

# Mangrove Capital

Securing resilience through mangroves  
along vulnerable coasts

## Introduction

This paper introduces **Mangrove Capital**; a programme conceived by Wetlands International and partner organisations, that aims to bring the values of mangroves to the fore and provide the knowledge and tools necessary for the improved management of mangrove forests.

The project will enable governments, private sector organisations and local communities in Indonesia to manage mangroves, so that they play a more significant role in protecting vulnerable coasts and supporting the local economy. Building on cutting edge research on mangrove values and services, **Mangrove Capital** will support the development of improved coastal management policies and will influence existing mangrove initiatives. Furthermore it will catalyse some new large scale pilot projects, developing and testing innovative options to use mangroves as key components in coastal defense and aquaculture developments. Insights and experiences will be communicated in other regions.



## The problem: rapid loss of Indonesia's mangrove forests

Indonesia is the most mangrove rich country in the world, with more than 20% of all mangroves. However these valuable forests are being lost at an alarming rate due to large scale aquaculture for shrimp production as well as firewood collection, road construction and urban development.

The loss of mangroves has many negative consequences that are mostly overlooked. The rich biodiversity that mangroves support is diminished and valuable **stocks of commercial fish species are being put at risk**. Currently 30% of the fish catch and nearly 100% of wild shrimp catch in Southeast Asia depend on mangrove areas.

The current practices of clearing coastal forests and establishing shrimp ponds is far from optimal for local people. **Pollution** by fertilizers, pesticides and antibiotics leads to reduced shrimp harvests. As mangroves are depleted and fragmented, the **coastal protection** that they provide is diminished, leaving villages and towns more vulnerable to erosion and the direct impacts of storms as well as salt water intrusion.

Other hidden but valuable roles of mangroves are also deteriorating – such as storage of **carbon** and **water purification**.

The loss of this 'mangrove capital' has inflicted widespread poverty and created increased vulnerability.

## The problem: patchy understanding on mangrove values

Various projects have attempted to halt and reverse the loss of mangroves in Indonesia, but many failed or became unsustainable. Often they did not build on available scientific insights or omitted to draw on lessons from the past. Some projects conflicted with ill-informed developments and land use plans. Underlying these issues is the lack of recognition of mangroves as a crucial asset that can contribute to long-term sustainable development.

While there is considerable knowledge on the economic values of mangroves available, this information remains highly fragmented and often difficult to access and interpret by non-scientists. This problem of access has constrained those engaged in the management of mangrove resources to take effective action.

The key need is to close the gaps between science, policies and practice. Through making the knowledgebase accessible and demonstrating effective approaches in the field, we will help stimulate policy change, improve land-use planning and stimulate large scale mangrove restoration.



## Aim of the project

*Mangrove Capital* aims to advance the improved management and restoration of mangrove forests as an effective strategy for ensuring resilience against natural hazards and as a basis for economic prosperity in coastal areas.

A major focus will be on influencing the sustainability of shrimp farming and promoting ecosystem-based strategies for coastal defense. This will require communications and advocacy, connecting issues and information across many disciplines, and working in close collaboration with government and private sector bodies.

To be successful in this, the project needs to convince these groups of the benefits of conserving and restoring mangroves and demonstrate practical approaches for the integration of mangrove solutions in land-use, coastal defense and development planning.





## The approach

**Mangrove Capital** will bring together knowledge on the full range of economic values of mangroves and will promote its application in policy and practice.

### Action research and literature review

Key knowledge gaps will be addressed through action research. We will investigate the role of mangroves in providing erosion protection, identify the economic values of different management regimes and provide a baseline on the status and distribution of mangroves across Indonesia.

### Practical tools

Knowledge will be translated into a range of practical management tools such as policy briefs, decision support systems, online mapping applications and scenario analyses.

Private sector and government bodies will be encouraged to use these tools to improve the management of their mangrove resources and maximize their benefits to local communities.

