



# ASSESSMENT OF NATURAL RESOURCE GOVERNANCE INCLUDING LAND AND FOREST TENURE IN COASTAL MANGROVE FORESTS OF INDONESIA

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# TABLE OF CONTENTS

LIST OF ABBREVIATIONS	8
ACKNOWLEDGEMENT	10
1. INTRODUCTION	16
2. METHODOLOGY	20
3. MANGROVE GOVERNANCE: Policy and Legal Framework	24
4. BACKGROUND INFORMATION ON LAMPUNG PROVINCE AND STUDY SITES	35
5. MANGROVE GOVERNANCE IN PRACTICE IN LAMPUNG PROVINCE	41
5.1 History and Motivation	41
5.2 Tenure and Property Regimes	42
5.4 Gender and Mangrove Governance	49
5.5 Coordination and Collaboration in Mangrove Management	51
5.6 Community Efforts at Mangrove Rehabilitation	52
6. OPPORTUNITIES AND CHALLENGES FOR THE GOVERNANCE OF COASTAL MANGROVE FORESTS	55
6.1 Rights Distribution and Tenure Security	55
6.2 Benefits Capture and Distribution	57
6.3 Cross-Sectoral Coordination	58
6.4 Change in Mangrove Forest Cover and Biodiversity	59
6.5 Gender Equality	60
6.6 Conflict Resolution	60
6.7 Monitoring, Review and Learning	60
7. CONCLUSION AND RECOMMENDATIONS FOR POLICY, PRACTICE AND RESEARCH	62
7.1 Multiple Regulations and Overlapping jurisdiction	62
7.2 Data on Status of Mangrove Forests and Rehabilitation Efforts	63
7.3 Governance, Leadership, Rights Distribution and Tenure Security in Mangrove Management	64
7.4 Gendered Dimensions of Mangrove Management	64
7.5 Tenure Arrangements and Mangrove Rehabilitation	65
7.6 Recommendations for Future Research	65
8. REFERENCES	66

ANNEXES

1. Data Collection Instruments	68
2. List of Legislation	89

# LIST OF FIGURES AND TABLES

## FIGURES

1. Distribution of mangrove forests in Indonesia.	18
2. Research sites in Lampung province.	20
3. Organizational structure of BPDPM in Pahawang village.	44

## TABLES

1. Number of people involved in focus group discussion in each research site.	22
2. Responsible agencies, their roles and authority in mangrove resource governance.	25
3. Summary of implementing agency for mangrove resource management in Lampung province.	27
4. Matrix showing different pieces of legislation and governance variables.	33
5. Forest area in Lampung province as defined by the function of the forests.	35
6. Summary of implementing agencies for mangrove resource management in Lampung province.	36
7. Population and mangrove forest area in study sites.	38
8. Key features of the study sites.	38
9. Rationale behind perception of tenure security in different territories in Pahawang village.	43
10. Rationale behind perception of tenure security in different categories of land in Purworejo village.	43
11. Local rules and practices in Pahawang village.	45

# LIST OF ABBREVIATIONS

APL	<i>areal penggunaan lain</i> , area for other land uses
BAL	basic agrarian law
BAKOSURTANAL	<i>Badan Koordinasi Survei dan Pemetaan Nasional</i> , National Coordinating Agency for Surveys and Mapping (renamed <i>as Badan Informasi Geospasial</i> , Geospatial Information Agency)
BAPPEDA	<i>Badan Perencanaan Pembangunan Daerah</i> , Provincial Development Planning Board
BAPPENAS	<i>Badan Pembangunan Nasional</i> , National Development Planning Agency
BPDAS	<i>Balai Pengelolaan Daerah Aliran Sungai</i> , Watershed Management Agency
BPDPMP	<i>Badan Pengelola Daerah Perlindungan Mangrove</i> , Community Institution for Mangrove Protection and Management
BPHM	<i>Balai Pengelolaan Hutan Mangrove</i> , Mangrove Forest Management Center
BPN	<i>Badan Pertanahan Nasional</i> , National Land Agency
CBD	Convention on Biological Diversity
CIFOR	Center for International Forestry Research
FGD	<i>fokus grup diskusi</i> , focus group discussion
HP	<i>hutan produksi</i> , production forest
HPT	<i>hutan produksi terbatas</i> , limited production forest
ITTO	International Tropical Timber Organization
IUPHHK	<i>izin usaha pemanfaatan hasil hutan kayu</i> , timber utilization permit
JICA	Japan International Cooperation Agency
KKP	<i>Kementerian Kelautan dan Perikanan</i> , Ministry of Marine Affairs and Fisheries
KII	<i>wawancara informan kunci</i> , key informant interview
LMC	Lampung Mangrove Center
LSM	<i>lembaga swadaya masyarakat</i> , nongovernmental organization
MOEF	Ministry of Environment and Forestry
MOF	Ministry of Forestry
RLPS	<i>rehabilitasi lahan dan perhutanan sosial</i> , land rehabilitation and social forestry
SWAMP	Sustainable Wetlands Adaptation and Mitigation Program
UNEP	United Nations Environment Programme



UNILA  
USAID  
USFS

*Universitas Lampung*, University of Lampung  
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United States Forest Service

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# EXECUTIVE SUMMARY

This report provides an analysis of natural resource governance including land and forest tenure in coastal mangrove forests in Indonesia as part of a broader study that includes a global review and similar work in the Rufiji Delta in Tanzania. It analyzes national-level legal and institutional frameworks in order to provide an indication of how different sectoral regulations address mangrove governance and tenure and how respective government authorities implement them. It also analyzes the practice of mangrove management, especially governance and institutional arrangements that are designed and implemented at the local level in order to better understand how they function and ultimately how they influence mangrove resources.

Indonesia possesses the largest cover of mangrove forests in the world, accounting for between 20 and 22% of the world's mangrove area and up to half of Asia's mangroves (FAO, 2007; Giri et al., 2011). Mangrove forests connect landscapes and seascapes and have valuable social and ecological functions. They are a critical breeding space for various marine species, reducing the effects of surging sea waves on the coast, protecting landscapes from storms and tsunamis, and contributing to the livelihoods of coastal communities. Mangrove areas support fish and shrimp production accounting for over 45% of Indonesia's annual fish exports, which is valued at USD 1.5 billion. Mangroves play an important role in climate change mitigation. Mangrove deforestation in Indonesia results in a loss of 190 million metric tons of CO<sub>2</sub> annually, i.e., about 20% of land-use emissions (CIFOR, 2015; Murdiyarso et al., 2015). Yet these mangrove forests continue to face enormous threats from various economic activities such as aquaculture development, shrimp farming, and timber logging. Between 1970 and 2001, close to half of Indonesia's mangrove forests were destroyed through these pathways. Currently only about 30% of mangrove forests are in good condition; both the Ministries of Marine Affairs and Fisheries and the Ministry of Environment and Forestry, accept that over 70% of mangrove forests in Indonesia are in a critical condition (RLPS-MOF, 2007 *in* Kusmana, 2014; Antara News, 2010).

Over the past two decades, the Indonesian Government has introduced interventions aimed at controlling mangrove deforestation. These have included the declaration of coastal zones as protection areas, thus forbidding mangrove timber extraction; the creation of mandatory greenbelts along the coastline; and the provision of mangrove seedlings for restoration and rehabilitation programs. Investments in mangrove rehabilitation gained momentum following the devastating tsunami that hit West Sumatra in 2004, which brought into sharper focus the function of mangroves in protecting against coastal erosion and storm surges. Also, the overall approach to mangrove restoration and rehabilitation is changing following the tsunami. While pre-tsunami mangrove rehabilitation programs were challenged by contested claims over resources and limited engagement of local communities, post-tsunami rehabilitation schemes have increasingly adopted community participation as a central approach (Wibisono and Suryadiputra, 2006; Brown et al., 2014). These efforts have also been characterized by substantial NGO involvement.

