Mangroves for the Future
INVESTING IN COASTAL ECOSYSTEMS

A look back at 2016

Turning Tides

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Food and Agriculture Organization of the United Nations

About

Mangroves for the Future
INVESTING IN COASTAL ECOSYSTEMS

Mangroves for the Future (MFF) is a unique partner-led initiative to promote investment in coastal ecosystem conservation for sustainable development. Co-chaired by IUCN and UNDP, MFF provides a platform for collaboration among the many different agencies, sectors and countries that are addressing challenges to coastal ecosystem and livelihood issues. The goal is to promote an integrated ocean-wide approach to coastal management and to building the resilience of ecosystem-dependent coastal communities.

MFF builds on a history of coastal management interventions before and after the 2004 Indian Ocean tsunami. It initially focused on the countries that were worst affected by the tsunami: India, Indonesia, Maldives, Seychelles, Sri Lanka and Thailand. More recently it has expanded to include Bangladesh, Cambodia, Myanmar, Pakistan and Viet Nam. Mangroves are the flagship ecosystem of the initiative, but MFF is inclusive of all types of coastal ecosystem, such as coral reefs, estuaries, lagoons, sandy beaches, sea grasses and wetlands.

The MFF grants facility offers small, medium and regional grants to support initiatives that provide practical, hands-on demonstrations of effective coastal management in action.

Each country manages its own MFF programme through a National Coordinating Body which includes representation from government, civil society and the private sector.

MFF addresses priorities for long-term sustainable coastal ecosystem management which include, among others: climate change adaptation and mitigation, disaster risk reduction, promotion of ecosystem health, development of sustainable livelihoods, and active engagement of the private sector in developing sustainable business practices. The emphasis is on generating knowledge, empowering local communities and advocating for policy solutions that will support best practice in integrated coastal management.

Moving forward, MFF will increasingly focus on building resilience of ecosystem-dependent coastal communities by promoting nature based solutions and by showcasing the climate change adaptation and mitigation benefits that can be achieved with healthy mangrove forests and other types of coastal vegetation.

MFF is funded by Danida, Norad, Sida and the Royal Norwegian Embassy in Thailand.

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Editorial Note

By Steen Christensen, MFF Coordinator

Welcome to 'Turning Tides', our first-ever year in review magazine for Mangroves for the Future (MFF).

MFF is a unique, truly regional, partner-led initiative that brings together a network of more than 220 partners including coastal communities, governments, civil society and the private sector.

What started as a disaster response programme working in the six countries most affected by the devastating 2004 Indian Ocean Tsunami, has since evolved into a strategic programme building resilience in ecosystem dependent coastal communities in 11 member countries.

By the end of 2016, MFF's portfolio included more than 315 projects. In terms of funding and reach, the programme is the largest grant making mechanism for coastal conservation in the region.

As Asia's exponential economic growth has brought many benefits to its communities through higher incomes and a better quality of life, it has also exacerbated threats to the region's ecosystems due to ever- increasing commercial, agricultural and industrial activity. Rates of mangrove, wetland and forest loss in the region remain amongst the highest in the world; 95% of Southeast Asian coral reefs are at risk of being destroyed; and over 1,400 plants and animals in the region are listed as Critically Endangered or Endangered.
Sustainability must be an integral concern as Asia grows. In this connection, MFF is constantly innovating and contributing to sustainable development. We are also pleased and encouraged to see that positive new developments are emerging, such as the implementation of the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SGDs) in 2016. MFF's strategic focus areas: coastal rehabilitation; livelihood support; and resilience-building and empowerment, with climate change and gender as key cross-cutting issues, all contribute to the 17 SDGs, particularly SDG 14 'Conserve and sustainably use the oceans, seas, and marine resources for sustainable development'.

Partnerships are central to the success of MFF and this year we welcomed a new partner, the ASEAN Centre for Biodiversity (ACB). IUCN and ACB signed a Memorandum of Understanding to support ASEAN countries in achieving biodiversity targets and building on their shared objectives in biodiversity conservation and sustainable development. ACB has joined the MFF Regional Steering Committee, and will work with MFF members in ASEAN countries to ensure ASEAN principles are reflected in MFF initiatives.

In this magazine you will learn about how MFF is effecting change and strengthening the resilience of coastal communities by restoring mangrove habitats, starting up alternative income initiatives, and providing on-the-ground training. You will read about how MFF is changing the lives of women in coastal communities through projects that respond to women's needs and involve them in decision making processes. You will also meet some of the champions of MFF who are leading the way, dedicating their lives to supporting community participation in

coastal management solutions. We also present some of our achievements engaging with the private sector as an important partner for securing the future of coastal ecosystems that benefit both business and people.

Moving forward MFF will continue to support a wide range of projects and strive to identify best practices that harness and utilise the diverse knowledge generated by the programme to date. There will also be a focus on capturing lessons learned, in order to replicate success among other coastal communities across the region. Furthermore, MFF will be seeking opportunities to scale up the programme to support the REDD+ agenda and climate resilience actions. Our future progress will build on the existing principles of MFF and its key success factors; governance structure, grant modalities, partnership-based focus and, most importantly, country-level ownership.

We hope that you enjoy learning more about MFF in this publication and the programme's achievements in 2016.

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People of MFF

Established in August 2007 and headquartered in Bangkok, Thailand, the MFF Regional Secretariat is responsible for programme development and coordination to ensure the smooth running of the initiative in close consultation with MFF member countries and institutional partner representatives.

Working with members of the MFF secretariat are the MFF National Coordinators (NCs), who oversee the implementation of the programme at the national level. NCs provide support to the National Coordinating Body (NCB) – made up of representatives of civil society organisations, government agencies and the private sector – and in particular provide strategic advice in relation to many aspects of the programme's priority areas.

The team would like to thank MFF's core institutional partners – IUCN, UNDP, UNEP, Wetlands International, the ASEAN Centre for Biodiversity, Norad, Sida, Danida and the Royal Norwegian Embassy – for their long-term commitment to the initiative. Funding partners deserve special appreciation for their generous support of MFF's work on behalf of the millions of people whose livelihoods and well-being depend on coastal resources.

MFF would also like to thank all of the communities, NCB members and other stakeholders who have participated in the programme to date. Without their care and concern for our coastal environment, the positive long-term changes we see today would not have been possible.

Stories of Change

MFF's work stretches across the Asian region, touching the lives of people from Indonesia all the way to India. The best measure of our impact is in the stories of real people, of lives changed, of communities transformed.

Drying holy mangrove leaves in Kraksaan sub-district, East Java Province, Indonesia - Credit: MFF Indonesia

Women of Kraksaan lead the way in mangrove conservation

Mother of two Tutut Ulfa Rahayu, is a fish farm worker. Tutut is one of many women from Kraksaan sub-district in Indonesia, who acknowledges the importance of mangrove ecosystems to sustain her livelihood, as well as improve her family's well-being.

Mangrove degradation in Kraksaan sub-district is attributed to the large-scale conversion of mangrove land into milkfish, shrimp or salt ponds. This is a phenomenon known as 'rent intensification' or 'renting system diversification'; a renting system available for investors since the 1990s. These production methods are unsustainable largely due to inappropriate construction methods, often eroding the embankments due to exposure to the sea and destroying the edge of the farms. Today, Kraksaan sub-district has the lowest percentage of mangrove coverage at 45%, compared to other sub-districts.

In the face of a declining ecosystem and insecure livelihoods, Tutut expresses her fears for the future, "If the environmental condition continues to deteriorate, it will lead to the decrease in shrimp and milkfish production or might even lead to production failure. The fingerlings will not come and stay at the pond when there are no mangroves."

Through the MFF Small Grant Facility (SGF), Sido Agung Farmer group aims to increase the volume and scope of mangrove cover in Kraksaan to build overall community resilience. As a result, Tutut became one of 17 members of the Sido Agung Women's Group, comprised of women from three villages who received training on mangrove and fish-based food

"The income generated from selling mangrove herbal tea has been used to buy kitchen utensils that I need."

processing. These capacity development initiatives have presented benefits for Tutut, her peers and the wider community.

Another woman who benefited from the initiative is Tutik Sumarti. The civil servant and mother, who received training in Daruju herbal tea production, highlighted the importance of mangroves in her daily life: "We need to re-vegetate the coastal areas to prevent the areas from getting eroded. Mangroves provide so many benefits for me, for example I can make herbal tea."

Through the initiative, Sido Agung Women's Group has not only improved the participating women's technical capacity but also allowed them to generate sufficient additional income for their families; in the last nine months, the herbal tea activities generated a profit of US$ 1,600. "The income generated from selling mangrove herbal tea has been used to buy kitchen utensils that I need. This can be an alternative income source for other female community members too; collecting holy mangrove leaves," Tutik added.

Silsilah, a mother of two and trader by profession, also gave examples of how the initiative has improved her life as well as her family's. In addition to generating extra income from selling mangrove products made by the women's groups, Silsilah now has additional time to make room for activities that were neglected before. "I can now afford to buy a television and have time to watch the TV together with all my family members," said Silsilah.

Like the others in her village, Silsilah understands the important link between mangrove regeneration and the overall well being of the community. "If mangroves continue to deplete, the number of fish will also certainly go down. Fish cannot stand heat and so take shelter under mangrove trees. Replanting mangrove will ensure the sustainability of people's livelihoods."

Unlike Silsilah, who was aware about the socio-economic benefits of mangroves prior to the project, Ummy Kalsum, also known as Ibu Haji (a well-respected woman who has completed pilgrimage to Mecca), was initially opposed to planting mangrove trees around the ponds, "I used to think that the trees would block the direct sunlight required in drying out salt in the pond. I also thought that fallen leaves would damage the soil around the pond," said Ummy.

Now, through a salt bank programme where her mangroves have grown over 50 cm tall, Ummy is a local champion in mangrove conservation. She encourages more and more salt farmers to initiate mangrove rehabilitation along reservoir dykes of their salt ponds.

Mangrove restoration project empowers Indian fisherfolk community

Credit: Society for People Education and Economic Development (SPEED)

The depletion of fish numbers and competition with bigger fishing companies left Jenitha and her community in Karankadu, India, struggling for a reliable source of income. Through a mangrove restoration project supported by MFF, Jenitha picked up new supplementary livelihood skills which allowed her to turn her life around.

Mother of two Jenitha and her husband are fisherfolk who practice traditional crab and fish catching, along with 1,500 other residents of Karankadu. The availability of fish is dependent on the growth of nearby mangroves that sustain nurseries of economically important species for the community. In recent times, their livelihoods have been threatened by the loss of mangroves due to diminishing fresh water flows as well as the growth of trawler fishing in the region.

"Our catch became smaller and smaller. Most of the fish were being caught by big fishing companies who use mechanised boats. Our manual boat simply could not compete with them," explains Jenitha.
Without sufficient fish to catch and sell, Jenitha was not earning enough money. Along with many other women in the village, she was forced to find supplementary sources of income to support her family, something that she struggled with at the beginning.

"I did not know how to do anything else besides catching and selling fish. I also had no time and money to learn new things," she said.

Through the 'Participatory community engagement and education for conservation of mangroves in Palk bay areas of Ramanathapuram district in Tamil Nadu' project, Jenitha, along with 40 other women, learned new and vital livelihood skills including cage culture fishing and fish pickling.

Jenitha displays one of her catches in Karankadu, India - Credit: Society for People Education and Economic Development (SPEED)

Aside from the capacity-building component, the project also successfully developed a model for the restoration of mangroves, improving the resilience of the village to natural disasters in the process.

"I learned that cultivating mangrove plants ensures healthy growth of fish populations, and that mangroves act as a natural shelter during natural disasters such as floods and tsunamis. These are things I never knew before," added Jenitha.

Now, in addition to selling fish and crabs that she and her husband catch, Jenitha also sells pickles that she makes. In the evenings, she cultivates mangrove plants. With the new skills that she acquired, Jenitha is bringing in income to repay her debts and renovate her house. The quality of life for her family is slowly improving and she has become more self-confident.

"My inter-personal communication skills have improved. In the past, I was very shy and fearful of meeting government officers, and hesitant of entering banks and rural development offices. The project has helped me to overcome all these insecurities and be more confident of myself," she adds.

