

Vulnerability of coastal people to climate change cannot be ignored. But with improved fisheries governance and coastal management and a growing demand for fish, there are growing opportunities to develop profitable value chains for domestic, regional and export markets.

COASTAL RESOURCES

Blue economy in crisis?



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An alternative approach

Without the ocean, the people of the Solomon Islands archipelago have little alternatives for sustenance. But the ocean is turning against them, with rising sea levels destroying their coastal areas and homes. “By 2015 most houses in the shoreline will be washed away,” says Lawrence Nodua, an Ontong Java islander. “Our people need to eat a balanced diet and nutritional food but those who depend on swamp taro and local ferns are losing their source of food as our crops die due to the increasing salinity of the swamp.”

The world’s coastal and marine resources provide protein for 1.5 billion people and employment for some 170 million, through fishing, marine aquaculture, tourism and other activities. But while coastal and marine resources can be strong drivers of local and national economies, coastal people also have particular vulnerabilities, whether to catastrophic storms, infiltration of sea water, conflict with other coastline users, or the destruction of the marine resource base on which they depend. They often have little control or ownership over their resources, which are prone to over-exploitation. And the crisis in coastal livelihoods is just beginning: in the coming decades, in addition to over-exploitation, climate change and sea level rise will threaten the long-term survival of many communities.

However, whilst fishers and coastal dwellers are facing great challenges, the ‘blue economy’ can power strong and sustainable development. As a counterpart to the land-based green economy, this idea, in the view of the OECD, “implies a new growth engine by promoting both the sustainable use and preservation of the ocean, ensuring the Earth’s continued survival.” The blue economy’s potential is already evidenced in numerous successful island states, and there are emerging opportunities to develop sustainable value chains using coastal and marine resources.

Cloudy waters

Coastal life is the only life in Kiribati, a low-lying chain of South Pacific islands, some of which have already disappeared under rising sea levels. Now many of the population are preparing to relocate from the low-lying capital, South Tarawa, to Kiribati’s Christmas Island, one of the remotest islands in the world. The Government has also confirmed the purchase of 2,400 ha of land in Fiji which it intends to use for growing food crops, as farming is now almost impossible on most of the country’s atolls. The Kiribati President, Anote Tong, has stated that changing rainfall, tidal and storm patterns pose at least as much threat as ocean levels, which so far have risen only slightly.

Environmental degradation is another major threat for small island states as sewage, agricultural fertiliser and sediments entering the sea destroy coral reefs and other marine habitats. High nutrient content in agricultural runoff causes phytoplankton blooms that deplete oxygen in



Above: Workers at the Luderitz mariculture oyster farm in Namibia, which produces 25,000 oysters a week for markets in Cape Town and Johannesburg, South Africa

the water, killing fish and other organisms over a large area. Mangroves absorb these pollutants, shelter coasts, nurture species, protect coastal areas against floods and provide livelihoods in many parts of the world. However, these vital ecosystems are disappearing at a rate of 150,000 ha per year, and more than a third of existing mangrove forest have been destroyed in the last 20 years.

According to think tank Chatham House, the shadowy sector of illegal, unreported and unregulated (IUU) fishing is worth up to €17.8 billion a year. In West African waters, IUU fishing produces up to 37% of the catch and therefore is a key driver behind over-exploitation. The Environmental Justice Foundation states that some of this is ‘pirate’ fishing, in which European and East Asian accredited vessels launder illegally caught seafood for export to the EU. The diversity of overlapping regulations, authorities and mandate zones also leaves ample opportunities for legal or semi-legal overfishing. As the captain of a local fishing boat in Guinea reports to Greenpeace Africa, “If we don’t have a sustainable policy for this sector, we will have no fishing whatsoever... the whole region depends on small-scale fishery.”

Such failings of fisheries governance have spelled



Women processing oysters in Quirimbas National Park, Mozambique

fishers whose livelihoods are at stake also need to have a role and a voice in management. In 2011, after years of negotiation, the Caribbean Community (CARICOM) countries, with the exception of the Bahamas, approved a draft agreement establishing a Common Fisheries Policy and issued the Castries (St Lucia) Declaration on Illegal, Unreported and Unregulated Fishing. The Caribbean Network of Fisherfolk Organisations, established with Caribbean Regional Fisheries Mechanism and CTA support, helped ensure fishers' representation in drafting the policy and is advocating actively for its signature and implementation as well as the operationalisation of the Castries Declaration and mainstreaming the ecosystems approach to fisheries into fisheries governance.

While Marine Protected Areas (MPAs) have long been a tool for sustaining marine environments, they can be a boon or a disaster for local livelihoods. Some set aside the coast and its resources for hotels, beaches and expensive housing. Others are simply used as reserved fishing areas for those with access. To combat the latter trend, in 2012 the International Union for Conservation of Nature issued stricter definitions for MPAs, so that fishery advisory bodies are not able to exploit the zone designation. This may favour the establishment of multi-zoned marine parks in future, rather than strictly protected areas.