The current government administration, which came into power in 2014, has strongly emphasized mangrove tree planting, with up to 4.9 million trees planted to date. Prior to this, a national strategy on mangrove ecosystem management was authorized in 2012 with the aim of strengthening cross-sectoral coordination. Despite these efforts, the current legal and policy

framework for mangrove management in Indonesia strongly supports mangrove protection as the prime policy instrument. There is much less flexibility, according to the law, for the application of other governance arrangements (such as co-management or community management) as is increasingly evident with terrestrial forests over much of Indonesia. It is also generally unclear how these protectionist policies and laws are interpreted and translated into action on the ground by the various stakeholders that have mandates and/or interests in mangroves. There is also need for a better understanding of whether and how local community efforts, especially of those who live in and around mangroves, can best be engaged in support of conservation and rehabilitation. Establishing an evidence base of how governance and institutions influence mangrove use and management will provide a sounder basis for developing guiding policies and practices.

This study addresses the need for providing an evidence base in support of current policy implementation. It also fills a general gap in mangrove research, which in Indonesia and the world over, has to date been dominated by biophysical studies. The recent push for mangrove conservation and management by the Indonesian Government follows the same pattern and maintains a strong focus on the biophysical aspects of mangroves. By refocusing attention on governance and tenure issues within a mangrove setting, this study also aims to expand the current debate on policy and institutional design, long confined to terrestrial forests, to include mangrove forests.

This report draws from multiple sources, including a review of relevant published literature, a review of up to 21 national policies and regulations, focus group discussions with communities and interviews with government and non-governmental officials at national, provincial, and district level working on mangrove governance. Field data collection was conducted in three communities in Lampung province. Lampung province has a relatively large coverage of mangrove forests, diverse mangrove tenure and management regimes, recent mangrove rehabilitation initiatives as well as established CIFOR project sites, which include research sites of the Sustainable Wetlands Adaptation and Mitigation Program—a mangrove-focused program. Mangrove forests in Lampung fall under at least five different tenure and management regimes, including strict national park, *de facto* community governed territory, State forest zones under central government's ownership, areas under local government's management and large-scale concessions. Three of these tenure regimes offer considerable rights and management responsibilities to local communities, which we selected as field study sites. They include Pahawang Island in Pesawaran district (community governed); Purworejo village in East Lampung district (State forest zone); and Margasari village in East Lampung district (areas for other land uses or APL,) which is under local government but managed by the University of Lampung.

### Main findings:

Mangrove forests in Indonesia are classified as either State forest zone or APL (area for other land uses). Forest Law 41/1999 is relevant to the State forest zone, where land ownership remains with the Ministry of Environment and Forestry. When mangroves fall under the APL, Regional Autonomy Law 23/2014 is used and local governments have the authority to make land-use decisions. However, Presidential Decree of 1990 keeps the coastal mangrove areas as protected zones, restricting land conversion or timber extraction and requiring the maintenance of a greenbelt along the seashore.

Based on the Lampung case study, communities appear to value environmental services or non-consumptive use (e.g. ecotourism). Mangroves provide land with protective cover, which reduces the risks to critical livelihoods activities. Protecting against the negative impacts of coastal erosion is a major motivation for community involvement in mangrove protection and rehabilitation activities.

The legal and institutional framework for the governance of mangroves in Indonesia is characterized by fragmented authority. Because mangroves are located at the confluence of land and sea, their management falls under five different government authorities. This overlapping authority and regulation poses major coordination challenges across line ministries. For example, though many mangrove forests are located in coastal areas or small islands and should ideally be under the Ministry of Marine Affairs and Fisheries, it is the Ministry of Forestry that has jurisdictional control over mangrove areas when they fall under official 'State forest zones'. In addition, forestry planning and coastal management planning are to a large extent not harmonized with regional spatial plans. In order to improve coordination across sectoral regulatory and institutional frameworks, a national strategy on mangrove ecosystem management (Pres. Regulation 73/2012) was authorized. This sets up a national multi-sectoral coordination team with a separate steering committee and implementing team. In practice, however, these bodies at the sub-national level either do not exist or are nonfunctional.

Despite the large number of national and subnational rules that apply to mangroves, at local level village regulations for mangrove protection and conservation in Lampung are designed specifically for mangroves and are implemented as such. Moreover, they are integrated into broader resource management rules at village and district levels. We find no obvious negative impacts of this confusing multiplicity of laws and authorities on local mangrove governance in Lampung. The multiplicity of regulations from different sectors appears to be tempered or even substituted by mangrove-specific regulations at village level.

In the case study sites in Lampung, government agencies such as the Medan Mangrove Center, Provincial Development Planning Board (BAPPEDA), Forest and Land Rehabilitation Department at provincial level, the Indonesian Army and several State-owned enterprises provide seedlings and cover labor costs as part of mangrove rehabilitation efforts. Similarly, NGOs and University of Lampung (i.e. the Lampung Mangrove Center) have also been offering awareness-raising programs and local institutional and skills development related activities. In most of the community-led mangrove plantations, seedling survival rate is high - up to 90%. However, groups indicate that current levels of support are inadequate and *ad hoc*. They fear that this will undermine local enthusiasm for mangrove rehabilitation efforts; for example, some groups in Pahawang are less effective today due to the reduced support.

Although mangroves are under the authority of government agencies that have designated them as protected zones with restrictions against their consumptive use, communities in Lampung have negotiated management and exclusion rights with the relevant authorities (i.e. District Forestry Agency, Local Government and Lampung Mangrove Center), ensuring that they have rights to manage and to exclude outsiders from 'their' mangroves. They also have management responsibilities such as monitoring, sanctioning, and rehabilitation of degraded mangroves.

Communities have drafted regulations for mangrove conservation and management, which not only have been incorporated into overall village regulations but have been recognized, acknowledged, and accepted by higher level authorities such as village leadership, district authorities, and provincial-level authorities.

Communities in the three sites in Lampung feel that their rights are secure for several reasons: (i) village regulations are recognized and supported by higher levels, which suggests that any challenge to their rights will be countered by the higher level authorities that back up these regulations; (ii) monitoring and enforcement is conducted by communities and there are clear and visible structures (such as watchtowers) as well as individuals (guards, committees) tasked with monitoring and ensuring that violators are sanctioned. Sanctions are well known and are graduated and their severity increases with the magnitude and/or frequency of the violation; and (iii) village regulations were defined jointly, rather than imposed from outside and are well known to community members. A comparison of perceptions of tenure rights security for communities across three different tenure regimes (i.e. community-controlled vs. State forest area under Forestry Agency vs. local government) suggests that perceptions of tenure security are higher among the community in the community-controlled area than in other areas.

All the national policies and regulations that are relevant to mangrove use and management are silent with respect to women's rights over land and forest resources. Similarly, local village regulations are gender blind - gender equality is assumed rather than actively sought. Community-level practices are based on gendered roles and the activities that men and women can appropriately perform in line with broader social expectations. NGOs have provided training to women in processing mangrove products such as preparing crackers, syrup, and sticky cakes but because of lack of market outlets and a limited scale of production, these products have remained at a subsistence level. In mangrove rehabilitation and management, women are not only trapped in low-skilled activities such as polybag filling and seedling planting but are completely left out of the decision-making processes at the village level.