About the project

With support from MFF, the 'Participatory community engagement and education for conservation of mangroves in Palk bay areas of Ramanathapuram district in Tamil Nadu' project was implemented in Karankadu, a coastal village in Ramanathapuram district, India, from December 2013 to June 2015. Implemented by local NGO Society for People Education and Economic Development (SPEED), the project developed a model for the restoration of mangroves to enhance the livelihoods of fisher-folk; provided supplementary livelihood training sessions for fisherwomen; and improved the resilience of the village to natural disasters.

Farmed fish:
a nature based solution for increased resilience

Harvest from the integrated fish farming ponds in Sarlagondi village, India - Credit: Nisha Maria D'Souza/MFF India

Across the east coast of India, abandoned land stands testament to unsustainable aquaculture practices and the collapse of shrimp farming in the 1990s. Communities have been forced to find alternative work opportunities, many ending up in manual labor. In 2007, IUCN and M.S. Swaminathan Research Foundation (MSSRF) partnered through an MFF initiative to develop the Integrated Mangroves Fisheries Farming System (IMFFS) in Tamil Nadu, allowing the land to be sustainably farmed, improving the natural ecosystems and providing income, meaningful work and food for coastal families.

A nature-based solution

IMFFS ponds, stocked with fish and crabs, are engineered to leverage the natural benefits of tides and surrounding mangroves. Incoming tidal water refreshes the ponds and brings in supplementary food for the farmed fish and crabs. This eliminates the need for artificial pumping of the pond water, and the need for synthetic feed. IMFFS ponds are thereby energy-efficient and organic. The system does not compromise on quality and size of produce, both of which are comparable to wild catch.

Mangroves are planted along the periphery and bunds within the ponds, providing additional nutrients in the form of leaf litter. Mangrove-associated marsh grass can also be cultivated as organic feed. Other associated flora can be grown and sold as ornamental plants to supplement income. IUCN and MSSRF are further exploring the carbon sequestration and storage potential of the mangroves grown around the ponds.

Increased community resilience

In 2012, IUCN worked with MSSRF and Praja Pragati Seva Sangham (PPSS) to build ponds for families of the Yenadi tribe in Sarlagondi village in Andhra Pradesh. The Yenadi families used to hunt rats for farmers in agricultural fields earning INR 5 (US$ 0.08) per rat. They have no permanent housing, and extremely low food or income security, often turning to manual or agricultural labor in times of need.

Just three months after 10 IMFFS ponds were set up on land donated by the Revenue Department, Government of India, the community was able to sell intermediary harvests as and when they required money or food. In the mid-year harvest, the community earned US$ 1,681 in its first mid-year harvest of crabs from eight ponds. The end of year crab and fish harvest was sold for US$ 4,423. On average a single Yenadi family earned between US$ 224 and US$ 676 within four months of building the ponds.

Communities can now directly sell harvests at local markets when they need money instead of borrowing from money lenders or middlemen and incurring unnecessary debt. There is a growing sense of financial security and empowerment amongst the families. Through capacity building in finance management families are working to build permanent housing and send their children to school.

"There is now a growing sense of financial security and empowerment amongst the families. Communities can directly sell harvests at local markets when they need money instead of borrowing from money lenders or middlemen and incurring unnecessary debt."

Moving forward

Even as humanity continues to depend on the oceans for food and livelihoods, pressures from overfishing, climate change and ocean warming are leading to big changes for local communities. MFF SGF projects are a great example of how state governments, Intergovernmental Organisations like IUCN , Community-based Organisations like PPSS and research institutions like MSSRF can partner to provide sustainable coastal livelihoods to coastal communities in need.

MSSRF is already working through the Climate Adaptation Fund and Government of India to replicate IMFFS across India. The Aquaculture Authority of India is considering the IMFFS model for eco-labeling for its potential for carbon sequestration and sustainability. IUCN is continuing to build coastal community resilience by addressing pressures and threats to ocean biodiversity and community livelihoods through MFF and other initiatives. In 2016, the IUCN World Conservation Congress in Hawai'i focused on ocean-related challenges and solutions through more than 100 events, including the IMFSS projects.

Yenadi tribe members hold up the products of their integrated fish farming ponds - IUCN/PPSS

Morning catch in Ban Mod Ta Noi, Trang, Thailand - Credit: MFF Thailand

Oceans for Sustainable Development

Mangroves For the Future: Contributing to the 2030 Agenda for Sustainable Development Goals

All 17 Sustainable Development Goals are connected to MFF's strategic focus areas: coastal rehabilitation; livelihood support; and resilience-building and empowerment, with climate change and gender as key cross-cutting issues.

SDGs Number 1 on poverty, Number 5 on gender, Number 14 on ocean resources and increasingly Number 17 on global partnerships are particularly central to MFF's current work and long-term plans.

Breaking the Poverty Cycle

In terms of SDG Goal 1, 'End poverty in all its forms everywhere,' MFF focuses on promoting livelihood activities that are environmentally sound, economically realistic, and sustainable. The programme develops models to guide livelihood restoration in post disaster situations, encourage replicable community-led ecotourism activities, restore fisheries in tsunami affected areas, and help market non-fish mangrove products.

In Indonesia, mangrove degradation in Kraksaan sub-district is attributed to the large-scale conversion of mangrove land into shrimp or salt ponds. Such activities – which result in the erosion of embankments and the decline in fish population – threaten the livelihood of communities that rely on selling fish.

Through the MFF Small Grant Facility project, women from three villages in Kraksan received training on mangrove and fish-based food processing as part of an initiative to strengthen the overall communities' resilience to environmental change.

"I now have an alternative income source as I can sell the mangrove leaves that I collect to people who wish to use it to make tea." - Tutik Sumarti, Indonesian project beneficiary

A young community member in Phang Nga Province, Thailand – Credit: Ana Grillo/MFF Thailand

Ensuring Equity and Equality for All

SDG Goal 5 'Achieve gender equality and empower all women and girls' is well-aligned with IUCN's gender policy, which calls for the promotion of equity and equality as a crucial factor for environmental sustainability and an integral part of all conservation efforts. Of MFF's 177 Small Grants Facility projects implemented from 2010-2015, 55 (31%) had a gender component and were designed and implemented to meet the gender needs and interests of both women and men. More than 80% of these gender-responsive projects resulted in a measurable increase in women's income by providing education and skills development to women and their families. This trend is continuing in 2016 with MFF's Cycle 5 projects.

A young mangrove sapling in coastal Thailand –
Credit: Ana Grillo/MFF Thailand

In Bangladesh, the women of Kultoli village in Shyamnagar are responsible for collecting fresh water for the family, spending up to two hours a day walking three kilometers to the nearest clean water source. Today, thanks to an MFF project that re-excavated ponds and built reservoirs closer to their homes, the women now only need half an hour a day to collect water. This has increased their discretionary time to over two and a half hours a day, which they now dedicate to other activities that benefit themselves and their families. Closer access to water sources has also reduced the risk to personal security that women and children used to face.

"With increasing capacity for monitoring gender impacts and women's empowerment, MFF projects are increasingly able to demonstrate their responsiveness to context-specific gender needs and interests, and to make contributions towards closing the gender gap by improving women's access to and control over resources." - Maeve Nightingale, gender focal point for IUCN Asia and MFF

In Viet Nam, an MFF project that aimed to develop and integrate a co-management model in the Xuan Thuy National Park management system for the protection of mangroves empowered over 500 women in policymaking processes. The project also enhanced the women's awareness of the importance of mangrove ecosystems and sustainable fishing methods. Through the Local

Initiative Fund (LIF), the women also received financial support to expand their small-scale level livelihood activities.

Using Ocean Resources Sustainably

MFF is also a driving force behind SDG Goal 14 'Conserve and sustainably use the oceans, seas and marine resources for sustainable development', by influencing policy and encouraging local communities to adopt best practices in effective and responsible coastal management.

In Seychelles, Sri Lanka, Maldives and Thailand, an MFF regional project contributed to better multi-stakeholder engagement in natural resource governance. The project supported ongoing efforts to decentralise environmental management and enhance public participation in coastal resource management decision-making. This has resulted in the involved countries developing reports on natural resource governance frameworks to influence national policy, as well as a draft resource toolkit for community involvement in natural resource governance in small islands.

Koh Samui attracts high-end tourists; raises cost of living for locals - Credit: MFF Thailand

Revitalising Partnerships for Sustainable Development

Increasingly, as a key component of its sustainability strategy, MFF touches on SDG 17 'Revitalise the global partnership for sustainable development.'

"MFF's governance structure brings government, civil society and private sector together to take action at the national level and cooperate at the regional level to contribute to the conservation of coastal areas. The programme's unique partnership of diverse stakeholders across countries facilitates knowledge sharing and provides opportunities for transboundary cooperation." - Dr. Steen Christensen, MFF Coordinator

A project in Thailand utilised a local multi-stakeholder participation process to develop local coastal ecosystem management plans for 23 villages – ensuring its integration and support at district and provincial levels.

As coordination among multi-stakeholder groups was strengthened, tension between local communities and national agencies was reduced. The project also facilitated the uptake of ecosystem-based coastal resource management concepts into the local development plan.

Moving forward, MFF is working towards helping companies to assess and mitigate their impacts, connect with their supply chain and ensure sustainable sourcing for their businesses, connect with local communities and optimise return on Corporate Social Responsibility (CSR) investment, explore new green products and services which can benefit coastal communities, and adopt sustainable practices.

To celebrate International Day for the Conservation of the Mangrove Ecosystem on 26 July 2016, MFF released this photo story showcasing its achievements and efforts across 11 countries towards achieving the recently adopted Sustainable Development Goals (SDGs). The SDGs are part of the 2030 Agenda, a new global framework to help eradicate poverty and achieve sustainable development by 2030.

Getting the Balance Right

Recognising that gender equality is fundamental to conservation and sustainable development, MFF has established gender integration as an important strategic approach in its programme.

Promila Rani: Nabadiganta Mohila Shomity - Credit: Nabolok Parishad/IUCN Bangladesh

Empowering women for community and ecosystem resilience

Local women like Promila Rani have established and run community enterprises that provide alternative and sustainable livelihood with the aid of a Mangroves for the Future Small Grants Facility project for NGO Nabolok Parishad.

Members of Shomity - Credit: Enamul Mazid Khan Siddique/IUCN Bangladesh

"Stay educated, keep being organised and don't lose hope," says Promila Rani, chair of Nabadiganta Mohila Shomity, a Mangroves for the Future (MFF) Small Grants Facility (SGF) beneficiary. "Find the resources and people who can support you, because when you have the drive and a plan in place, people will gladly help you."

MFF promotes an integrated approach to coastal management to support sustainable development and build resilience in coastal communities. MFF's SGF provides small-scale grants to initiatives that provide practical, hands-on demonstrations of effective coastal management.

MFF worked with the Nabolok Parishad organisation in Bangladesh to alleviate poverty and promote conservation by providing rural women in villages near the Sundarban Impact Zone with alternative and sustainable livelihoods, financial training and a sense of ecological stewardship.

Women in this region face marginalisation for two reasons: because they live and work in rural, pastoral communities and because they are women.

Nabolok Parishad helped identify Nabadiganta Mohila Shomity – a group of 100 women from the Borokupot and Bayershing – as an eligible programme beneficiary. MFF SGF provided Shomity sub-groups with a small co-finance of US$ 300. This support had many positive impacts for Promila and other women in the group, as well as for the local ecology.

Before MFF support, Promila and the other women in the group collected shrimp post-larvae and fish larvae from the Kholpetua River, which put pressure on local and extended ecosystems and accelerated the rate of depletion of Sunderban resources. With MFF support, Promila and her associates were able to start Shomity – a business selling mats they made out of local reeds. Mat prices range from US$ 1 to US$ 7 per mat, depending on size.

As a result of the financial leadership training, Promila and colleagues now feel empowered to negotiate prices and take orders directly from customers. "My confidence has increased a great deal", reports Promila with a smile on her face.

Using reeds from a one hectare plot, they sold US$ 3,500 worth of mats in 2015. "I received a supplementary income of 15,000 Taka (US$ 192) by selling my mats alone – this is incredible for me," added Promila.