Jamaica has successfully developed an MPA for multiple users in Negril, a developing tourist region where many people still rely on fishing. The managing body of the Negril Marine Park includes leaders from both sectors. Negril fishers participate in measures such as creating protected nursery areas, and are supported by official enforcement to deal with destructive tourist boats and outside fishers.

Mozambique's Quirimbas National Park was actually established at the request of local communities in 2002. ▶

disaster for insufficiently protected species such as the Pacific bluefin tuna (*Thunnus orientalis*). A recent report by the International Scientific Committee on tuna in the northern Pacific revealed that the species has suffered a decline in stocks of more than 96%, and may soon be extinct. Rarity of the species is driving prices even higher with the result that fishing fleets continue to pursue the few remaining fish.

New policy voices

High-level governance and international cooperation are essential to protecting and developing marine resources, which are often mobile and exploited by many users. To avoid conflicts, cooperating nations can establish Regional Fisheries Management Organisations with the authority to manage and conserve stocks. This is seldom an easy process; the Western and Central Pacific Fisheries Commission was only established in 2004 after 10 years of negotiation and preparation between more than 30 states. However, the Commission is now a crucial tool for balancing shared access to highly migratory fish such as tuna across a vast area of ocean.

Governments are also increasingly recognising that the

KEY FIGURES

32% of global fisheries are overexploited, depleted or recovering.

54.8 million people worldwide are directly employed in the fisheries and aquaculture sectors.

30 million tonnes of fish are caught by industrial and artisanal fishing for human consumption per year.

1% of climate change gases are emitted by the Pacific Island nations but they are the most vulnerable to adverse climate change effects.

DOSSIER

► As a result, new management strategies led to a boom in pearl oyster (*Pinctada capensis*) along the coast. The oysters are a protein staple in the area and sold in local markets, but they became a real livelihood driver when women were trained in pre-cooking, boiling, drying, seasoning and preserving them in oil. Such value-added techniques increased incomes six-fold and have allowed women to benefit from the park they demanded.

The on-shore counterpart to multi-sectoral approaches has come to be known as Integrated Coastal Zone Management (ICZM), which includes the rehabilitation and management of mangroves and other coastal forests, home gardens and agroforestry shelterbelts. ICZM aims to balance the often competing needs of rural and urban coastal people with environmental considerations and natural resource management.

ICZM is a priority in the Seychelles, which has an almost wholly coastal economy. A National Coordinating Body is bringing communities, the Government, NGOs and companies together to conserve and restore these ecosystems. Projects so far have emphasised beach protection and local coastal stewardship, but have not yet answered thornier questions, such as trade-offs between different users.

In Senegal, which has lost a quarter of its mangrove cover since the 1970s, the restoration of this ecosystem represents the greatest challenge to coastal management. Since 2009, the Senegalese association Oceanium has planted more than 100 million mangrove trees in 450 villages. The restored trees will help bring back fish and shellfish and slow the salinisation of village farms. Several other ACP countries, such as Guinea-Bissau and Guyana, have also embarked on protection and reforestation of mangrove with encouraging results.

Farming the ocean



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The production of commercially useful marine species, mariculture, has recently been introduced in the region of Kavieng in New Ireland, Papua New Guinea (PNG), partly motivated by the collapse of the sea cucumber fishery due to overharvesting. The first stage of

mariculture is obtaining a supply of the required species, and a marine hatchery facility has been built for this purpose. The hatchery recently produced its first batch of a high-value sea cucumber species called sandfish. The local community is now learning how to rear the sandfish, and it is hoped in time this will build into a full-scale sea-ranching operation. Other marine species that have commercial potential are also being investigated. Edible oysters are in demand in hotels and restaurants in PNG, and are being trialled; while the third commodity being explored is fish for the highly lucrative international aquarium trade. Because mariculture is new to PNG, awareness raising and capacity building are critical. As well as training at the community level, the hatchery is functioning as a training centre for fisheries students. The development of mariculture opportunities in PNG is being supported by the recently completed National Fisheries Authority marine hatchery, in collaboration with the Australian Centre for International Agriculture Research and James Cook University.