Local community leaders play a central role in mangrove protection and rehabilitation. Successful community initiatives are often spearheaded by active, committed, and trusted leadership. Such leaders can establish and maintain links with external agencies, securing funding and other support for mangrove management, protection, and rehabilitation.

### Main recommendations:

These recommendations apply across national, sub-national and local levels. The majority of them cut across all levels and focus on strengthening community-level structures, incentives and processes in order to strengthen current efforts at sustainable use and management of mangroves. The recommendations call for a more collaborative approach to the governance of mangrove resources in Lampung province. One recommendation is targeted at the national level and it calls for understanding how best actors can work together to implement the mangrove management strategy.

Support for the implementation of the National Mangrove Management Strategy is needed. This should include a careful assessment of the constraints to its implementation and opportunities for strengthening cross-sectoral collaboration in mangrove conservation management.

Support from external stakeholders is critical for sustained mangrove management on the ground. Current practice shows that the communities are receiving the support on an *ad-hoc* basis, which has created anxiety among local leaders with regard to the sustainability of their rehabilitation efforts. Therefore, a mechanism for ensuring regular funding support to local communities should be created. Similarly, a coordination mechanism for joint learning and scaling-up of the tested approaches is also necessary.

Other avenues for strengthening incentives for and reducing uncertainty over the future viability of current efforts exist. The first is to address the main threats to resource rights identified by communities and to strengthen their ability to exclude large-scale investments, which they perceive as the most serious threat. In addition, expanding the range of rights that communities have for mangrove resources can provide additional incentives for engaging in sustainable management practices (including rehabilitation) over the long term. The second avenue is to expand income generation possibilities by taking advantage of existing laws and initiatives that support the provision of special incentives to encourage and sustain environmental conservation such as payments for ecosystem services (PES) or Reducing Emissions from Degradation and Deforestation (REDD+).

Strengthening local-level institutions and increasing their capacities to interact, collaborate, and coordinate with national and subnational agencies are necessary. Similar initiatives that strengthen the capacity of subnational and national actors to support local-level initiatives and reinforce community incentives for protection, management, and rehabilitation are also necessary. Further research and experimentation (including pilot programs) can generate specific insights on how best to design institutions to support local-level conservation management.

Specific legal and institutional provisions and incentives are required in order to ensure women's participation in mangrove forest governance. Overall, gender differentiation is clearly evident in community mangrove management in Lampung, but the rules crafted for village mangrove management are not cognizant of that differentiation. Similarly, the majority of relevant national policies and regulations are silent in terms of women's rights over land and forest resources. Although external actors recognize gender differentiation, they focus their support largely on developing women's skills in income generation activities. Regardless of the pathway to gender blind institutions and processes, it conceals inequality i.e. there is a complete absence of women in decision-making positions. Over the longer term, this risks stifling women's interest and incentives for adopting and maintaining sustainable mangrove management practices. Thus institutional arrangements and processes that increase and strengthen women's capacities for leadership and decision-making are necessary. Such arrangements should also seek men's involvement.

# 1. INTRODUCTION

About 75% of mangrove forests are found in just 15 countries in the world and only 6.7% are designated as part of the global protected areas network. Asia accounts for 42% and Africa for 20% of total global area of mangrove forests (Giri et al., 2011). Mangroves provide a wide range of economic and ecological goods and services that are important for the food security and livelihoods of local populations. They are rich in biodiversity, store and sequester significant quantities of carbon and protect coastal landscapes against erosion. Despite their importance, mangrove forests are under threat and in rapid decline (Lewis, 2009). By 2001, at least 35% of the area of mangrove forests was lost during the period 1980–2000 (Valiela et al., 2001). The loss of mangrove forest area declined to 1.7% in the period 2000–2012 but deforestation is still ongoing (Richardsa and Friess, 2016). Conversion to mariculture, agriculture, aquaculture, coastal and urban development, and natural disasters as well as overharvesting and conflict are the drivers of mangrove deforestation and degradation, especially in Southeast Asia and Eastern Africa (Saenger et al., 1983; Fortes, 1988; Marshall, 1994; Richardsa and Friess, 2016).

Indonesia possesses the largest cover of mangrove forests in the world, accounting for between 20–22% of the world's mangrove area and up half of Asia's mangroves (FAO, 2007; Giri et al., 2011). Mangroves are distributed across the major islands of Indonesia (Figure 1). Though the exact coverage varies between 2.8 million ha (as reported by Indonesia's Ministry of Forestry) and 3.2 million ha (as reported by Indonesia's Geospatial Information Agency), it is generally agreed that these forests face enormous threats from aquaculture development, shrimp farming, industrial development as well as allocation of concessions to private companies (Kusmana, 2014). Almost half of Indonesia's mangrove forest area was destroyed between 1970 and 2001<sup>1</sup> and currently only about 30% of mangrove forests are in good condition. Both the Ministries of Marine Affairs and Fisheries and of Forestry<sup>2</sup> accept that over 70% of mangrove forests in Indonesia are in a critical condition (RLPS-MOF, 2007 *in* Kusmana, 2014; Antara News, 2010). The massive loss of mangroves in Indonesia is attributed to the conversion of mangrove territory for shrimp farming and rampant logging (FAO, 2007).

Yet mangroves play an important role in the lives and livelihoods of millions of people living along coastal areas (UNEP, 2014). They provide products such as timber, poles, fuelwood, fruit, and medicine. Leaves, fruits and roots are also used for making crackers, juice and other food items. They provide habitats for various aquatic fauna including prawn, eel, clam, crab, sea snail, and a variety of fish species (Armitage, 2002). They are often cleared for shrimp production, which is an important industry in Indonesia worth USD 1.5 billion annually and accounting for over 45% of total fish exports (Ministry of Marine Affairs and Fisheries, 2014 *in* Ilman et al., 2016). The industry also employs over 1 million people.

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<sup>1</sup> Earth observatory: <http://earthobservatory.nasa.gov/IOTD/view.php?id=47427> accessed on 6 April 2016.

<sup>2</sup> Ministry of Forestry and Ministry of Environment merged and became Ministry of Environment and Forestry in late 2014.



Mangroves play an important role in climate change mitigation. Mangrove deforestation in Indonesia results in a loss of 190 million metric tons of CO<sub>2</sub> annually, i.e. about 20% of land-use emissions in (Murdiyarso et al., 2015). Additional valuable environmental services include shoreline stabilization, climate regulation, and water quality maintenance (UNEP, 2014). Following the 2004 tsunami, it is now recognized that mangroves can protect coastal communities from the impacts of severe storms and cyclones, and prevent seawater intrusion. Mangrove forests are also valued for their recreational, spiritual, and cultural values (UNEP, 2014).

Since the 1990s, the Government of Indonesia has introduced various initiatives aimed at controlling mangrove deforestation. These include the declaration of coastal zones as protection areas, thus forbidding mangrove timber extraction, the mandatory creation of greenbelts along the coastline and the provision of mangrove seedlings for restoration and rehabilitation. Investments in mangrove rehabilitation gained momentum following the devastating tsunami that hit West Sumatra in 2004, which brought into sharper focus the protective function of mangroves against coastal erosion and storm surges. Overall, pre-tsunami mangrove rehabilitation programs were challenged by site suitability problems, contested claims over resources and limited engagement of local communities. Post-tsunami rehabilitation schemes attempted to correct these failures and have increasingly adopted community participation as a central approach (Wibisono and Suryadiputra, 2006; Brown et al., 2014). These efforts have also been characterized by NGO support. The current government administration, which came into power in 2014, has strongly emphasized tree planting, with up to 4.9 million trees planted to date.