"Without this platform, none of this could have happened. All of the members have invested their labour in the business. If it was not for Shomity I would not have been able to pay the women for their hard work," she says.

Shomity continues to show signs of improved market access as the women build and maintain good working relations with local shopkeepers. The enterprise continues to save every week and has appointed an accountant to help manage finances. Members are also eligible to take loans from the group for individual ventures.

As Shomity's network grows and Promila becomes more equipped with expertise and experience, she feels that opportunities for women in her region are increasing, even for future generations.

Promila aims to open a personal savings account to invest in her daughters' futures, one of whom is in high school and the other in primary school. "I am happy that I can afford to help my daughters with paper, pens and books. Sometimes I also buy water to avoid the time spent collecting it," she says.

Women's empowerment for ecosystem and community resilience was one of many important issues that was discussed at the IUCN World Conservation Congress in Hawai'i in September 2016.

Reducing the 'invisible workload'

Women fetching drinking water from distant ponds in Shyamnagar, Bangladesh - Credit: IUCN Bangladesh

In many parts of the developing world, women spend many hours each day performing tasks such as gathering fuel wood or collecting water. Improved access to basic needs and services and introduction of new technology and practices can help free women from these physically demanding and time-consuming tasks, so that women have more time to care for their health, earn cash income, cultivate gardens and new crops, improve their knowledge and education and participate in the enhancement of their communities.

According to Water.org, 180 million people are without access to safe drinking water in South, West and Central Asia. Millions of women and children in developing countries like Bangladesh, and especially in the coastal zone, spend a significant part of each day collecting water for household use, a preoccupation prohibiting them from accessing other crucial life opportunities. A survey conducted by Water.org in 45 developing countries showed that in 76% of rural households, women and children have the greatest responsibility for collecting water for household use. The responsibility and time commitment required for fetching fresh water often exacerbates conditions of poor health and low educational attainment.

In Kultoli village, Shyamnagar, Bangladesh, the increasing shrimp production and high salinity levels in the Chuna River are the prime causes for the scarcity of potable water. Following Cyclone Aila in 2009 the fresh water ponds on which the local community had traditionally relied for their household water needs had become shallow and highly saline, rendering them unsafe and unusable. Women of the village, traditionally tasked with collecting fresh water for the family, were faced with no choice but to spend up to two hours of their day to walk the three kilometers to the next, nearest clean water source.

To help address this issue in Kultoli village, the Mangroves for the Future programme supported the implementation of a Small Grant Project through the local organisation Nakshikantha Mohila Unnayan Sangstha. The project focused on rehabilitating local fresh water sources but achieved multiple benefits beyond this.

The Nakshikantha organisation seeks to improve gender equality through economic empowerment. One of its main approaches is to promote household-based trades by training women. This is the first time the organisation worked on a project to address the fresh water scarcity issue, the central priority concern of Kultoli village and an issue preventing women from having the time to engage in skills development for other trade-based activities.

Kultoli village stands at the border of the Sundarbans, the largest contiguous mangrove forest in the world, which is heavily depended upon for the livelihood of many, including the people of Kultoli. Men traditionally harvest forest resources such as mud crab, honey, nipa palm products, and fish. Men are rarely involved in household responsibilities such as cooking, water collection, or childcare, as these tasks are traditionally considered to be the women's domain. Women, in an effort to contribute to household income, also find time to collect shrimp larvae and

crabs from nearby canals of the Sundarbans after completing their household tasks. Some women also work as labourers to clean the aquatic weeds from privately-owned shrimp ponds, or fill other labour requirements in the area.

Due to fresh water scarcity, the people of Kultoli had been living with extreme hardship including poor sanitation conditions and waterborne diseases. The MFF Small Grant Project re-excavated five fresh water ponds and provided 33 plastic tanks for storing rainwater in order to increase access to safe water for consumption. In April 2014, four ponds were successfully re-excavated, with one pond being made into a reservoir that can store up to seven million litres of fresh water.

A year later, in May 2015, at least 250 Kultoli village families were accessing clean fresh water from the re-excavated ponds, situated only 250 meters from their houses. The project also provided significant additional positive spin offs. Today the time needed to collect water has been reduced to half an hour a day, saving over two and a half hours which women now dedicate to other activities that benefit themselves and their families. Closer access to water sources has also reduced the risk to personal security that women and children were facing. Previously, women collecting water in the evenings after completing their daily household activities would often return home after dark, frequently facing sexual harassment and teasing on the way. In this respect, having water available near their residence has improved personal security and provided a kind of social security for women.

"Inequality takes many different forms, including income inequality; unequal access to and control over property and resources; unequal access to civil and political rights; and unequal access to social, cultural, and economic rights. These forms of inequality possess inherent gender dimensions"

These unintended consequences – saved time and increased personal security – have had a profound impact in and of themselves. Time saved in collecting potable water has been redirected to productive work within the village and the once 'invisible work' of women and children is now visible and recognised.

As a result of the project the villagers now have more time for meaningful social activities and the 'multiple burden' of taking on both household and productive responsibilities has been relatively reduced. The women of Kultoli have taken up various new activities that were previously not possible, including new forms of trade for income generation which has resulted in a sense of empowerment. The alternative activities include chicken raising, home gardening, providing well-cooked meals for their families, and teaching their children lessons for schools. Individual women have even reported that having more time and less stress has lead to "fewer quarrels with their husbands."

At the same time, it should be noted that providing access to new sources of fresh water has not dramatically changed the behaviour of villagers towards water usage and sanitation and there continues to be a high prevalence of waterborne diseases. In an effort to address this, the fresh water ponds are overseen by a village committee, led by the women living nearest to the ponds. The committee has installed public announcement boards with messages about good practice related to sanitation and clean water; e.g. the good practice of boiling water before drinking, dos and don'ts when collecting water from the ponds, and ensuring that poultry and livestock stay away from the ponds. Today the village is creating a collective fund from the contribution of water users so the ponds can be maintained and kept in a good state.

Inequality takes many different forms, including income inequality; unequal access to and control over property and resources; unequal access to civil and political rights; and unequal access to social, cultural, and economic rights. These forms of inequality possess inherent gender dimensions, but the one form of inequality that has received less recognition but which has major adverse implications for accessing economic rights is time poverty: the relative allocation of time between women and men in the household and in the economy. MFF works to recognise and address all forms of inequality and to build resilience for coastal communities.

This article was originally published in a SIDA journal.

Eco-logical Solutions

The private sector, especially the tourism and fisheries industries, are important stakeholders for MFF. The sustainable management of coastal resources can only be achieved if these stakeholders are engaged and become active partners in the programme.

Rethinking inclusive sustainable coastal tourism in Cox's Bazaar

Home to a golden sand beach, towering cliffs, amazing surf, rare conch shells and colourful pagodas, Cox's Bazar should long ago have been on the map as a popular tourist destination. Yet, little is known about this fascinating fishing port located in the South Asian nation of Bangladesh.

Cox's Bazar is best known for having the longest beach in the world – 120 km of continuous sandy shore running the length of the coastline. The town is named after Lieutenant Cox, an officer of the British East India Company who sought shelter in the then British territory after the conquest of Arakan by the Burmese. A majority of the population, many of which are originally from Myanmar, are descendants of the Arakan refugees, creating a continuum of ethnic diversity and cultural harmony that shapes Cox's Bazar today. Products of the Rakhine people are a favorite amongst tourists; their unique culture attracts visitors from home and abroad.

From Cox's Bazar all the way down to Teknaf: a place of culture, wildlife and natural landscapes

Located north-west of Cox's Bazar town, the Island of Sonadia has been identified by the Government of Bangladesh as an Ecologically Critical Area (ECA) to protect it from overexploitation (Environmental Protection Zone as a result of the 1995 Environmental Conservation Act). It is a barrier island, lying parallel to the mainland and protecting it from erosion. Sonadia Island provides a diverse habitat that supports three different vegetation types: sand dunes, salt marshes,

and mangroves. Along with its associated marine area, it provides habitat for several threatened species including marine turtles, shore birds, and cetaceans. The island is one of the last remaining habitats of the spoon-billed sandpiper, a very rare shore bird.

Nearby, St Martin's Island – the only coral-bearing Island in Bangladesh – is a site of interest for establishing one of the first national Marine Protected Areas (MPA) through the support of the International Union for Conservation of Nature (IUCN) and its regional coastal ecosystem programme, Mangroves for the Future (MFF), which would open up opportunities for conserving wildlife and promoting sustainable tourism activities. MPAs involve the protective management of natural areas so as to keep them in their natural state. They can be conserved for a number of reasons including economic resources, biodiversity conservation, and species protection. They are created by delineating zones with permitted and non-permitted uses within that zone.

Fishermen on Inani Beach in Cox's Bazar - Credit: Ann Moey / IUCN Asia

Other important local attractions include the forests of Shilkali and Chunuti, which are managed and protected by local communities. Chunuti Wildlife Sanctuary is the country's third oldest sanctuary and home to a herd of majestic Asian elephants, the rare scarlet-backed flowerpecker, kalij pheasant, and crab-eating mongoose. The Teknaf Wildlife Sanctuary is another place of diverse wildlife, featuring a hill forest in the middle part of the Teknaf Peninsula.

Driving Cox's Bazar tourism industry towards inclusiveness

A sustainable approach to tourism means that neither the natural environment nor the socio-cultural fabric of the host communities should be impaired by the arrival of tourists, according to UNESCO. The goal is for local communities to benefit from tourism, both economically and socially, without sacrificing their natural environment in the process.

Tourism can be a driver for social growth and economic development if it carefully considers local assets to build attractive and marketable tourism products while maximising benefits sharing and reducing negative environmental impacts.

"Defining a Sustainable Tourism Strategy for Cox's Bazar will require developing a common vision at the local, national, and regional level to pave the way for local to national economic development opportunities and work across industries including fisheries and aquaculture, agriculture, handicrafts, tourism facilities and service providers," says Maeve Nightingale, Capacity Development Manager, MFF. The first step of this strategy will be a participatory consultative initiative where national and local government, tourism industries and related businesses, as well as local communities work together to design the vision and way forward for a sustainable future for Cox's Bazar. Conservation and tourism and community development opportunities go hand in hand as marine and coastal environments provide key natural assets which are essential to the tourism industry and coastal communities. Coastal tourism development should therefore be an inclusive process that values local communities and creates benefits-sharing systems.

To guide the tourism sector towards sustainability, IUCN has developed guidelines for the integration of biodiversity into hotels and resorts development, for the integration of business skills into ecotourism operations, and for ensuring sustainable tourism in Parks and Protected Areas. In parallel, MFF works

to leverage opportunities for communities to develop small-scale, sustainable enterprises, which support local livelihood development. Some of these initiatives include facilitating the supply of local sustainable seafood to hotels and restaurants, souvenir product development for hotels, and development of ecotourism services.

Emphasising the importance of these types of collaborative approaches, MFF works closely with communities in Bangladesh to achieve a sustainable, community-based ecotourism industry. In Shyamnagar, a sub-district located close to the Sundarbans, the largest mangrove forest in the world, MFF works together with Joar, an NGO that supports natural resources dependent communities by providing alternative sources of income from the operation of eco-cottages and related ecotourism activities.

Raising awareness for public-private partnerships

In the long run, the future of tourism as a driver of sustainable and inclusive development in Cox's Bazar will necessitate a participatory approach, collaboration, and active support from both the private and public sectors, and the community.

Strategic guidelines, like participatory tourism development planning, is necessary for Cox's Bazar to ensure a holistic approach to sustainable tourism development that includes considerations for managing fresh water, wastewater, drainage, waste management, infrastructure and other essential services necessary for tourism, while at the same time preserving cultural and natural heritages as the foundation not only for tourism but also for societal wellbeing. Recognised for its potential to become a top tourist destination, Cox's Bazar was selected to be the venue of the PATA New Tourism Frontiers Forum, in November 2016, where Mohammad Shahad Mahabub Chowdhury, National Coordinator for MFF Bangladesh, moderated the session 'Rethinking Sustainable Coastal Tourism.' The session focused on how the private sector is a critical stakeholder for the stewardship of coastal resources.