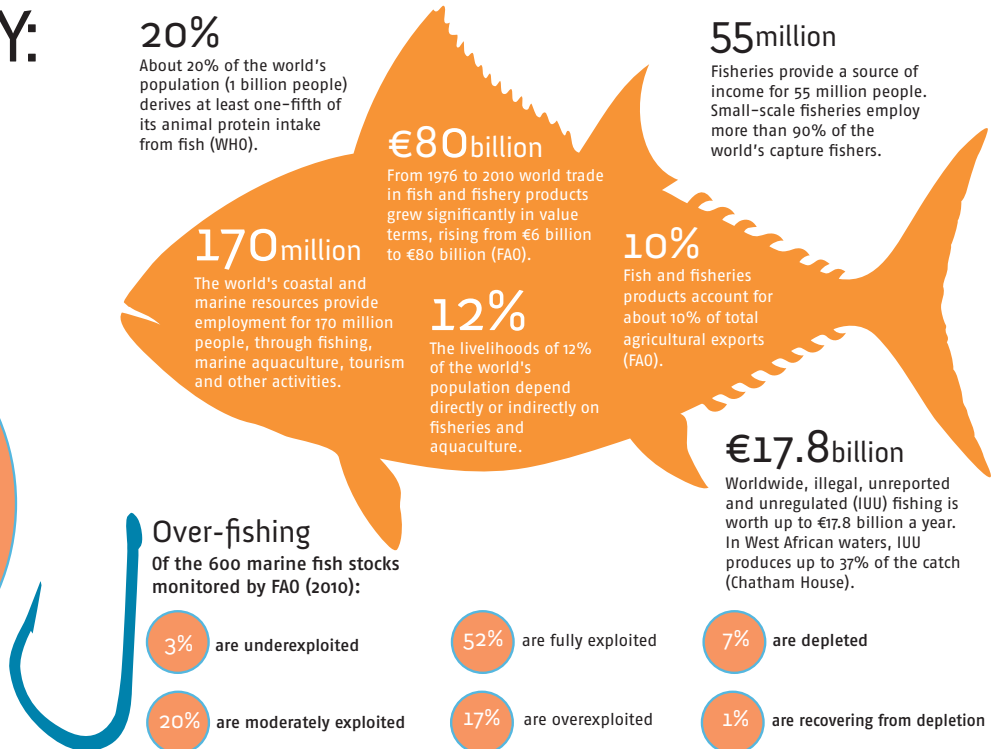
A sustainable future?

In addition to policy frameworks and policy tools, investments in infrastructure along the value chain - port facilities, cold chains, processing units, etc. - are also vital to helping the blue economy drive livelihoods,

BLUE ECONOMY: the value of ocean and coastal resources

CHALLENGES

- Over-fishing
- Poor governance
- Weak management regimes
- Conflicts over natural resources
- Persistent use of poor fishery practices



food security and nutrition beyond the immediate area and fishery products remain some of the most important and widely traded food commodities. Often the most effective route to coastal stewardship lies in promoting sustainable fishing and fish farming. The latter approach, known as mariculture when practised on the open ocean (see box), has taken on countless local forms. Certification is another route to better stewardship. In December 2012, the Fiji Tuna Boat Owners Association's albacore tuna long-line fishery became the fourth tuna fishery in the South Pacific to earn Marine Stewardship Council certification. To do this, fishers committed to establishing harvest control rules for their surface long-line method, ensuring that the fishery will not slow down the recovery of the region's important albacore population.

With hopes of opening up high value, sustainability-conscious markets, certification is likely to grow in importance as an approach to protecting such open water resources. However, as with all certified markets, questions remain. For individual fishers, there's no guarantee of a premium price now, and even less of one in the future. For countries, developing export markets could become much more difficult if certification becomes the sole route of access. While seeming an attractive pathway to sustainable management, in contrast to the headaches of open-access, competing interests, and marauding pirates, certification is just one idea among many. In finding a sustainable future, coastal livelihoods will surely need to weather many coming storms. ■

Tuna long-lining equipment on a commercial fishing boat in the Cook Islands



Viewpoint

Jahson Alemu is a reef ecologist at Trinidad and Tobago's Institute of Marine Affairs (IMA). He explains how assessing the value of the islands' coastal ecosystem services will inform national development planning.



The link between land and sea

How does the development of small island states affect the coastal environment?

Trinidad and Tobago's economy has always been supported by the coastal and marine environment, from oil and gas to fisheries and tourism. In recent years, we have also observed increased conflict among various stakeholders over different uses within the coastal zone, such as reclamation of land, ports, resorts and fishing. For instance, there is constant conflict between the oil and gas sector and fisherfolk; coastal communities reliant on the tourist trade are naturally concerned about the loss of beaches due to industrial development.

Just how important are these coastal resources to the economy?

In 2007, a valuation assessment conducted by the World Resources Institute, in collaboration with IMA and Buccoo Reef Trust, estimated that coral reefs as providers of fisheries, tourism and shoreline erosion control contributed around €90–130 million to Tobago's GDP (estimated to be €215 million). To provide additional information on the value of the shoreline protection services provided by coral reefs in Tobago, an IMA Project for Ecosystem Services (ProEcoServ) is currently underway to map and assess the value of this vital ecosystem, the associated benefits to human wellbeing and trade-offs with other coastal users.

How will your work on ProEcoServ make a difference?

New policies that aim to diversify the economy would see investment in tourism and agriculture, which depend heavily on healthy and productive coastal and marine environments. However, most of the proposed developments are situated along the coast and this puts pressure on already degraded ecosystems. Coastal zone management offers a potential solution to build resilience within coastal ecosystems while maintaining the biological diversity and productivity of coastal ecosystems (seagrasses, mangroves, coral reefs) that supply these resources. However, there is an information gap between ecosystems and policy. Through applied research, ProEcoServ will narrow this gap and improve how decisions are made about managing and using the coastal ecosystems responsible for shoreline protection in south-western Tobago.