Mangroves are held under diverse tenure regimes, from strict protected areas through joint management to communal and customary arrangements. However, although tenure and other governance arrangements are widely recognized in Indonesia as important incentives for sustainable forest use and management, most of this debate has focused on terrestrial forests and has largely bypassed coastal mangrove forests. Mangroves management research in Indonesia, as for the rest of the world, has focused mostly on the biophysical dimensions of management and less so on the governance dimensions of management. Even the recent push for mangrove conservation and management by the Indonesian Government maintains a strong focus on the biophysical aspects of mangroves. Little attention is paid to governance and tenure issues, which are critical for the effectiveness of mangrove protection, restoration, and rehabilitation.

CIFOR's research in Indonesia and elsewhere continues to demonstrate the importance of governance arrangements and tenure for providing the incentives, coordination, skills, and resources required for sustainable forest management (see <http://www.cifor.org/forest-tenure> and <http://www.cifor.org/gcs-tenure> ). CIFOR's mangrove research in Indonesia also demonstrates the critical carbon sequestration role played by mangroves (Murdiyarso et al., 2015). Given the important functions of mangroves, there is an urgent need to better understand the governance arrangements underpinning their conservation and management. Currently, the legal and policy framework for mangroves management in Indonesia strongly supports State protection, but it is unclear how these policies are interpreted and translated into action on the ground by various stakeholders that have mandates and/or interests in mangroves. There is also need for a better understanding of whether and how local community efforts, especially of those who live in and around mangroves, can best be engaged in support of meeting and sustaining recent conservation

and rehabilitation targets set by the Mangrove Restoration Agency. Establishing an evidence base of how governance and institutions influence the use and management will provide a much sounder basis for developing guiding policy and practice.



Figure 1. Distribution of mangrove forests in Indonesia.

Source: Giri et al. (2011)

This report addresses the governance knowledge gap (including tenure rights) with respect to the use, management, and rehabilitation of mangrove resources in Indonesia. It analyzes national-level legal and institutional frameworks in order to provide an indication of how different sectoral regulations address mangrove governance and tenure and how respective government authorities and nongovernmental actors implement them at national and subnational levels. The report also analyzes the practice of mangrove management, especially governance and institutional arrangements that are designed and implemented at the local level in order to better understand how they function and influence mangrove resources. We draw empirical evidence from three locations in Lampung province, where tenure regimes and mangrove management arrangements vary i.e. community/customary management, joint community-State management and local government management in collaboration with a local university. Gender, often a missing element in many mangrove studies (Bosold, 2012), is also considered in this study both in terms of rights as well as participation in decision-making. The report concludes by providing recommendations for policy and practice.

While the study revealed a broad range of issues related to tenure and governance of mangroves, some findings that stand out are listed below.

- Because of the biophysical nature of mangroves, located at the interface between the sea and the land, a large number of laws and regulations have bearing on mangrove management and there is no single ministerial authority in charge of mangrove forest management. Instead, the legal and institutional framework for the governance of mangroves is characterized by fragmented authority and overlapping jurisdictions, which

poses major coordination challenges across line ministries. However, this confusing multiplicity of laws and authorities across jurisdictions has no obvious negative impacts on local mangrove governance. The multiplicity of regulations from different sectors at national level appears to be tempered or even substituted by mangrove-specific regulations at village level.

- Communities in Lampung province have drafted regulations for mangrove conservation and management, which have not only been incorporated into overall village regulations but have been recognized, acknowledged, and accepted by higher level authorities in which the community is embedded.
- Communities in the study sites feel that their rights to mangrove forests are secure. A comparison of perceptions of rights security for communities in different tenure regimes finds that perceptions of security are most pronounced in community-controlled mangroves and least where communities are managing State-owned forest areas.
- Although mangroves are under the authority of government agencies (i.e., Ministry of Forests inside the State forest zones and local government in the area for other land uses or APL, which is outside the State forest zone) as protected zones, with restrictions against their consumptive use, communities have negotiated management and exclusion rights (in addition to use rights) where they have rights to manage and to exclude outsiders from ‘their’ mangroves.
- Community mangrove rehabilitation initiatives in our study sites have a modest history, with the earliest established about 20 years ago and the other two five to 10 years later. The effectiveness of these efforts is variable. The ones that are directly connected to government (local or central) through land ownership and funding arrangements appear to be more effective. They rehabilitate larger areas, offer payment for labor invested and have a broader range of activities in their rehabilitation programs. All community rehabilitation programs are managed by village-level organizations that were established specifically for mangrove management and protection. Seedling survival rates vary from 60-90% and seem related to the strength of tidal waves, the prevalence of shellfish that suppress root growth and whether or not planting is done on newly reclaimed land.

Section 2 of this report describes the methodology used in this study. Section 3 presents an analysis of the policy and legal frameworks relevant to mangrove conservation. Section 4 sets the context by describing the key features of our study sites in Lampung district. Section 5 presents and discusses existing mangrove governance and tenure arrangements at community level. In Section 6, we outline our key findings again and in Section 7 we present our conclusions and recommendations.

## 2. METHODOLOGY

We used a mixed method approach in order to gather information at multiple levels of governance, from national to local. Our main aim was to collect data that would provide insights into the following: national legal and policy frameworks for mangrove management and their on-the-ground implementation, local governance, and tenure arrangements for mangrove conservation and management, local perceptions of tenure security and the organization of local mangrove rehabilitation efforts.

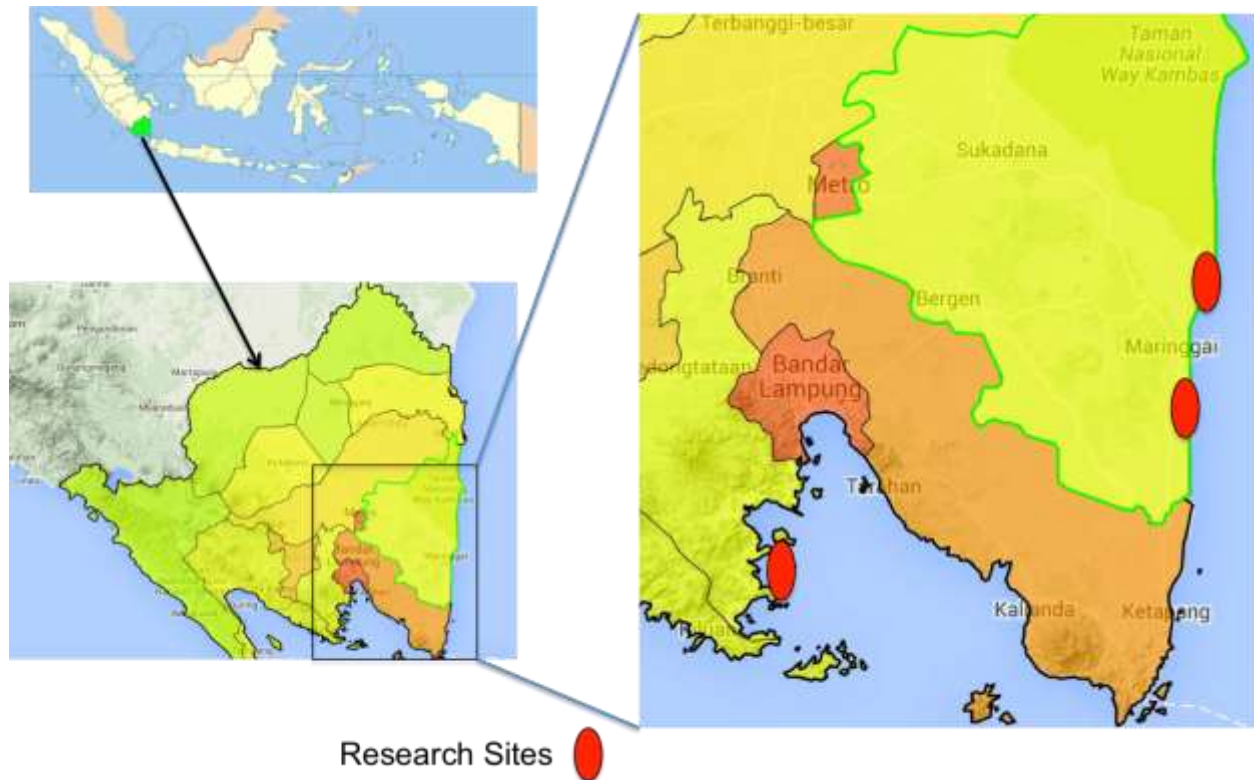


Figure 2. Research sites in Lampung province.