This article was originally published on the Pacific Asia Travel Association website.

Credit: Ann Moey / IUCN Asia

IUCN and Thai Union Group collaborate with coastal communities to strengthen natural resources governance

Engaging local communities in coastal and marine resources management is key to sustainable development in coastal areas. IUCN and Thai Union Group have launched a collaboration to enhance community capacity and develop a long-term plan for community-based coastal resources management in Pathiu Bay, Chumphon Province in Thailand. The project aims to strengthen the resilience of communities and the ecosystems they depend on.

Local livelihoods along Thailand's coastline are heavily dependent on the integrity of the marine and coastal environment. In Pathiu Bay, fishing is the main livelihood of the coastal communities. A preliminary assessment conducted by IUCN in 2015 concluded that while the community has important natural resources and other assets to build on, there is a need to create more sustainable fisheries, in particular through the minimisation of by-catch and the protection of juvenile fish.

In 2015, Thailand adopted a new Marine and Coastal Resources Management Act and a new Fisheries Act, which provide the basis for a greater degree of community engagement in coastal and marine resources management.

In order to strengthen the resilience of the community, this project will work with established community groups and other key partners to develop the knowledge base and capacity for integrated coastal resources management in Pathiu Bay, to develop a long-term plan for integrated coastal resources management, and to implement pilot activities to support the implementation of the long-term plan.

The pilot interventions supported by the project may include; setting up a process for community-based monitoring of commercially important fish species; working towards establishing community fishery regulations and/or a community-based marine protected area; or supporting sustainable aquaculture projects.

The project also aims to establish a link with Thai Union's supply chain for certified fishery products of the community that ensure sustainable fishing and aquaculture practices.

This partnership falls under IUCN's Business and Biodiversity Programme and the MFF initiative and is part of Thai Union's commitment to sustainability. As part of its Sea Change Sustainability Strategy, Thai Union has started a consultation programme with key stakeholders aimed at shaping its future sustainability action plans.

In line with its Business Engagement Strategy, IUCN conducted a Risk and Opportunity Assessment prior to this engagement.

A fisherman from the Ban Son community in Chumphon, Thailand - Credit: Saisunee Chaksuin / IUCN Thailand

MFF Champions

As a partnership-led initiative, MFF relies on its regional network of partners. This includes government organisations, private sector companies, and civil society organisations, working synergistically to achieve long-term and sustainable coastal ecosystem management. Without the commitment of its partner organisations and the people that drive them, MFF would not have been able to deliver the coastal conservation results it has achieved in the region.

Gender Equity and Participatory Development: Portrait Of A Pioneer

Indra Kertati has been the driving force behind community coastal conservation projects in rural Indonesia. She marries activism for gender equality with environmental protection, and uses her influence as the head of an NGO to inspire others. Indra mobilises her team of 30 staff to work with her to ensure that communities' voices are heard and that women can effectively reach their full potential.

Recognising the importance of mangroves

Ibu Indra and her team's latest work – part of an MFF Large Grant Facility project – is a 16-month community-based coastal management project in Gejoyo, Demak. Like many others in Asia, Demak's coasts are faced with severe mangrove deforestation and coastal degradation due to infrastructure development and aquaculture, which in turn has adverse effects on the community. Working closely with the local Development Planning Agency (BAPPEDA), the project has helped reverse the adverse effects of development by expanding the mangrove range. A total of 286,000 mangrove seedlings were planted from 2011 to 2013.

"Mangroves play a vital role in these people's lives. An improvement in coastal conservation efforts essentially led to a better quality of life for the communities living in the area," explained Indra

A passion for supporting communities

Earlier on in her career, Indra worked as a field officer for the non-government organisation (NGO) Bintari Foundation. She was often at project sites assisting communities in improving environmental management practises, as she believed that it would improve their quality of life. It was there, on the ground, that Indra's commitment to conservation work grew as she built trust with community members and began to realise that environmental degradation had grave implications for local communities.

Serious about the issues at hand, Indra and some of her friends founded local NGO Lembaga Pengkaijiandan Pengembangan Sumberdaya Pembangunan Semarang (LPPSP) in 1998. The organisation worked with communities in Tegal, a large city in the northwest part of the Central Java Province of Indonesia, to conserve mangrove forests and sensitise the public to improving conditions in coastal areas.

"For seven years, I joined the communities and lived together with them. I explored their problems and understood their lives," said Indra. "Some of the problems Tegal faced was the over-logging of mangroves, poor environmental sanitation, as well as low public awareness on the environment. My biggest

challenge at the time was to restore degraded and damaged mangrove forests and encourage people to care about the environment. It wasn't an easy task. For almost two years I had to fight and persist to make people aware that a healthy environment can improve their lives."

Working closely with the government

While LPPSP was doing impressive work, it could not function to its fullest potential on its own. With great foresight, Indra connected with the local government and other NGOs to raise funds to conduct research and better understand the sandy and challenging terrain in Tegal. Today the programme runs its own course.

As the Head of LPPSP, Indra continues to connect local communities, NGOs and the local government with one another to ensure that short-term projects continue to have long-term, sustained results.

"One thing I always try to do is to look at how the public can interact with the local government. Community action plans should be integrated in the budget planning, so that when the programme ends, the government can continue to support the plans. It is the government's duty and LPPSP's responsibility to ensure that work continues."

A gender champion, Indra takes conservation work to another level. "Women are still trapped in the Indonesian culture and they cannot walk out of its fences on their own," she reflects. "Living in a highly patriarchal society, women depend on decisions made by men. They are systematically subordinated into household work. They face marginalisation, which contributes to their disempowerment. Access to, and control over, resources for women is definitely much lower than for men in this society."

With a strong belief that women are key to sustainable development, Indra has become a specialist in designing gender equity projects, and creating tools that allow the government to implement gender responsive programmes and activities that are effective at the provincial and village level.

This has been a long struggle for Indra and her team. Faced with shortcomings of one of her pilot projects, Indra returned to work closely with women's groups on the ground to try to learn more about the pressing problems faced by the communities and the multitude of issues surrounding gender. She also began studying different types of analytical approaches in order to develop a new gender analysis tool. This tool can be used for medium- or short-term analyses with a potential for long-term strategic planning and development.

According to Indra, the challenge is to achieve a "buy-in" from the local Ministry of Women's Empowerment and Child Protection. She hopes that by introducing the new gender analysis tool through a series of trainings, the government will be able to implement more gender responsive programmes and activities. "I hope that the robust data and excellent participatory processes seen in this tool will help achieve good results," says Indra, beaming with optimism.

Indra is now thinking ahead by developing a module for gender responsive planning and budgeting at village level.

With Indra at the helm, LPPSP's ability to reach out to various stakeholders to influence policies and implement programmes in their work on conservation, gender equality and community empowerment, helps ensure that such developmental programmes continue to be sustainable for generations to come.

"Mangroves play a vital role in these people's lives. An improvement in coastal conservation efforts essentially led to a better quality of life for the communities living in the area"

Wetlands and their communities: The story of Yus, an advocate for coastal conservation

When Yus began his journey in conservation over 30 years ago, he was clear and unwavering in his passion for conservation. He understood from the very start that natural resources provide what is necessary for humans to thrive, and contribute to the economy of human communities and countries.

An ornithologist by craft and wetlands conservation specialist by trade, Yus' experience in working on conservation in various parts of Indonesia and the region has endowed him with a broad perspective on the coastal conservation environment in Indonesia, making him a prominent figure in MFF's programme in the country.

Yus became involved in conservation work at a very early age. Passionate about birds, Yus studied Ornithology and conducted a waterbirds study for his undergraduate thesis in 1987. After getting his degree, he joined Wetlands International and worked his way up to becoming the head of the organisation's Ornithology Department – a role that gave Yus the opportunity to be directly involved in migratory waterbirds work over five continents.

In 2000, Yus started working on community development, particularly in relation to sustainable use of natural resources in and surrounding wetlands. According to Yus, one of the challenges facing sustainable wetlands management in Indonesia is poverty. Due to the absence of affordable alternative resources, local communities are forced to use wetlands resources in an unsustainable manner. The provision of sustainable alternative livelihoods is essential in order to ensure that local communities are fully involved in the maintenance and restoration of wetlands ecosystems.

"We must raise awareness about the importance of protecting our wetlands, as the destruction of these ecosystems will destroy the future of local communities. We also need to, in parallel, convince local communities that restoring wetlands is crucial for improving their livelihoods," says Yus.

A central part of MFF's work is in offering strategic support and providing countries with the right information to guide them on

Yus Rusila Noor in front of the ranger office at Sembilang National Park, South Sumatra - Credit: Yus Rusila Noor

the development of national coastal development policies. Much of this information can be acquired from local communities, as they possess very precise knowledge of ecosystem functioning at small spatial scales. Through community groups, MFF also strives to encourage community networking to build participatory mangrove and coastal resource management capacity.

Having worked in the field since 1985, Yus has established an excellent rapport with local communities. His experience includes supervising field facilitators, working with local communities, and establishing various community-based wetlands restoration works. In his capacity as project manager for the resilience programme for Wetlands International, Yus has also played a key role in bringing local knowledge and perspectives of local communities to the national and global stages.

"I am very passionate about working with local communities, as I believe it is a fundamental aspect for achieving conservation goals, to contribute to communities' well-being, and to ensure programme sustainability," explains Yus. "Working with local communities has also helped me on my journey of personal growth. Instead of us systematically sharing our knowledge with the communities in a top-down manner, I realised that we can actually learn a lot more from the communities. They have a wealth of knowledge, especially on issues such as sustainable wetlands management, which in many cases is very compatible with modern science."

Since MFF was initiated in Indonesia in 2006, a total of 30 Small Grant Facility projects, one Medium Grant Facility project, and one Large Grant Facility project have been implemented.

"Due to the nature of the programme, which is action-oriented at field level, MFF provides real, tangible solutions, and encourages local communities to conduct the type of local initiatives that helps them obtain sustainable solutions to challenges. In this regard, the programme has definitely helped address some of Indonesia's most pertinent coastal challenges," says

Peaceful early morning at the Bajo village of Torsiaje, where Yus makes frequent monitoring trips - Credit: Yus Rusila Noor

Yus. "MFF effectively provides opportunities for communities to communicate with one another to develop joint sustainable livelihood activities."

As Wetland's International's gender focal point for MFF, Yus is also responsible for ensuring that project implementation at field level is in compliance with gender balance principles. "Besides ensuring that women are involved in activities, I also ensure that the decision-making process involves all members of the communities."

Thus far, Yus enjoys his work and is positive about the benefits that MFF brings. When asked about how the programme could be improved, Yus said: "MFF could consider working closely with other initiatives to ensure the sustainability of joint investments at a local level. In addition, there needs to be more exposure for MFF's work in Indonesia, both at national and sub-national levels, and it needs to be closely linked to conservation policy and advocacy work. This will ensure that the current available resources will effectively contribute to the development of Indonesia's policies on sustainable mangrove and coastal management."

When asked about his conservation goals, Yus says: "My short-term conservation goal is to contribute to the maintenance and restoration of wetlands and their biodiversity. My long-term conservation goal is to ensure that wetlands are used wisely and restored, for the role they play in improving human well-being and local livelihoods, conserving biodiversity, sustaining the water cycle, and reducing climate change and its impacts. These are also the goals of Wetlands International."

Talk the Talk

MFF recognises that there is a need to project itself as an influential initiative that is visible to identified key audiences. To achieve this, reaching out to the media and attaining coverage is key. In the past year, MFF has moved from being reactive to media requests to proactively reaching out to key target audiences through media relations.

Nature: the decisive solution for the climate change crisis

By Ann Moey, Head, Communications, IUCN Asia

This blog, originally published in Thomson Reuters Foundation News and eco-business.com, highlights how MFF harnesses the natural functions of ecosystems and women's strength in resource management to bring about better solutions to climate change mitigation and adaptation.

Near the Sundarbans, Bangladesh, home to the largest mangrove forest in the world, Promila makes her living by making mats out of a grass-like wetlands plant called 'reed'. Depending on size, these mats are sold at US$ 1 to US$ 7 through a community enterprise established by Promila and her friends.

