part of corporate social responsibility.

Availability of Full Reports

This document is to be read as a supplement to the CD version of the complete State of the Coral Triangle Report.

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