We selected Lampung province because of its diversity of tenure regimes, resource management arrangements, recent mangrove rehabilitation initiatives and the existence of CIFOR projects such as SWAMP (Sustainable Wetlands Adaptation and Mitigation Program), which focuses on mangroves. Mangrove forests in Lampung fall under at least five different tenure and management regimes. These include: strict national park, *de facto* community-governed territory, State forest zones under central government's ownership, local government's management, and large-scale concessions. Following a reconnaissance survey in Lampung province in December 2015, which involved discussions with community leaders in four communities, University of Lampung and local government officials, we selected the following tenure/management regimes for an in-depth study:

- communal management (on Pahawang Island, Pesawaran district)

- joint community-local government management (Purworejo village, East Lampung district)
- multi-stakeholder management led by University of Lampung on local government land (Margasari village, East Lampung district)

There are two other tenure regimes, one controlled by the government (Way Kambas National Park) and another by a private company (Dipasena shrimp industry), which we also selected but had difficulties in gaining access to the managers.

Our selected research sites are illustrated in Figure 2.

Community-level data was mainly gathered through key informant interviews, observation, and document review including reviews of village rules and management plans. In addition, focus group discussions disaggregated on the basis of gender and age were used to gather community-level data. These primary sources of data collection were supplemented by reviews of relevant secondary data available for each site, district, and country.

At the national level, our main aim was to understand the policies and laws regulating mangrove use and management; key stakeholders and their involvement; coordination across sectors and levels of government; and the adequacy of regulatory provisions and implementation challenges. A literature review, legal analysis, and interviews with relevant government agencies and NGOs were useful in understanding the national sphere. Prior to conducting interviews at the national level, we interviewed a CIFOR scientist working mainly on the biophysical aspects of mangrove and carbon assessment in order to obtain a general understanding of the status of mangroves across Indonesia and to identify relevant stakeholders. CIFOR's existing Sustainable Wetlands Adaptation and Mitigation Program (SWAMP) supported by USAID was also a useful resource in understanding the significance of mangroves in general and in identifying sites for this study. A total of five interviews were organized at national level, representing government ministries, NGOs, and academic institutions. We conducted in-depth interviews with the key people responsible for mangrove forest management within the Ministry of Environment and Forestry and Ministry of Marine Affairs and Fisheries. These interviews explored the existing regulatory mandates and programs for mangrove conservation and management, institutional mechanisms of implementing policies and programs of the government, coordination among various government agencies, incentives for implementing the programs and key territorial focus of these ministries. We interviewed two people representing conservation NGOs working on coastal and marine conservation, one working at international and the other at the national level. These interviews helped us understand civil society perspectives on conservation initiatives, the rights of local communities and community participation in mangrove management.

A total of nine interviews were conducted at the subnational level. This included an interview of a staff member of the University of Lampung who has been conducting mangrove governance research in Lampung for over a decade and who also participated in mangrove protection and rehabilitation initiatives in two of the three villages we collected data from. Besides providing information on mangrove protection, conservation, rehabilitation and utilization activities in Lampung province, this person provided information on the gaps in coordination across different government agencies in relation to supporting community-based mangrove rehabilitation efforts.

We also interviewed staff of Lampung province BPDAS, the head of the District Forestry Agency, East Lampung district, the staff of the District Forestry Agency, Pesawaran district and NGOs working in the province. The purpose of interviewing these subnational actors was to gather information on mangrove management, key actor roles in management and rehabilitation, community tenure and management efforts as well as links and interactions between communities and key actors. Although we wanted to include the State-controlled national park and a private company in this study, we were unable to access their managers during the reconnaissance survey and thus were forced to omit them.

We gathered data at the community level primarily through key informant interviews (KIIs) and focus group discussions, complemented by the observation of sites and activities, meeting minutes, and published and unpublished documents of the respective communities. Nine key informant interviews were conducted at community level with village heads, office bearers, and other leaders who held extensive amount of information on mangrove protection and rehabilitation. In particular, KIIs were used to collect data on the history of the villages, demographic dynamics, history of mangrove exploitation and its consequences, use of mangrove, emergence and rationale behind mangrove protection and rehabilitation activities, rights and obligation of local communities over mangrove forest territories, local power dynamics, benefits distribution, outcome of mangrove management initiatives and the relationship of the community with the external agencies.

A total of 12 focus groups (four in each site) were conducted, which involved 78 people (37 women, 41 men) (Table 1). Focus groups of men and women were sought to gather gender-disaggregated perception of mangrove governance including tenure rights and benefit distribution.

**Table 1. Number of people involved in focus group discussion in each research site.**

Village name	Men		Women		Total
	Older	Younger	Older	Younger	
Pahawang	9	5	5	5	24
Margasari	6	7	5	5	23
Purworejo	9	5	12	5	31
Total	24	17	22	15	78

All data gathering instruments are included in Annex 1.



# 3. MANGROVE GOVERNANCE:

## Policy and Legal Framework

This section presents an analysis of the policy and legal framework for mangrove governance. It assesses the extent to which current policies, laws, and strategies in the natural resources sector provide an enabling environment for the conservation and management of coastal mangroves. It also evaluates the extent to which national laws and policies in relevant sectors address forest and land governance, especially tenure rights in regard to mangrove forests. We identified a total of 21 pieces of legislations, ranging from the Constitution to the sectoral regulations that are relevant to mangrove forest governance (see Annex 2 for the list of regulations reviewed). Evidently, many regulations have a bearing on the governance of mangrove forests in Indonesia, making it a complex field of interplay among various regulations and authorities responsible for enforcing them. Prior to analyzing the policies and laws, we provide information on the government organizations that are responsible for implementing mangrove-related laws and policies and their sources of authorization.

### Government Agencies and Authorities Charged with Mangrove Management

Given the nature of mangroves, which are located in the ocean, on land, and sometimes in freshwater systems, up to five different government agencies are involved in their management. These include the Ministry of Environment and Forestry, the Ministry of Marine Affairs and Fisheries, the Ministry of Agrarian and Spatial Planning Affairs/National Land Agency (BPN) and the National Development Planning Agency (BAPPENAS). The National Development Planning Agency prepares the National Strategy for Mangrove Management. The Ministry of Agrarian and Spatial Planning Affairs/National Land Agency is responsible for enforcing tenure rights and conducting spatial planning in mangrove zones. The Ministry of Maritime Affairs and Fisheries is responsible for mangrove management in coastal areas and small islands. The Ministry of Environment and Forestry holds authority for mangrove protection in general and for mangrove management if they are situated in classified forest areas. At lower levels, mangrove management is also regulated by provincial, district, and village governments.<sup>3</sup>

The recent Law on Regional Autonomy 23/2014 shifts the authority for coastal areas management by the Department of Fisheries from district to provincial level in non-State zones.