Thanks to the reed mat business, Promila and over 100 other women in her community no longer have to rely on collecting shrimp and fish – hence reducing pressure on the Kholpetua river.

Besides playing a role in mitigating climate change, the mat business has also brought about social benefits. The women now have a new-found confidence that enables them to negotiate prices directly with customers, while maintaining fruitful working relations with shopkeepers.

Implemented through Mangroves for the Future (MFF), an International Union for the Conservation of Nature (IUCN) partnership-based coastal programme, this alternative livelihoods initiative in Bangladesh is an example of a conservation intervention designed to conserve biodiversity by substituting one livelihood activity that causes harm to a species or a habitat with another activity that causes less harm.

Nature-based solution

In just a few decades, reoccurring heat waves, rapidly rising sea levels, and more intense droughts, wildfires, and floods, are clear signs that our planet is experiencing a serious upsurge in climate change.

To tackle this existential crisis, there are two solutions that we can consider: the first is climate change mitigation, which includes swift reduction of global carbon emissions. The second is climate change adaptation, like Promila's story above, which refers to increasing our capacity to address the adverse impacts of climate change.

At IUCN, we believe that the best way to achieve climate change adaptation and mitigation is to utilise the natural functions of healthy ecosystems. Such nature-based solutions help protect the environment, and provide economic and social benefits.

Mangroves, for example, are plants that have the ability to absorb very large amounts of CO_2, making them a fundamental asset in our efforts to reduce carbon emissions.

Mangrove swamps also provide a more effective buffer that protects coastal regions from storm surges and tsunamis than man-made dykes. Sustainably managed mangrove forests further provide firewood, food as well as spawning grounds for fish.

Empowerment and community ownership

As we combat climate change, forgetting to engage local communities and empowering them in the process would be a major faux pas. These communities have, over centuries, developed practices that protect the natural resources on which they rely for their survival.

Sundarban women turned entrepreneurs by selling reed mats in Shyamnagar, Bangladesh - Credit: Enamul Mazid Khan Siddique / IUCN

Using such knowledge will increase our chances of protecting ecosystems, which in turn will help us mitigate the impacts of climate change, and cope with its aftermath. Building on existing traditional knowledge not only satisfies local communities' expectations, but also provides a solid basis to address current and upcoming challenges.

It is therefore important to provide the right conditions for local communities – with a particular focus on women – to manage natural resources within and surrounding their territories.

Gender equality: the silver bullet

In many countries, women play a dominant role in natural resource management, and have traditional responsibilities such as growing food, collecting water, and being the primary caregivers for their families.

But, despite the fact that women play such a critical role in the conservation of ecosystems, their contribution is, unfortunately, often overlooked and undervalued.

The good news though, is that within the climate change paradigm, contributions of women are receiving increased attention, with more and more conservation experts calling for women to have greater ownership of the ecosystems on which they rely.

With their knowledge of sustainable resource-management at the household as well as the community level, women play a fundamental role in our collective response to climate change.

Coastal ecosystems

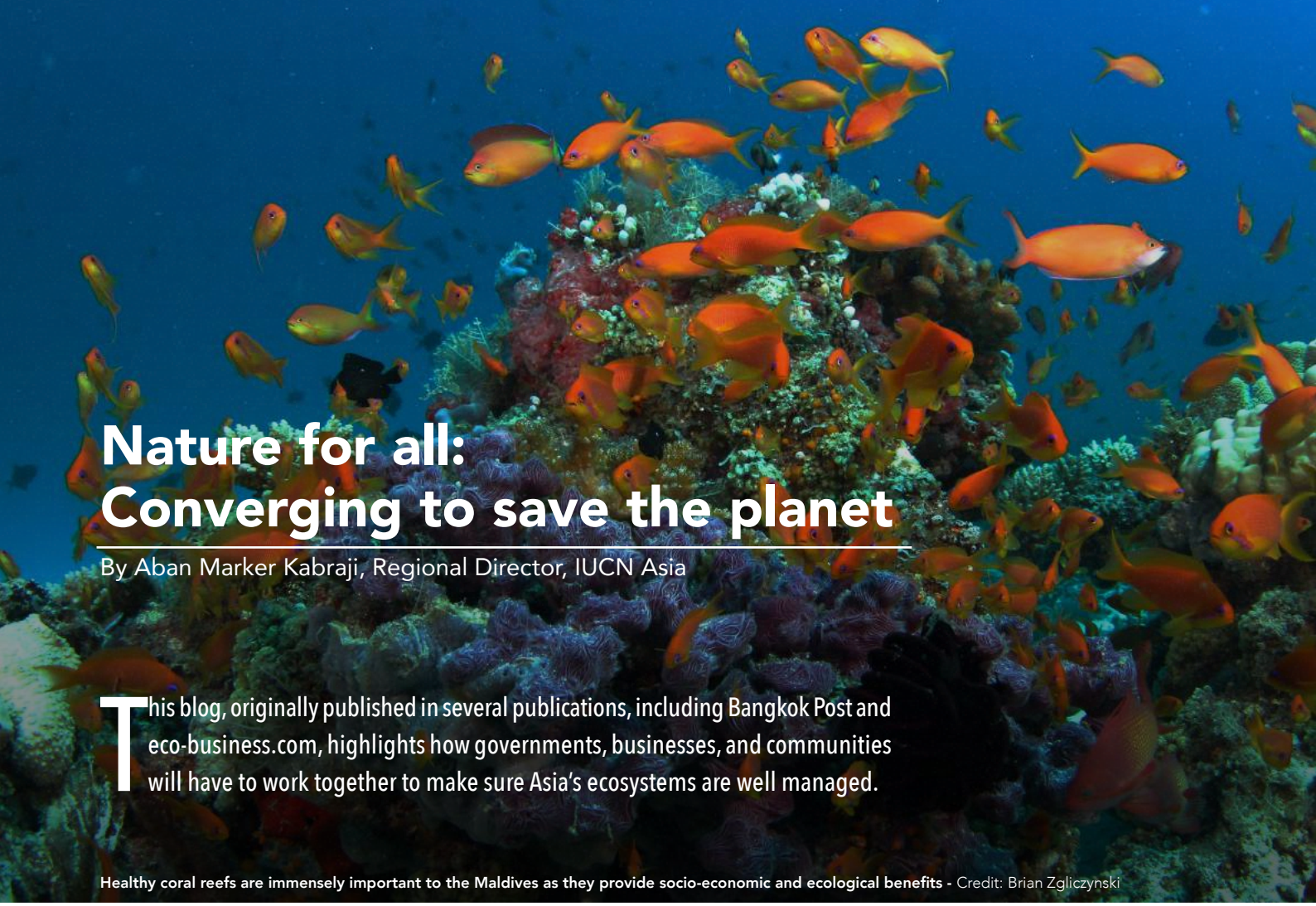
In Viet Nam, an MFF initiative to strengthen national park management has engaged local women to co-manage mangrove forests. Not only has enlisting community participation in caring for important areas proven to be an effective strategy for protected area management, it has also created momentum for effective climate change adaptation.

By increasing awareness of the importance of mangrove forests and sustainable fishing methods, this initiative has also helped empower women, by giving them the opportunity to have their voices heard in policy-making processes.

In Sri Lanka, another MFF initiative established a community-based model for the conservation of the Vankalai wetlands. Through training on climate-smart livelihoods such as sustainable aquaculture and ecotourism, the project has increased awareness of the threats posed by climate change, and how these could be mitigated.

The project also enabled the development of women-led entrepreneurship endeavours through training on community-based alternative livelihoods.

But there is still a lot to do. With nature-based solutions at the heart of its agenda, MFF will continue to focus on empowerment, gender equity and good governance as it applies participatory methods to ensure the desired impact of its projects.



Nature for all: Converging to save the planet

By Aban Marker Kabraji, Regional Director, IUCN Asia

This blog, originally published in several publications, including Bangkok Post and eco-business.com, highlights how governments, businesses, and communities will have to work together to make sure Asia's ecosystems are well managed.

Healthy coral reefs are immensely important to the Maldives as they provide socio-economic and ecological benefits - Credit: Brian Zgliczynski

The world is slipping away – three degrees Celsius at a time. It is clear that climate change is occurring. To tackle it, world leaders and scientists have agreed that we need to limit global average temperature rise to 2C over the next century. Yet, the planet remains on a trajectory to experience an increase of 3C.

Such a temperature rise will likely see a momentous drop in food production, an increase in heat waves, acceleration of sea level rise, and more droughts, wildfires, and floods.
Despite the dire situation, there are glimmers of hope.

As former President Barack Obama said, "We are the first generation to feel the effect of climate change and the last generation who can do something about it."

But we need to act fast. According to a study published in the journal Nature in 2013, the point of no return is approaching. By 2050, 5 billion people may face climactic extremes, and heightened competition for natural resources may trigger violence and instability.

Asia will likely be hit the hardest, as it is at greatest risk from climate change. The most vulnerable are poor people living in the low-lying river deltas of Bangladesh, China, India and Viet Nam. Perhaps we are just reaping what we sow.

Four out of the world's top 10 carbon emitting nations are from Asia, and the region is now responsible for 35% of worldwide energy-related carbon dioxide emissions, compared to 17% in 1990. Our region is also among the most susceptible to disasters usually associated with environmental degradation. If the rate of increase in atmospheric CO2 continues its current trend, the number of disasters in Indonesia, Thailand and the Philippines is expected to increase and it is estimated that there will be one additional annual disaster every 20 years.

It is increasingly apparent that Asia's rapid development – accounting for 40% of global economic output and two-thirds of global growth – is taking a toll on our region's species and ecosystems.

Rates of wetland, mangrove and forest loss are among the highest in the world; 95% of Southeast Asian coral reefs are at risk; and more than 1,400 plant and animal species in the region are listed as Critically Endangered.

Thankfully, the solution to many of Asia's challenges can be provided by diverse, well-managed and functioning ecosystems. When nature's support system is healthy, societies become more resilient.
We must understand that development and nature can – and must – work harmoniously together. We need to debunk the 'nature vs. progress' myth by giving nature its due credit and providing it with more opportunities to contribute to human progress and well-being.

With the adoption of the Paris Climate Agreement in December 2015 and the 2030 Agenda for Sustainable Development in September 2015 — which includes 17 Sustainable Development Goals (SDGs) — the world has clearly come to a consensus on the need to curb emissions and boost climate-resilient growth.

The Paris Agreement has set a long-term goal to hold global average temperature rise to well below 2°C above pre-industrial levels, and to pursue efforts to limit it to 1.5°C. And the SDGs have set a precedent for the entire world to move toward a more resilient and sustainable future.

To achieve this, we need to reduce our global emissions swiftly while at the same time increasing our capacity to address the adverse impacts of climate change.

Here at IUCN, we believe that interventions that use nature and the natural functions of healthy ecosystems can help tackle some of the most pressing challenges of our time. These types of nature-based solutions not only help to protect the environment but also provide numerous economic and social benefits.

Mangrove forests, for example, provide a more effective and cost-efficient buffer from storm surges and tsunamis than man-made dykes. Mangroves are also a fundamental asset in the battle to reduce carbon emissions, as they have the ability to absorb very large amounts of CO2.

Mangroves for the Future, a partner-led initiative that is co-chaired by IUCN and UNDP and implemented in Bangladesh, Cambodia, India, Indonesia, Maldives, Myanmar, Pakistan, Seychelles, Sri Lanka, Thailand and Viet Nam, has demonstrated what can be done.

By building a collaborative platform for multiple stakeholders to work together locally, nationally and regionally, and by promoting investment in coastal ecosystems as a form of natural infrastructure, Mangroves for the Future has shown that nature-based solutions can effectively support sustainable development.

As the challenges become more severe, both the public and private sectors are becoming more receptive to holistic, nature-based solutions. The private sector, in particular, needs to step up and use nature's infrastructure sustainably in their business practices. Nature-based solutions can, after all, also help to create new jobs and economic growth.