### Policy dialogue and joint planning

By engaging key persons from these target groups in the action research and through extensive policy dialogue and joint land-use planning, we will enable the tools to be applied.

This will result in improved management and large-scale restoration of mangroves across Indonesia.

## What the project will deliver

### **National level: improved coastal resource management policies**

At the national level, we will work with governmental working groups that deal with climate change adaptation, disaster management and with mangroves in general to improve policies related to coastal protection, fisheries, forests and aquaculture development. Following a joint review of existing policies, specific, policy developments will be identified for improved recognition and integration of the economic values of mangroves. Solutions to remedy any existing policy conflicts will be identified and incentive mechanisms to engage local stakeholders in mangrove restoration will be developed. This will provide the basis for improved governance of mangrove resources and create an enabling environment for improved mangrove management at the district and community levels.

### **Regional level: facilitating mangrove solutions in coastal defense policies**

At the provincial and district level, we will focus on identifying new strategies for coastal defense which combine mangrove restoration with more conventional protection measures, such as mud-nourishment or construction of groynes or other sediment trapping structures. The project will promote use of such 'hybrid-engineering' measures in coastal protection policies (including those on disaster risk reduction and climate change adaptation), working through the governmental working groups. Based on the research analyses, we aim to secure commitment and funding for the implementation of a large-scale pilot to demonstrate the hybrid engineering methodology.

### **Local level: improving sustainability of local aquaculture economies**

National and regional efforts for improved management of mangroves can only be successful if the most important *local* driver of mangrove loss – shrimp farming – is addressed. There is increasing evidence that by integrating mangrove belts into shrimp production systems harvests can be improved alongside reduced pond maintenance costs, decreased incidence of disease, improved water quality, reduced vulnerability of coastal areas and greater firewood availability. The project will work with the shrimp sector through the round tables on shrimp certification to make the case for criteria on mangrove services. We will work with companies, government agencies and farmers in selected field sites to implement new, mangrove-based shrimp production strategies.

### **Communicating the outputs and outcomes internationally**

The findings of the project are extremely relevant for other countries with mangrove forests along vulnerable coasts where similar pressures and values exist. The project partners will reach out via existing networks and communicate on the project findings with relevant Conventions, governments and key private sector organisations working internationally on aquaculture and coastal defense.

## The programme partnership

**Mangrove Capital** is a partnership programme, bringing together the expertise, capabilities and networks of a wide range of research institutions, NGOs, government and private sector partners in Indonesia, Europe and North America. It will closely link to existing field projects and extensively engage local community groups.

The principal roles of the core partners are as follows:

- The international NGO *Wetlands International* will lead and coordinate Mangrove Capital through its headquarters in the Netherlands and will give technical input based on its experience with mangrove restoration worldwide. The network of offices and partners of this NGO will be instrumental in communicating the project outputs internationally.
- In Indonesia, *Wetlands International*'s office based in Bogor will coordinate the field work and will lead the cooperation with Indonesian authorities.
- The Netherlands based knowledge institute on water issues *Deltares* will guide the development of new approaches for coastal defense through restoration of mangroves and sediment dynamics.
- *Wageningen University* will lead the studies on the economic values of different land-use scenarios in (former) mangrove areas.
- The global NGO *The Nature Conservancy* will lead the literature reviews on mangrove services and will support global dissemination of the project findings.
- The Indonesian government service *BPDAS-PB of the Ministry of Forestry* will coordinate the engagement of government agencies in data gathering, field work and policy dialogues.
- The *Indonesian Government Centre for Marine Resource Survey* will lead on detailed mapping of mangrove status and distribution in Indonesia.
- *Bogor Agricultural University* will participate in the field work and will facilitate the engagement of Indonesian students.



## Budget

Budget for 3 years: **1,110.000 EUR**

A second phase is foreseen, consisting of modular extensions of the first phase of the project, with a total budget of € 919.000.

Funding for this second phase will be sought during implementation of phase one, while implementation of modular extensions is foreseen within the three year timeframe as well as thereafter in subsequent project phases.



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