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<sup>3</sup> Indonesia's decentralization policy distributes authority and responsibility among national-, provincial-, district- and village-level government authorities. When the territory is classified as APL, land ownership and management responsibility rests with the local government. When it falls under kawasan hutan (State forest zone), the land ownership remains with the central government but management responsibility is with the district forestry agency. However, the government has issued Law 23/2014 that brings the management responsibility of forest and other natural resources from district to provincial level. In 2015, mangrove territory was shifted from the forestry agency to the fisheries agency



Similarly, the management responsibility of mangrove forests under the State forest zone has now shifted from the District Forestry Agency to the provincial level Forestry Agency. This shift in authority is rationalized by a need to control rampant corruption, nepotism, and inefficiency by regency-level government agencies. However, the pulling back of all the power from district to provincial level has created confusion on the ground and created the impression that there is no one with responsibility for protecting mangrove forests.

Thus, overlapping authority and regulation is one of the greatest problems of mangrove management in Indonesia. For example, although many mangrove forests are located in coastal areas or on small islands and should ideally be under the Ministry of Marine Affairs and Fisheries based on Law 27/2007 on the Management of Coastal Areas and Small Islands, many of them fall under ‘State forest zone’, which falls under the Ministry of Forestry. As a result, forestry law and coastal areas and small islands law are competing within the same jurisdiction. In addition, forestry planning and coastal management planning are to a large extent not harmonized with regional spatial plans. The involvement of multiple government agencies at different levels in mangrove management is a decade-old practice. Soemodihardjo and Soerianegara (1989), *in* Kusmana (2014) reported that in the late 1980s, at least five government ministries (such as Ministry of Forestry, Ministry of Fisheries, National Land Agency, Ministry of Life Environment and Ministry of Home Affairs as well as local governments) were recognized as responsible authorities for mangrove governance.

The role and legal basis of these authorities are summarized in Table 2 below, while Table 3 takes the example of Lampung district and illustrates the nature of institutional fragmentation with regard to mangrove conservation and management.

**Table 2. Responsible agencies, their roles and authority in mangrove resource governance.**

Agency	Authority and legal basis
Ministry of Maritime Affairs and Fisheries (MMAF)	Law 27/2007 on the Management of Coastal Areas and Small Islands
Ministry of Environment and Forestry (MOEF)	<p>Environmental Protection and Management Law Number 32/2009, Law 41/1999 on Forestry and Law 5/1990 on Natural Resources Conservation</p> <p>The environmental law provides general principles on mangrove management, instruments for preventing environmental destruction, planning and law enforcement.</p> <p>Once the mangrove areas are designated as forest areas (mangrove forest), they will be under the jurisdiction of the forestry law. The law can apply three functions: as production forest, protection, and conservation (mangrove) forest.</p> <p>In the case of conservation mangrove forest, the conservation law will be applicable. This law is under government review now.</p>
Ministry of Agrarian and Spatial Planning Affairs/National Land Agency	<p>Basic Agrarian Law and Law on Spatial Planning</p> <p>1960 Basic Agrarian Law (Law 5/1960) regulates any land rights including land for indigenous peoples</p> <p>The Spatial Planning Law (Law 26/2007) regulates the function of mangrove either</p>

Agency	Authority and legal basis
	as protected or cultivated areas.
National Development Planning Agency	Mangrove utilization planning is part of the national development plan, which is prepared by the National Development Planning Agency.
Local government	<p>Law 23/2014 on Regional Government places the authority for community-based coastal management with provincial government. If mangrove land is used for commercial purpose, permits are granted by district governments. Law 23/2014 grants that authority to district governments including the authority to handle informal land claims.</p> <p>Law 6/2014 on Villages also grants village governments the authority to manage natural riches in their jurisdiction.</p>

Table 3. Summary of implementing agency for mangrove resource management in Lampung province.

	Fishery and Marine Agency	Fishery and Marine Agency	Mitra Bentala	Lampung Mangrove Center (LMC)	Lampung Province Forestry Office	District Forestry and Plantation Office	Watershed Management Agency	Way Kambas National Park
Level	National	Pesawaran district, East Lampung province	Lampung province	Lampung province	Lampung province	Districts of Lampung province (our sites in East Lampung and Pasawaran districts)	Lampung province	Lampung province
Type of Agency	Government	Government	NGO	University of Lampung	Government	Government	Government	Government
Law and policies	<ul style="list-style-type: none"> <li>• Law No 27/2007 on Management of Coastal Areas and Small Islands</li> <li>• President Decree on National Strategy for Mangrove Management</li> </ul>	District regulation on the establishment, organization, and working procedures of technical implementing unit of Pesawaran district	<ul style="list-style-type: none"> <li>• Law No. 27/2007 on Management of Coastal Area and Small Islands</li> <li>• Indonesian Constitution 1945</li> </ul>	East Lampung Regent Decree No. B. 303/22 / SK / 2005 on Determining a location for Lampung Mangrove Center	<ul style="list-style-type: none"> <li>• Lampung Governor Regulation No. 34/2010 on the Details, Duty, Function and Administration of the Office of the Provincial Government of Lampung</li> <li>• Law No 41/199 on Forestry</li> </ul>	<ul style="list-style-type: none"> <li>• Regulations of the Head of Lampung Timur District Number 23 Year 2007 on the Establishment of Implementing Agency in East Lampung district</li> <li>• Regulation of the Head of East Lampung District No. 26/2007 on Description of the Tasks and Functions of the Implementing Agency in East Lampung district</li> </ul>	Minister of Forestry Decree No. 26/Menhut-II/2010 on the Technical Guidelines for Rehabilitation Forest and Land	<ul style="list-style-type: none"> <li>• Law No. 5/1990 on Conservation of Natural Resources and Ecosystem</li> <li>• Law No. 41/1999 on Forestry</li> <li>• Minister of Forestry Decree No. 670/Kpt-II/1998 on the Organization of the Way Kambas National Park</li> </ul>
Main objective	<ul style="list-style-type: none"> <li>• Improve local economy</li> </ul>	<ul style="list-style-type: none"> <li>• Community empowerment</li> </ul>	<ul style="list-style-type: none"> <li>• Community empowerment</li> <li>• Mangrove</li> </ul>	<ul style="list-style-type: none"> <li>• Education</li> <li>• Environmental</li> </ul>	<ul style="list-style-type: none"> <li>• Policy-making, institutional arrangements for</li> </ul>	<ul style="list-style-type: none"> <li>• Plantation, management of forests;</li> </ul>	<ul style="list-style-type: none"> <li>• Improve rehabilitation program by</li> </ul>	<ul style="list-style-type: none"> <li>• Securing coastal and forest area</li> </ul>

	Fishery and Marine Agency	Fishery and Marine Agency	Mitra Bentala	Lampung Mangrove Center (LMC)	Lampung Province Forestry Office	District Forestry and Plantation Office	Watershed Management Agency	Way Kambas National Park
	<ul style="list-style-type: none"> <li>• Mangrove protection</li> <li>• Integrated rehabilitation program for tourism</li> </ul>	<ul style="list-style-type: none"> <li>• Mangrove protection and controlling erosion</li> </ul>	protection and awareness	<ul style="list-style-type: none"> <li>• conservation</li> <li>• Community empowerment</li> </ul>	<ul style="list-style-type: none"> <li>• implementing policies, Planning forestry and forest management operations</li> <li>• Gazetting of forest zones: production forests, protected forests, and National Parks</li> <li>• Implementation and monitoring of rehabilitation, reclamation, silvicultural systems, aquaculture and processing;</li> <li>• Management of forest reserves, production forests and protected forests provincial scale, and Forest Management Units (FMUs)</li> <li>• Capacity-building support: education, technical training, applied research and development</li> </ul>	<ul style="list-style-type: none"> <li>• Technical support to social forestry schemes</li> </ul>	<ul style="list-style-type: none"> <li>• providing data and site information</li> <li>• Provide guidance and technical support</li> <li>• Provide seedling</li> <li>• Facilitation</li> </ul>	<ul style="list-style-type: none"> <li>• Establishment of conservation groups</li> <li>• Development of endangered species; elephant care, conflict mechanism between humans and wildlife</li> <li>• Prevention, extinction, and treatment of post-fire forest; hot spot monitoring and forest fire prevention</li> <li>• Development and utilization of nature</li> </ul>