As a union composed of government bodies and NGOs, working with conservation experts, IUCN helps make dialogues surrounding 'nature-based solutions' happen. In Hawai'i in September 2016, IUCN convened all these sectors on a neutral platform to discuss ways to enhance the resilience of people and nature. Simply put: without nature, there is no growth. Sustainability, well-being, and economic growth go hand in hand. To win the race against time, all sectors of society need to converge and tread the path of this new paradigm – working with nature and not against it – and become forerunners in the fight against climate change.

"Here at IUCN, we believe that interventions that use nature and the natural functions of healthy ecosystems can help tackle some of the most pressing challenges of our time."

Jaffna: Building back better with value-added research

The three-decade long civil conflict in Jaffna severely impinged on the daily lives of the communities who lived on the peninsula. Although education at all levels continued despite the adversities, biological field research suffered and stalled for 30 years. Post 2009, the picture is very different. With freedom to move around, universities in Jaffna are now out in the field, collecting data for various research studies. And here, as in the rest of the island, ecosystems provide a rich source of information.

The Jaffna peninsula — connected to the rest of Sri Lanka by a small strip of land — is unique ecologically, as it lacks any natural streams or rivers, of which there are 103 coursing through the rest of the island. It also houses the largest brackish water system on the island, the 441 km^2 Jaffna Lagoon Complex, which opens in the southwest into Palk bay and in the northwest between Kayts and the westernmost tip of the peninsula and is comprised of Jaffna, Uppu Aru and Chundikulam. It also houses the 74.5 km^2 Thondaimanaaru Lagoon. Fringing these lagoons are mangroves, large tidal flats and salt marshes. Edging the peninsula are extensive sand dunes; surrounding it are coral reefs and seagrass meadows.

Off the coastline of this peninsula, are several islands – Analaitivu, Chirutivu, Delft, Eluvaitivu, Karativu, Karaitivu, Kayts, Mandativu, Nagadeepa or Nainativu, and Punkudutivu – which are less populated than the peninsula.

With funding from the Small Grant Facility (SGF) of Mangroves for the Future (MFF) regional initiative, scientists from the Department of Chemistry at the University of Jaffna set out to develop a socio-ecological profile of the Jaffna Lagoon, in order to support the upcoming development efforts while ensuring the sustainability and resilience of ecosystems.

The study assessed the composition of the flora and fauna of the Lagoon, analysed lagoon water and mud and collected socio-economic data of communities living around the lagoon.

Mangroves, salt marshes, mud flats and sea grass meadows were observed in the Lagoon area. Five species of mangrove plants and two species of plants from salt marshes were observed. One hundred species of fin fish, 28 species of molluscs, six species of crabs, and seven species of prawns were identified in the catches from the lagoon, indicating a richness of species important for fisheries.

Data collected from 1,000 households revealed that a quarter of the people living around the lagoon were full-time fishermen, nearly all of whom used traditional methods of fishing and 85.4% of whom fish in the Lagoon, demonstrating the importance of the lagoon to fisheries and livelihoods. Nearly a tenth of the population was living below the poverty line, indicating the need to improve livelihoods and at the same time ensure that the health of the lagoon is not damaged.

The study revealed that the water quality in certain areas of the Lagoon raised some serious concerns, as there was exceptional

salinity in the Thenmaradchi area. Such hyper-salinity changes the range of species in the Lagoon — for example, salt-tolerant species will survive while others will not. These changes will have profound impacts on fisheries.

In addition, in the areas of Navanthurai, Pannai, Gurunagar, Columbuthurai and Paasayoor, the researchers found increased phosphate levels and a high occurrence of Escherichia coli, indicating pollution from agrochemicals and sewage dumping. These changes will not only affect fisheries but also the health of lagoon communities.

In Kilaly, land mines have not yet been cleared fully, although fishermen continue to fish there. Fishermen in Araliththurai and Ponnalai were found to be using small-sized mesh nets, which is an unsustainable practice as it catches juveniles, as well as fish of target age.

Post conflict development has already had a negative impact on the Lagoon. The reconstruction of the Jaffna-Pannai road has blocked the free flow of water, resulting in a reduction of fish catch in the fish landing site of Navanthurai, which is beyond this blockage. Another road constructed for the Mandaitivu village partitioned a wetland, resulting in a differentiation in salinity between the two portions of the wetland, again with consequences for the species within. Yet another road has been built on the island of Chirutivu, destroying the lush mangrove vegetation there.

The Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI), also supported by the MFF's Small Grant Facility, took a different approach and examined the value, in monetary terms, of the Jaffna Lagoon. They found the total value of fish production provided by the Lagoon each year to be LKR 6,100m (US$ 40m). They calculated the total economic value of Jaffna Lagoon to be LKR 7,608m per year, and qualify their findings by saying this figure is an under estimation, as ecosystem services such as carbon sequestration and flood protection were not valued.

To the east of Jaffna Lagoon lies the elongated and narrow Thondaimanaaru Lagoon, opening in the north into the Palk Strait. The surrounding areas are heavily populated by communities being resettled after the conflict. In the 1950s, a barrage was built near the mouth of this lagoon (less than 2km from the sea), restricting the natural ebb and flow of sea water into the lagoon. Here, the Department of Zoology of the University of Jaffna, under the aegis of MFF, carried out a baseline analysis for development opportunities in the area. They found that the ecosystems in the area are mangroves, salt marshes, mud flats and sea grass meadows, providing homes to 13 species of migratory birds, including four species of sandpiper, two species of plover and two species of duck. Here, the majority of species observed in fish catches were molluscs (38 species), with four species of fin fish, two species of crabs and five species of prawns also found. Several species of mangrove and salt marsh plants were also observed. Again, this list of species indicates not only how important the lagoon is for fisheries, but also for migratory birds.

"The Sevalanka Foundation, supported by MFF's Small Grant Facility, began a project with 40 fisherwomen to introduce a process to make dry fish in more hygienic conditions using less salt. The Foundation reports a 31% increase in the monthly income of the beneficiaries, and has identified a 'niche market' for the low-salt dried fish that targets the health-conscious segment of population who prefer low-salt meals."

Analysis of socio-economic data by the same researchers showed that there were 327 fisher families around the Thondaimanaaru lagoon, indicating a high pressure from lagoon-based fishing.

To the east of the Thondaimanaaru Lagoon lie some magnificent sand dunes and one of the most beautiful beaches in Sri Lanka, Manalkadu. Here, as was the practice in the 1970s, the Forest Department began planting an 8km belt of Casuarina to prevent erosion and protect communities from the force of extreme weather events. Neglected as a consequence of the civil conflict, severely damaged by the Indian Ocean Tsunami of December 2004, and currently subjected to destruction, this belt became the focus of community-based organisation Aaruthal Sri Lanka. Through a grant from the SGF, 375 families in the area were mobilised and empowered through education and awareness programmes to sustainably use this anthropogenic patch of forest.

To the west is an island popularly known as Delft (named by the Dutch), known by the Portuguese as Ilha das Vacas and by the locals as Neduntivu. Delft, famous for its wild ponies, ancient baobab tree, coral fences, and historical ruins, is home to a population of about 4,500. Of this, about 1,200 fishermen in 560 families are engaged in fishing as their main livelihood. A fisherman's entire catch has to be sold in a single day as there are no facilities for freezing fish on the island. As a way around this constraint, 80 families are engaged in drying fish and marketing the dried fish. The Sevalanka Foundation, supported by MFF's Small Grant Facility, began a project with 40 fisherwomen to introduce a process to make dry fish in more hygienic conditions using less salt. The Foundation reports a 31% increase in the monthly income of the beneficiaries, and has identified a 'niche market' for the low-salt dried fish that targets the health-conscious segment of population who prefer low-salt meals.

The socio-ecological studies carried out by the University of Jaffna accrued baseline data regarding the flora and fauna and communities, all of which will be invaluable for future monitoring. These projects also created awareness among the general public, fisher communities and government officials. The Sevalanka project mobilised the communities and improved their livelihoods. The HARTI project quantified the value of the Jaffna Lagoon.

The Thondaimanaaru Lagoon study disseminated their results to the stakeholders, including local government officials, through

Hygienic, low-salt dried fish production on Delft Island using elevated benches - Credit: Kumudini Ekaratne/IUCN

a number of workshops and training programmes and proposed a strategic plan for the future development of the lagoon. This included recommendations for soft engineering solutions to replace the barrage that has restricted water flow in and out of the lagoon, declaration of the area as a bird sanctuary and promotion of ecotourism.

The findings of all research carried out under the aegis of MFF's SGF programme have also been shared in Colombo among key line agencies, such as the Department of Wildlife Conservation and the Marine Environmental Protection Agency.

The achievements of these projects are many, but so, unfortunately, are the general problems in the peninsula. As with the rest of the island, the ecosystems of Jaffna are also falling to the axe of unplanned development, as seen in Chirutivu island. Pollutants from cultivation and homes are washing into the lagoons of Jaffna, just as they are choking other lagoons in the country, such as the Lunawa Lagoon. Ill-conceived hydrological alterations of lagoon outlets such as in Thondaimanaaru Lagoon are changing salinities, with dire consequences for fisheries, as was the case of the hypersaline Mundel Lake. Fishermen fish unsustainably, either using small-meshed nets or simply taking too much. Again, this mirrors practices in many lagoons in the rest of the island, which are too many to mention here. The addition of climate change to this mix – with increasing extreme weather events, rising sea levels and changes in weather patterns – will also have serious consequences.

These problems are not simply a rhetoric of conservation, but will ultimately impact the people of Jaffna, who have already had more than their share of tribulations. The destruction of mangroves, salt marshes, tidal flats and sand dunes is forfeiture of natural flood regulators and natural protection from extreme weather events. Altering the natural flow of lagoons results in a loss for fisheries. Destruction of seagrass meadows and mangroves is the same as razing the nurseries of the fish and shell fish species that are important to us. Damaging seagrasses removes a natural means of filtering sediments and pollutants from water.

There was an opportunity in Jaffna to learn from the mistakes we made in various infrastructure development projects in the rest of the island. Unfortunately, we have not done so.

This article was originally published in Sri Lanka's the Sunday Times.

Blog: Can science benefit both mud crabs and local fishers in the Sundarban?

The crab fishers sell their catch to depots installed by traders, middlemen, and exporters in small towns surrounding the Sundarbans - Credit: Garth Cripps / Blue Ventures

A blog post by Mahatub Khan Badhon, a research assistant at IUCN Bangladesh, discusses the crucial role science could play in the sustainable management of mud crabs in the Sundarbans, Bangladesh. The case presented in the blog draws on a five-day field trip facilitated by MFF in which two researchers and 15 stakeholders were interviewed about the mud crab industry and the social and financial issues faced by marginal fishermen.

Setting the Scene

Small-scale subsistence fishing of mud crabs in the Sundarbans has turned into a fast-growing industry, thanks to flourishing international demand. The marginal fishermen who live in and around the Sundarbans usually make 8- to 12-day fishing trips, during which they collect as many crabs as possible from the creeks of this vast mangrove forest. Before being exported, the live crabs change hands several times; some are sent to be fattened until they attain the desired weight; while others are exported directly from the natural forest to foreign markets. Interestingly, this process is not as simple as it appears. The scenario on the ground has evolved alongside the gradual shift of demand and markets from local to international spheres. So, what are we actually missing?

A Burgeoning, Demand-Driven Market for Wild Mud Crabs

As the market for mud crabs grew, the promise of quick-and-easy money attracted both permanent and seasonal middle-men at all levels, resulting in an intricate, tangled web of a supply-chain. While the profits derived from exports has circulated amongst a greater number of actors, the profit margin per actor increased less than those climbing aboard the gravy train had expected. Later, old stakeholders and businessmen – with their influence and understanding of the mud crab market – started investing more, and taking up multiple roles in order to secure a larger share of the profits. As a consequence, the market became complicated and competitive; this, along with a rising demand from consumers, led to significant pressure being exerted on the mud crabs of the Sundarbans, a fact that went unregistered in the frenzy.

Additionally, since no alternative forms of supply (e.g. mud crab culture) have yet been established, the market continues to depend on nature for a constant supply of mud crabs from the serpentine creeks of the Sundarbans.

