New policy brief on mangroves

Image: Mark Spalding

An unprecedented partnership of organisations — from forestry and conservation sectors and across the United Nations — has released a policy brief to provide managers with lessons learned in past mangrove conservation and management efforts, and with policy recommendations.

Found mostly in the tropics straddling the land and sea, mangroves make up less than 0.4% of forests of all kinds worldwide. Taken together, some 70 species of mangroves are found in 123 tropical and subtropical nations and territories but occupy just 152,000 km^2 in total — an area slightly larger than Nepal.

Yet these tidal forests harbour rich biodiversity and are highly effective carbon stores and sinks; alongside to the living biomass of the trees, mangrove soils are carbon-rich and sequester carbon over millennial timescales. In addition, they provide enormous benefits including:

- important habitat and nursery areas for many exploited coastal fish and crustacean species;
- breeding grounds for some offshore species, such as the shrimp species that are the target of many large-scale fisheries;
- sources of rot-resistant, high-value timber and excellent fuelwood that has been harvested in sustainable silviculture programmes in some countries for over 120 years; and
- natural coastal defence systems, reducing erosion, attenuating waves and even reducing the height of storm surges.

Since 1980, the world has lost about one-fifth of its mangrove forests and many of those that remain are degraded, states the new policy brief, entitled "Securing the Future of Mangroves".

According to the policy brief, the conversion of mangroves for coastal aquaculture is the foremost driver of mangrove loss. An estimated 38% of global mangrove loss can be attributed to the clearing of mangroves for shrimp culture, while another 14% can be blamed on other forms of aquaculture.

"Such large-scale conversion has had major negative environmental impacts, including collapses in wild fisheries, reports Ms Van Lavieren, Coastal Zones Programme Officer at the United Nations University's Canadian-based Institute for Water, Environment and Health (UNU-INWEH).

"There is now a growing awareness of the importance of mangroves, and government and community-led efforts are underway to restore or replant mangroves, and to improve legal systems to regulate future use."

Losses are being driven by other human threats as well, including overharvesting and deforestation; agricultural, urban and industrial runoff; oil spills; and poorly managed dredging and coastal development.

"Despite declining rates of loss, rare and critically important mangrove forests continue to be lost at a rate

three to five times higher than that for global forests. Set against this is a growing realisation of the social and economic value of mangroves and a remarkable array of restoration efforts in many countries around the world," says Dr Mark Spalding, Senior Marine Scientist at The Nature Conservancy, and co-author of the policy brief.

The most pronounced losses (over 20%) have occurred in the Asia-Pacific region, followed by Central America. Limited losses have occurred in East Africa, with only an 8% decline between 1980 and 2005.

Economic valuations of mangrove ecosystem goods and services provide some of the most powerful arguments for effective mangrove management. "When the full suite of ecosystem services from mangroves can be assessed, the arguments for maintaining healthy mangrove forests are usually compelling," says Ms Van Lavieren.

Specific examples of the economic value of healthy mangroves include prawns harvested in Australia across the wide, shallow coastal shelf areas off both the Northern Territory and Queensland. Prawns are one of the Australia's most valuable export fisheries, earning more than USD 70 million annually.

One study cited in the policy brief shows that planting and protecting nearly 12,000 hectares of mangroves in Vietnam cost just over USD 1 million but saved annual expenditures on dyke maintenance of more than USD 7 million.

The Matang Mangrove Forest Reserve in Malaysia is arguably the world's best example of a sustainably managed mangrove ecosystem. Established in 1902, the reserve covers an area of about 500 km^2, approximately 73% of which is considered productive forest. Harvesting mangrove timber for poles, firewood, and charcoal production occurs on a 30-year rotation cycle. The annual value of the forest products between 2000 and 2009 was estimated to be USD 12.3 million, with cockle aquaculture adding an estimated annual value USD 10.7 million.

The policy brief describes instruments and measures readily available to help conserve and manage mangrove ecosystems, and highlights lessons from around the world on successful measures for protecting mangroves. It also makes recommendations to improve legal and policy frameworks, mangrove management tools, data and information collection, economic incentives to promote more environmentally-responsible behaviour and local livelihoods, recognition of the full value of mangrove ecosystem goods and services, and coordinated global action under agreements related to biodiversity, wetlands and sustainable development.

Among the recommendations are several relating to climate change, including the need to:

- integrate the role of mangroves in climate change adaptation and disaster risk reduction into local and national adaptation plans;
- recognise the role that mangroves play as carbon stores and sinks, and to include these functions in national and international strategies that address climate change; and
- increase protection and restoration of mangrove ecosystems to enhance existing carbon stocks and help mitigate CO_2 emissions, and build mangroves into emissions trading and climate change mitigation planning.

The policy brief concludes that there is now a clear understanding of the management interventions required to secure the future of mangroves; interventions that are underpinned by many successful examples of mangrove management from around the world and by solid and convincing economic arguments. It also concludes that reversing the trends of mangrove loss and of the growing vulnerability of coastal peoples will require a real commitment by governments to develop and implement robust high-level policies for mangrove ecosystems.

The policy brief was based on the World Atlas of Mangroves (2010), published by Earthscan as an output of a joint project primarily funded by the International Tropical Timber Organization through the Japanese government, and implemented by the International Society for Mangrove Ecosystems in collaboration with the Food and Agriculture Organization of the United Nations, United Nations Environment Programme–World Conservation Monitoring Centre, United Nations Environmental, Scientific and Cultural Organization–Man and Biosphere Programme (UNESCO-MAB), UNU-INWEH, and The Nature Conservancy.

The policy brief was written by Hanneke Van Lavieren, Mark Spalding, Dan Alongi, Mami Kainuma, Miguel Clüsener-Godt, and Zafar Adeel, and funded by UNU-INWEH, UNESCO-MAB and the Spanish Government.[1]

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[1] The full policy brief is available from: http://inweh.unu.edu/wp-content/uploads/2013/05/Securing-the-future-of-mangroves-high-res.pdf