## Legal and Policy Architecture for Mangrove Conservation and Management

This subsection begins by discussing content of the laws that are most relevant for mangrove governance. These laws include the Presidential Decree, forest law, regional government law and village law. We also discuss the *National Strategy for Mangrove Ecosystem Management* among this first cluster. In general, this set define the rights and responsibilities of different actors; and the scope and extent of their authority. The strategy is a coordination instrument aimed at achieving coherence across the laws and authorities that are relevant to mangroves. The second cluster of laws that are discussed relate to the broad theme of conservation and include the Environmental Protection and Management Law, the Conservation Law and the Biodiversity Law, all of which together mandate conservation as well as rehabilitation. The third cluster of laws discussed are also thematic in nature and include the Spatial Planning Law and Law on the Management of Coastal Areas and Small Islands; both laws together set the basis for management planning and zoning and the latter law specifies a comprehensive conflict resolution mechanism.

Prior to 1938, when the mangrove silviculture regulation was issued, there was no single policy and institutional framework governing mangrove management (Isman et al., 2016). This regulation was however not implemented due to World War II and the ousting of the Dutch colonial administration from Indonesia. The central policy, regulation and institutional arrangements that shaped mangrove governance began with the New Order era (1966–1998), which promoted extensive forest exploitation to spur economic growth. Basic Forestry Law 5/1967 and subsequent regulations such as Government Regulation 21/1970 regarding Forest Concessions and Forest Regulation 33/1970 on Forest Planning had the greatest impacts on deforestation, including deforestation of mangrove forests.

Currently, two pieces of legislation are specifically targeted at mangrove management and conservation. These include Presidential Regulation 73/2012 concerning the national strategy of mangrove ecosystem management and the Minister of Environment Regulation Number 201/2004 regarding the criteria and standards for determining mangrove destruction.

The National Strategy for Mangrove Ecosystem Management (Presidential Regulation 73/2012) was established in order to enhance coordination, integration, synchronization, and synergy across relevant sectors, agencies, and institutions that have responsibility for mangrove management. Government and other actors realized that it was difficult to coordinate or to put concerted efforts into mangrove management across different sectors that were operating through their respective sectoral legal frameworks such as those governing forestry, water resource management, fisheries, regional autonomy, spatial planning, coastal area management, environment, and those ratifying international conventions such as biological diversity and climate change. In addition, the strategy is an important acknowledgement of the centrality of mangrove ecosystem management within integrated coastal management.

Substantively, the strategy requires that mangrove use is balanced together with conservation and rehabilitation and specifies that biodiversity conservation is an important role of mangroves. The strategy also underlines stakeholder coordination and collaboration, including the need for stakeholder support of mangrove management. It draws particular attention to community-based management and highlights the responsibility and authority of local governments in mangrove

management. Finally, it emphasizes the importance of research, science and technology for sustainable management. To ensure effective cross-sectoral coordination, the strategy establishes a national coordination team for mangrove management and a national working group to help the coordination team implement the national strategy. At local level, provincial and district governments formed their own strategy and working group. No monitoring and evaluation report has been published for the implementation of this strategy.

In terms of defining or constraining rights of local communities over mangrove forests, Presidential Decree 32/1990, Forest Law 41/1999 and subsequent regulations and local governance related regulations are critical. Once mangrove is located in the State forest zones, Forestry Law 41/1999 takes precedence. Forestry law divides the forest areas into three functions: production, protection, and conservation. Mangrove areas can be found in those three forest functions. The rights over the utilization of mangrove products differ, depending on the zone in which the mangrove forest is located. If the mangrove forest is located in production forest zone, timber logging is allowed. But in protection forests, logging is prohibited. Only non-wood forest products (NWFPs) and environmental services can be harvested from those zones. The most restricted utilization of mangrove occurs if they are located in conservation forest. In that area, only environmental services, research, and education can be conducted.

Presidential Decree No. 32, 1990 declared all mangrove forests protection forest zones, irrespective of whether the mangrove forest falls under areas classified as forest zone (i.e. on State forest land) or areas classified for other land uses (APL). The same presidential decree mandates the maintenance of a mangrove greenbelt in any coastal area of a width of 130 m multiplied by “the annual average of the difference between the highest and lowest tides” (Kusmana, 2014, p. 38). By placing mangroves under the State forest zone, the decree vests authority and control over them in the central government, although management responsibility of the mangroves rests with the District Forestry Agency. When mangroves fall under APL, authority over them is vested in local government. Timber harvesting is restricted in protection forest zones. In addition to the sectoral laws, thematic laws such as laws designed to clarify and partition authority across governance levels also have a bearing on the protection and management of mangroves. For example, Law 23/2014 on Regional Government specifies the authority of central, provincial, and district governments. Similarly, Village Law 6/2014 defines the authority of village governments. Both laws regulate the division of governmental authority, which also applies to mangrove forests. In terms of protection, conservation, and rehabilitation of mangrove, including the protection of biodiversity and a complaint-handling mechanism, the central government holds the authority in cross-province areas, the provincial governments for cross-district areas and the district governments apply their authority in their district jurisdiction. Additionally, the district government can conduct mangrove zoning as part of spatial planning processes as can provincial governments in cross-district areas and the central government in cross-province areas. Law 23/2014 states that the provincial government holds most authority over forestry, except for mangroves that are situated in a forest park (*taman hutan raya*). The latter forest is under the authority of district government. With Law 6/2014 (the Village Law), village governments have authority to set up village development plans and to develop economic activities in their territories. Villages with mangrove forest can use Law 6/2014 for these purposes. For the distribution of the benefits of mangrove use, villages can establish a special village economic organization called *badan usaha milik desa* or village-owned companies.

Other regulations also have implications for mangrove management, especially local community rights and protection, rehabilitation and use. They are briefly described here.

Environmental Protection and Management Law 32/2009 defines the processes and standards for community participation, environmental safeguards, and incentives for environmental conservation. Provisions of this law support community participation, customary rights, financing, and/or incentives for conservation and sustainable use/management, maintaining or increasing mangrove forest cover in the landscape, delivery of multiple benefits from mangroves (or other forests) in terms of ecological integrity, human well-being, and biodiversity conservation. Environmental Law 32/2009 provides for different forms of conflict and dispute settlement, including the use of out-of-court settlements. It also introduces financing mechanisms to incentivize sustainable management, none of which have been implemented due to the absence of operational regulations. However, this law provides a strong legal basis for the rehabilitation and/or restoration of mangroves, including the protection and preservation of biodiversity because it requires that agents polluting and causing environmental destruction must conduct rehabilitation and restoration.