Socio-Economic Equity and Perspectives

The booming mud crab industry undoubtedly employs and supports thousands of families along the south-west coast of Bangladesh. However, little has changed for the marginal fishermen who collect crabs directly from the forest. Researchers assert that the main factors behind this prevailing societal and financial injustice are the ignorance of fishermen regarding the price in international markets, and an informal money-lending system which lacks the requisite paperwork and authority. The current lack of governance was highlighted when Laxmipod Mondol from Kolbari, who has been involved with the mud crab

fisheries for more than 16 years, reflected that "most of them (fishermen/crab collectors) have now turned opportunistic and cheater." Mr Mondol also adds that fishermen either take loans from middle-men or are given advances from them in return for an oral assurance that they (the fisherman) will sell all their catch to the creditor.

However, according to multiple stakeholders, fishermen often do not honor these promises, leading to conflicts, one of which took place just before my most recent field trip. It is hard to conclusively determine who is culpable for the tensions that exist; however, our field trip interviews were enough to get a sense of the mutual distrust between these two actors. Almost all those interviewed agreed that these conflicts stem from the nature of the lending system, coupled with a lack of governance. On the other hand, the link between the financial injustice suffered by marginal fishermen and their ignorance of the price of mud crabs at international markets is tenuous, and more research is needed to establish whether an objective relationship exists.

How Can Science Help?

Since the Sundarban mud crab market and its associated social issues loom large in the public consciousness, the unregulated collection of wild mud crabs has recently caught the attention of researchers. Unfortunately, I found neither a reliable system to monitor the yearly catch, nor any peer-reviewed paper that attempted to calculate the total catch of mud crabs from the Sundarbans. Data regarding the quantity of exported crabs can be retrieved from exporters at Dhaka; however, these data rarely represent the actual catch, not only because injured and dead crabs are removed from the supply chain, but also because non-graded crabs – reared in captivity to increase their weight – frequently cannibalize one another.

With all these questions and uncertainties, it is diffcult to predict if-and-when the mud crab population will face a drastic decline; such a collapse would not only be an ecological catastrophe for the mangrove forest but would cripple the mud crab industry and the thousands who depend on it.

Mud crab, Sundarbans - Credit: Garth Cripps / Blue Ventures

In fact, the Sundarbans might be on the verge of experiencing such a collapse, if exploitation has already surpassed the Maximum Sustainable Yield (MSY). An assessment of the MSY of mud crabs would tell us about the quantity of total harvest each year, and the fishing practices that are necessary to make an informed management choice. Establishing social justice/equity and market sustainability requires a change at the core of the respective systems; however, we will not be able to tackle such issues until we know the threshold which fisherman must not cross. Knowing this will help us understand both the maximum market size and the tipping point for the mud crabs collected from the natural forest, and enable us to devise a sustainable management strategy.

Concluding note

The present situation, skewed heavily in favor of utilitarian values, neglects the fact that ensuring the persistence of a threshold population of mud crabs – often regarded as ecosystem engineers – is important not only to keep this unique ecosystem functioning but also for securing the long-term sustainability of the market. Translating MSY results into action could potentially help both conservation of mud crabs and local fishermen in the Sundarbans. Finally, while it is true that neither the mud crab fisheries nor the mangrove ecosystem have fallen apart yet, acting before that possible outcome is in all stakeholders' best interests.

Roots across the region

Spanning 11 countries across Asia and the Indian Ocean, MFF works with hundreds of civil society organisations, government agencies, private sector entities and communities. Whether its at the national or regional level, the programme has made tremendous impacts and progress on ensuring that our oceans and their resources are managed sustainably.

IUCN and ACB collaborate to boost ASEAN's conservation efforts

The ASEAN Centre for Biodiversity (ACB) and IUCN are strengthening ties to support ASEAN countries in achieving their biodiversity targets through a new Memorandum of Understanding.

IUCN and ACB, both regarded as international centres of excellence for biodiversity conservation, are building on mutually shared objectives in biodiversity conservation and sustainable development, particularly in the context of the Strategic Plan for Biodiversity 2011–2020 and the recently adopted Sustainable Development Goals 2030.

As a partner, ACB joins the Regional Steering Committee (RSC) of MFF, a partnership-based regional initiative co-chaired by IUCN and UNDP which promotes investment in coastal ecosystem conservation for sustainable development.

MFF focuses on the role that healthy, well-managed coastal ecosystems play in building the resilience of ecosystem-dependent coastal communities in Bangladesh, Cambodia, India, Indonesia, Maldives, Myanmar, Pakistan, Seychelles, Sri Lanka, Thailand and Viet Nam.

As a member of the MFF RSC, ACB shall work with ASEAN member states (AMS), particularly those that are MFF members, to ensure that ASEAN's principles are reflected in MFF's programmes.

The partnership also calls for IUCN and ACB to identify and implement collaborative projects and activities. Potential areas for collaboration include: protected areas management, particularly in relation to the Asia Protected Areas Partnership (APAP); the ASEAN Heritage Parks Programme; and transboundary protected areas.

Both organisations also share an interest in strengthening the capacity of AMS on access and benefit sharing measures, including the Nagoya Protocol. In addition, IUCN and ACB will seek to develop synergies through the exchange of best practices and information related to re-granting mechanisms, species conservation, and the illegal wildlife trade.

To achieve these aims, both organisations will collaborate on fundraising to support new biodiversity conservation initiatives in the ASEAN region.

ACB was formally welcomed as MFF's newest institutional partner at the 13th Meeting of the MFF RSC at Sayeman Beach Resort in Cox's Bazar, Bangladesh, on 25 October 2016.

Members and representatives of DMCR and IUCN Asia come together - Credit: Ann Moey/IUCN Asia

Participants at the 13th MFF Regional Steering Committee meeting in Cox's Bazar, Bangladesh - Credit: Muntasir Akash/ IUCN Bangladesh

13th Regional Steering Committee meeting in Bangladesh

Mangroves for the Future held its 13th Steering Committee meeting in Cox's Bazar on October 25 and 26 to assess the programme's achievements over the past year and discuss plans for the years ahead. The Committee discussed strategic issues, including the programme's sustainability plans and contributions to furthering the Sustainable Development Goals (SDGs) and a number of other international commitments.

Representatives from the MFF co-chairs, IUCN, and United Nations Development Program (UNDP), as well as representatives of the National Coordinating Bodies (NCBs) from MFF member countries, other institutional partners, donors, and the MFF Secretariat attended the event that was hosted by the MFF Bangladesh Secretariat and the Ministry of the Environment and Forests, Government of the People's Republic of Bangladesh.

During the meeting, participants reaffirmed the vital role of MFF in assisting member countries to strengthen their capacity for implementing sound marine and coastal ecosystem management policies. They also highlighted the impact of technical assistance and training provided by the programme as a basis for better policy decision-making.

The Steering Committee acknowledged the significant progress made by Mangroves for the Future and approved the work programme for 2017. Development partners discussed strategic priorities and expectations on the programme's sustainability beyond 2018 when the current donor funding comes to an end. To strengthen MFF's outreach activities, the Committee recommended that the programme collaborate with other regional bodies whose focus areas are in line with MFF objectives.

Regional Steering Committee members also stressed the need to maintain National Coordinating Bodies (NCBs) to oversee implementation and to ensure that lessons learned from project interventions are duly captured and applied, in order to strengthen the sustainable management of coastal resources.

On the programme's priorities for the coming year, Regional Programme Coordinator Dr. Steen Christensen said: "The programme will place emphasis on enhancing members' capacity to integrate private sector engagement strategies into their national programmes. The private sector, especially the tourism and fisheries industries, are important stakeholders.

"Although the new programme will cover new areas, it is important to ensure that it builds on the principles and lessons learned from MFF... These are factors that have clearly contributed to the long-term success of MFF"
- Ms Aban Marker Kabraji, Regional Director, IUCN Asia

The sustainable management of coastal resources can only be achieved if these stakeholders are engaged and become active partners in the management process."

The meeting also highlighted the Green Climate Fund (GCF), a fund within the framework of the United Nations Framework Convention on Climate Change (UNFCCC), as a promising avenue for funding a programme that builds on the structure and initiatives developed by MFF. The MFF regional secretariat is currently in consultation with several countries, and working to identify priorities to support the programme's proposal to the fund.

"Although the new programme will cover new areas, it is important to ensure that it builds on the principles and lessons learned from MFF, such as its governance structure, grant modalities, partnership-based focus and, most importantly, country ownership. These are factors that have clearly contributed to the long-term success of MFF," said IUCN Asia Regional Director, Ms Aban Marker Kabraji.

The meeting also saw the endorsement of the ASEAN Centre for Biodiversity (ACB), regarded as an international centre of excellence for biodiversity conservation, as an MFF institutional partner. IUCN and ACB had earlier signed a Memorandum of Understanding (MoU) committing the two institutions to collaborate on initiatives that support biodiversity conservation objectives. The MoU also identifies collaboration with MFF on programmatic issues as a top priority.

Back to back with the Regional Steering Committee meeting, the MFF regional secretariat hosted a workshop on social empowerment. The session explored and documented examples where MFF and its partners have been successful in strengthening social empowerment in communities. Through group discussions participants debated approaches, practices, lessons learned and challenges in order to identify potential best practices that can be used to enact socially supportive and environmentally sustainable results, and to inspire participants to consider the benefits of social empowerment.

"We need to keep in mind country level context, and to what extent MFF processes identify social empowerment as an objective. We have to monitor what we are doing in practice so that we know what we can improve on to mainstream social empowerment into the programme," said MFF Capacity Development Manager, Ms Maeve Nightingale, in her summary following group discussions.

Coastal ecosystems to benefit from cooperation between DMCR and IUCN

The signing of an Memorandum of Understanding on January 28 between the Department of Marine and Coastal Resources (DMCR) and the IUCN marks a significant step toward improved management of coastal resources and ecosystems in Thailand. Among other objectives, the formal partnership seeks to ensure that conservation and enforcement tools under the newly adopted Promotion of Marine and Coastal Resources Management Act are implemented for the benefit of coastal communities and ecosystems.

The signing of an MOU on January 28 between DMCR and IUCN - Credit: Ann Moey/ IUCN Asia

"DMCR and IUCN have been partners in conservation since 2002, working on numerous projects, including MFF, Mangrove and Markets (MAM), Ecosystems Protecting Infrastructure and Communities (EPIC) and the Transboundary Dolphin Conservation project."

Thailand's coastal resources are extremely important both in terms of biodiversity and economic activity, with tourism and fisheries contributing significantly to provincial and national economic development. Mangrove forests in particular are exceptional ecosystems, playing multifunctional roles such as purification of water and provision of food while also acting as buffers against storm surges.

Unfortunately, threats such as climate change, degradation, overexploitation, and unsustainable development-related activities like shrimp farming have severely affected the health of marine ecosystems, threatening the livelihoods of communities living in coastal areas.

"Thailand has a very rich natural heritage, but over the past four decades rapid economic growth has given rise to a series of environmental challenges, including the loss and degradation of coastal habitats including mangroves, seagrasses and coral reefs," said Ms Aban Marker Kabraji, Regional Director for IUCN Asia. "Partnerships like this one are very important in addressing these issues. In particular, we are very pleased to see the new action from the government on the active conservation of marine and coastal resources, with the adoption of the new Marine and Coastal Resource Management act, which IUCN provided support to develop, and with the enactment of the new Fisheries Law."

DMCR and IUCN have been partners in conservation since 2002, working on numerous projects, including Mangroves for the Future (MFF), Mangrove and Markets (MAM), Ecosystems Protecting Infrastructure and Communities (EPIC) and the Transboundary Dolphin Conservation project.

This new MoU specifically seeks to enhance and strengthen coastal community participation in marine and coastal resource management. This includes the development of conservation schemes for dolphins, coral reefs, and mangrove forests in demonstration sites. Lessons learned and outputs in the demonstration sites will be replicated in other areas in Thailand, with plans to also scale up collaboration with neighbouring countries.

DMCR and IUCN are currently working on finalising a framework response for coral bleaching management. This is in response to a global coral bleaching event, which is expected to impact approximately 38% of the world's coral reefs and kill over 12,000 square kilometres of reefs from 2015 to 2016.
"The coral bleaching response plan will define a set of pre-determined actions to be taken in response to bleaching-related events," said Ms Suthiluck Raviwan, Director-General for DMCR. "It represents an urgent need for collaboration between government, non-governmental agencies, and concerned stakeholders to take immediate actions to improve reef ecosystem resilience."

Held at the Centra Government Complex Hotel and Convention Centre Chang Wattana, the signing ceremony was attended by over 60 representatives of government agencies, civil society organisations, private sector, and the media. The MoU was signed by Ms Suthiluck Raviwan, Director General for DMCR and Dr. Chamniern Vorratnchaiphan, Country Representative for IUCN Thailand with Mr Sakda Wichiansin, Deputy Director-General for DMCR; Ms Aban Marker Kabraji, Regional Director for IUCN Asia; Dr. Pinsak Suraswadi, Director of Marine and Coastal Resources and Development Institute; and Mr Petch Manopawitr, Deputy for IUCN Southeast Asia Group acting as witnesses.

Blue Bond initiative to protect marine resources launched

Oceans play a significant role in everyone's lives, but no one is more dependent on them than small, vulnerable and isolated island developing states. Unfortunately, the 'deadly trio' of ocean acidification, warming, and declining oxygen levels is posing a risk to marine and coastal resources and threatening the livelihoods of millions living in these countries. To address this challenge, the Republic of Seychelles has launched the Blue Bond, a novel financing initiative which taps into capital markets to fund ocean-related environmental projects.

The Seychelles is a small archipelago in the Indian Ocean. Like other Small Island Developing States (SIDS), the country faces sustainable development challenges including small but growing populations, limited resources, susceptibility to natural disasters, vulnerability to external shocks, and fragile environments.

Due to its limited land resources, the Seychelles relies heavily on its coastal and marine resources for employment, socioeconomic development, and foreign exchange earnings. The fisheries sector is one of the country's top economic drivers, accounting for 30% of the country's GDP and 17% of employment.

Unfortunately, fisheries in the country are facing increased pressure from anthropogenic factors such as piracy, overfishing, and illegal fishing, as well natural factors such as rising sea temperatures, ocean acidification, deterioration of biodiversity, habitat loss; and worsening pollution. If no action is taken to conserve ocean resources, fisheries stocks will most likely decline to a point where they collapse or become unviable. This will directly threaten the country's socioeconomic growth and development.

Action to be taken now

The solution lies in finding ways to move beyond the usual trade-off between economy and the environment. Despite making many strategic investments in its conservation efforts, Seychelles recognises the need for innovation and constructive transformation in order to empower people and lay the groundwork for them to benefit from new opportunities.

These potential improvements were reaffirmed by the Republic's President James Michel at the launch of the national dialogue on Blue Economy last year. The Blue Economy is a concept in which ocean ecosystems provide efficient, equitable, and sustainable economic and social benefits. President Michel also formed the Blue Economy Department. This department will be the driving force in developing the National Blue Economy Roadmap, through which it is anticipated that a range of future development opportunities will be created and utilised.

As a first step toward recovering the ecological and economic health of the vital fisheries sector, Seychelles, with grant funding from the Global Environment Facility, has developed a detailed management plan for the Mahe Plateau fishery. The goal of the plan is to develop "a sustainable fishery that delivers the best possible ecological, economic, and social benefits for the Seychelles through effective, transparent, and participatory management."

Successful implementation of the plan, which is estimated to cost US$ 10m, is expected to result in a more economically valuable and financially sustainable fishery, with healthier fleet and supply chains, better and more secure jobs, and a healthier environment.

To raise the required capital for the implementation of the plan, the Seychelles Government plans to issue a sovereign bond named Blue Bond, a novel financing initiative which taps into capital markets for funds. The proceeds from this bond will

Lionfish next to a pristine reef in the Seychelles - Credit: Department of Blue Economy, Seychelles

specifically be designated for the implementation the Mahe Plateau fishery management plan. As the national authority responsible for fisheries, the Seychelles Fishery Authority will be the implementing agency and receive bond proceeds. Repayment of the bond will be the obligation of the Seychelles Government, which may be supported by specific revenues derived from the Mahe fishery after a period of time.

The proposed bond offering would generally follow the 'green bond' model that has been used by governments, development banks, and corporations to fund projects with positive environmental and climate benefits.

Implementation Matters

Seychelles has sought the assistance of an established consultancy firm to analyse the economic, social and environmental benefits of this transition in fishery management practices. Among other objectives, the firm will quantify specifics of funding needed, as well as develop a bio-economic model that will offer a projection of outcomes of various implementation scenarios.

In order to attract investors seeking to invest in this Blue Bond initiative, Seychelles will continue to engage internationally recognised NGOs in addition to certification bodies in the implementation of the Mahe Plateau fishery management plan. Their roles will vary from validating the management plan to ongoing involvement in the governance of fisheries management.

In implementing the Blue Bond initiative, Seychelles has made a giant leap forward in its ocean conservation strategy. If these efforts prove successful, it could serve as a much-needed model for other SIDS.

Good Science, Best Practice

Knowledge management at MFF has focused primarily on developing knowledge products in the form of publications, and managing information and learning generated from the grants through the DMS (online internal communications platform) and the website. These resources share MFF's experience in coastal ecosystem management with stakeholders, and partners, and provide avenues for dialogue and mutual learning on critical issues.

Local farmers replanting mangroves around abandoned shrimp ponds, Tan Xuan Hamlet, Gio Viet Commune, Gio - Credit: IUCN

MFF/FAO joint report; New low-cost mechanism for investing in mangrove protection and restoration

MFF and the Food and Agriculture Organization of the United Nations (FAO) have designed a new low-cost mechanism that enables investors to promote mangrove conservation and restoration through provision of funding to local communities. Developed under the regional project 'Income for Coastal Communities for Mangrove Protection,' the mechanism provides a simple yet credible methodology to ensure mangrove areas are monitored and protected, carbon stocks are assessed, and local communities are involved in and benefit from project activities.

Under the mechanism, mangrove mapping and monitoring are implemented using low-cost tools such as global positioning system (GPS) units, smartphones, and free software and online platforms. Carbon stocks are estimated using two simple parameters: plot latitude and standing mean basal area. Thus, field time and equipment costs are reduced. The majority of the tasks can be undertaken by local communities after initial training by mangrove experts. The mechanism clearly identifies involved parties and provides step-by-step instructions on project development, implementation and financing.

By reducing the costs of mangrove monitoring and carbon estimation, the mechanism allows for the protection and restoration of smaller areas of mangroves that are currently priced out of international carbon initiatives. It is designed to be used by private and public sector investors throughout Asia. By providing a simple and standardised yet flexible methodology, the mechanism has the potential to significantly increase investments in mangrove protection and restoration.

The mechanism was designed over a period of two years, with contributions from international mangrove experts, government agencies and academics. It was informed by visits to mangrove sites in Pakistan, Thailand and Viet Nam, which included field-testing and extensive consultations with mangrove communities and local governments. The carbon estimation component was designed in collaboration with Yale University and will be published in PLOS ONE journal in the coming months.

With SIDA as a donor, and IUCN as a resource partner, the 'Income for Coastal Communities for Mangrove Protection' project was implemented by the FAO Regional Office for Asia and the Pacific Office (RAP), within the framework of the MFF initiative. Technical assistance was provided by the USAID Lowering Emissions in Asia's Forests (LEAF) Program and the UN-REDD Programme.

The new mechanism is presented as a series of four publications that are now available for download from the MFF and ICEM website. The four reports, which are designed to be used collectively to guide the establishment of a sustainable financing for mangrove protection are:

- 'Financing for mangrove protection with emphasis on Pakistan, Thailand and Viet Nam'
- 'Mangrove-related policy and institutional frameworks in Pakistan, Thailand and Viet Nam'
- 'Mangrove carbon estimator and monitoring guide'
- 'Incentive allocation for mangrove protection'

Learnings on climate change adaptation in the Bay of Bengal documented in new book

One of the beautiful canals in the Bangladesh's Sundarbans -
Credit: Enamul Mazid Khan Siddique / IUCN

Seven climate change specialists from Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand came together and wrote seven chapters for a book entitled 'Climate Change in the Bay of Bengal Region: Exploring Sectoral Cooperation for Sustainable Development'.

In their articles, the specialists –US Exchange Programme Alumni – evaluated both climate change adaptation and mitigation approaches undertaken in their countries. They also outlined necessary actions to enhance regional cooperation to combat climate change, and to achieve sustainable development in the Bay of Bengal region.

Bangladesh is often called the 'adaptation capital of the world' because of its exciting progress as one of the most climate vulnerable countries in the world. Social, economic, political, and climatic systems are continuously changing at the national, regional and global levels. It is, therefore, important for climate change adaptation to keep pace by taking innovative steps and actions from the arenas of policy, finance, institutions and technology.

In the Bangladesh Chapter entitled 'What Does Bangladesh Tell Us About Innovation In Climate Change Adaptation', Haseeb Md. Irfanullah of IUCN Bangladesh has considered three related areas of climate change adaptation: Adaptation planning and implementation; nature-based adaptation technology development and diffusion; and Evolution in programmatic approaches.

The chapter touches on major developments in these areas between 2006 and mid-2016 through an 'innovation lens'. The author considers 2006 as the base year because Bangladesh prepared the National Adaptation Programme of Action (NAPA) in 2005 – the first ever strategic document in Bangladesh to make climate change adaptation an organised effort.

The article draws on examples from Bangladesh's coast and talks about the adaptation approaches undertaken, the opportunities created by them, and their impacts on people and nature. It further discusses the challenges faced by innovations in adaptation and how they can be transformed into opportunities.

The paper advocates evaluation of adaptation innovations, before and after scaling up, to avoid maladaptation. It emphasises knowledge generation and management as a key component of adaptation projects for informed decision-making. It argues that such initiatives should have a 'monitoring, learning and evaluation system' built within them – a useful approach strengthened under the Mangroves for the Future initiative.

Such an arrangement can help to create a dynamic environment for projects to harness innovation at individual, institutional, and policy levels, and at the same time make them more effective. The book was published by COAST Trust (an NGO in Bangladesh) with support from the United States Department of State.

Bridging the gap between dolphin tourism and conservation

Ecotourism is one of the fastest growing sectors of the tourism industry, and has the potential to drive changing attitudes towards wildlife conservation. For many coastal nations, it is the revenue generated through marine wildlife-based tourism that supports conservation and local livelihoods. Cetaceans (whales, dolphins and porpoises) are arguably the most commonly seen and best-known marine mammals.

The Global Cetacean Summary Report (2009), commissioned by the Australian Government found that in 1998, 25,000 tourists paid for organised cetacean watching tours in India; revenue worth US$ 525,000 was generated. Between 1998 and 2008 India experienced a growth rate in whale-watching tourists of 16.3%.

In 2008, over 60,000 tourists paid to view Indo-Pacific humpback dolphins in Goa, India. In 2015, 220 registered dolphin-watching boats were operating from North Goa alone, usually to the detriment of the dolphins. This is due to the lack of awareness and understanding of dolphins and their habitats, and absence of proper regulatory frameworks and codes of conduct for wildlife-based tourism in the state.

Mangroves for the Future (MFF) collaborated with WWF India to promote sustainable dolphin-based tourism in Goa. Over 40 boat owners and drivers were made aware of sustainable dolphin-watching guidelines and capacity was built to implement them. The project has sustained engagement with the Department of Tourism, Department of Forest and Captain of Ports Authority, Goa. In early 2016, a notification released by the Captain of Ports invited recommendations for the regulation of dolphin watching and other marine tourism activities. This project was the first to generate data and disseminate information on the challenges related to marine tourism, particularly the dolphin watching boat operations in North Goa.

Although there is a still a long way to go, IUCN is committed to advancing sustainable cetacean tourism and conservation in India. IUCN presented on the successes and challenges of this in South Asia at the IUCN World Conservation Congress in Hawai'i in September 2016.

Indo-Pacific humpback dolphin, Goa, India - Credit: IUCN/WWF India

Sunset in Phang Nga province, Phuket - Credit: Ana Grillo / MFF

Ms. Lek collecting oysters in Trat province, Thailand - Credit: Ana Grillo / MFF

Credits

Published by
Mangroves for the Future

Cover Photograph
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