Like the Environmental Law, Conservation Law (Law 5/1990) and Biodiversity Law (Law 5/1994) encourage biodiversity conservation in the coastal areas. Therefore, any mangrove forest inside the protection forest zone can be designated as a conservation forest area, thus severely limiting the rights of people over the resources. In addition, the Minister of Marine and Fisheries Regulation for Conservation (Regulation 17/2008) determines the types of conservation areas that can be delineated, the enactment of those areas, the division of governmental authority and procedures for managing those areas.

Spatial Planning Law 26/2007 and Law 27/2007 on Coastal Areas and Small Islands Management are important for mangrove governance as they set the basis for zonation, strategic and management planning and the coordination of different government agencies and across levels of governments. The spatial plan is the main reference for any land and resource utilization and all other sectoral plans must be integrated into it. The various plans under Law 27/2007 specify activities that can be conducted or prohibited, the procedures and responsibilities of the various institutions/agencies regarding resource use or development activities in specified zones and provide a comprehensive conflict resolution with in- and out-of-court settlements.

The regulations related to coastal areas and small islands management including Law 27/2007 (amended by Law 1/2014), the Presidential Regulation 121/2012 on Rehabilitation of Coastal Areas and Small Islands, Minister of Marine and Fisheries Regulation concerning Conservation (Regulation 17/2008), Minister Regulation concerning Controlling of Coastal Areas and Small Islands (Regulation 12/PERMEN-KP/2013), Minister Regulation on Planning (Regulation 34/PERMEN-KP/2014) and Minister Regulation on People's Participation and Empowerment (Regulation 40/PERMEN-KP/2014) are largely supportive of community participation and customary rights over coastal areas and small islands and define the authority and responsibility between central and local governments. All these regulations have a common objective to protect, conserve, rehabilitate, utilize, and enrich natural resources and their ecosystems in

coastal areas and on small islands. Hence they emphasize that “rehabilitation of mangrove in coastal areas and small islands must consider the balance of ecosystem and biodiversity.”<sup>4</sup> Enriching biodiversity, improving natural habitats and protecting species can achieve rehabilitation. Rehabilitation is carried out by central and local governments as well as those who get direct or indirect benefits from coastal areas and small islands.<sup>5</sup> Presidential Regulation 121/2012 on Rehabilitation of Coastal Areas and Small Islands states that the rehabilitation should be implemented in mangrove areas as well.<sup>6</sup> The regulation mandates the development of a rehabilitation plan that includes tenure rights, the harmony between the rehabilitation plan and zoning and spatial plans, biophysical and socioeconomic conditions.<sup>7</sup> The regulation mandates that central and local governments should conduct monitoring and evaluation of mangrove rehabilitation initiatives every 6 months.<sup>8</sup>

Community participation and empowerment is well regulated in Law 27/2007 on Coastal Areas and Small Islands Management. Chapter XI of the law consists of provisions regarding rights, obligations, and participation, including complaints, objections, and compensation.

Public participation in planning is detailed in Ministerial Regulation 34/2014. Public consultation is mandatory in all planning processes. To enhance knowledge and capacity as well as multiple benefits from mangrove management, Ministerial Regulation 40/2014 emphasizes six arenas of intervention: (i) capacity building; (ii) access to technology and information; (iii) capital; (iv) infrastructure; (v) markets; and (vi) access to other productive assets. The regulation allows various types of permits for the utilization of coastal areas and small islands. Legal entities, individuals, and local communities are eligible to be license holders. However, the law does not regulate the conditions of license application, duration, and procedure.

Table 4 illustrates which mangrove governance dimensions are provided for among the laws that have been described in the preceding discussion. It is evident that Coastal and Small Islands Law, Environmental Protection and Management Law and Regional Government Law cover the most ground in relation to governance. The Forest Law covers much fewer aspects but covers critical ones such as tenure and its security as well as legitimizing mangrove forests as a legitimate land use. However, the Forest Law’s coverage of tenure and land use is restrictive – it is protectionist, severely limits the range of rights of local communities and views protection as the only feasible mechanism for mangrove conservation. Because of a declaration that mangrove forests are *protection forest*, this is the law that holds greatest sway in mangrove management.

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<sup>4</sup> Law 27/2007, Art. 32.

<sup>5</sup> Law 27/2007, Art. 33.

<sup>6</sup> Presidential Regulation 121/2012, Art. 2 (3).

<sup>7</sup> Presidential Regulation 121/2012, Art. 9 (1).

<sup>8</sup> Presidential Regulation 121/2012, Art. 14.



Table 4. Matrix showing different pieces of legislation and governance variables.

	Gender equality	Community participation	Benefits distribution	Bundle of rights and duration	Tenure security	Coordination across levels of government	Conflict resolution	Community/customary systems	Financing and/or incentives	Knowledge and capacity	Cross-sectoral coordination	Mangrove forest cover	Biodiversity conservation	Multiple benefits from mangrove	Mangrove forests as legitimate land use	Monitoring and review
Forest Law				✓	✓										✓	
Environmental Protection and Management Law		✓				✓	✓	✓	✓		✓	✓	✓	✓		
Basic Agrarian Law	✓		✓	✓	✓	✓		✓				✓				
Coastal Areas and Small Islands Management		✓		✓	✓	✓	✓	✓		✓		✓	✓	✓		✓
Spatial Planning Law		✓				✓	✓				✓				✓	
Conservation Law and Biodiversity Law												✓	✓			
Fisheries Law										✓						
Regional and Village Government Laws		✓	✓	✓	✓	✓	✓				✓					
National Strategy on Mangrove Ecosystem Management						✓	✓			✓	✓					✓

Clearly, the range of laws that touch on mangroves are many and diverse, from sectoral laws (Forestry, Marine and Fisheries), to thematic/cross-cutting laws (Environmental Management, Regional Government) to a mangrove strategy. Apart from the decree, which declared mangroves protected forests and mandated the reservation of a mangrove greenbelt along the coast, there is no mangrove-specific law. However, as has been demonstrated here, there are bits and pieces of laws that support different aspects of governance that can be applicable in mangrove forest settings. For example, the Environmental Management Act requires that environmental destruction is compensated for by environmental rehabilitation or the Coastal Areas and Small Islands Act guarantees stronger tenure rights and participation for communities. While there is a logic to this level of fragmentation given the somewhat ambiguous location of mangroves, more efficient administration and effective mangrove governance could arguably result if there be a single, integrated piece of legislation for mangroves. In any case, the current operational situation is somewhat similar to the Forest Act (which narrowly promotes protectionist objectives), which supersedes all others in mangrove forest matters. The National Strategy on Mangrove Management, which was intended to serve a coordination function, has not yet materialized.

# 4. BACKGROUND INFORMATION ON LAMPUNG PROVINCE AND STUDY SITES

Located in the southeast of Sumatra Island, Lampung province was officially formed in 1964. It has an area of 3,301,545 ha. The forest area in Lampung province is 1,004,735 ha or 30.43% of the total area, out of which 462,030 ha is a conservation area (see Table 5). This data is inclusive of mangrove forests cover and does not specify the area attributed exclusively to mangroves.

Table 5. Forest area in Lampung province as defined by the function of the forests.

No	Forest area	Total (ha)
1.	Nature Reserve and Nature Preservation Forest	462,030
2.	Protection Forest	317,615
3.	Limited Production Forest	33,358
4.	Production Forest	191,732
5.	Total	1,004,735

Until the mid-twentieth century, the current Lampung territory was sparsely populated (Kusworo, 2014). Since then, the population grew substantially, from 104,200 in 1845 to about 8 million in 2015. Growth was primarily driven by the government’s transmigration program<sup>9</sup> that started in 1951. As a result, around 85% of the current population in Lampung province is comprised of immigrants from neighboring provinces. With the increased population, pressure for additional land led to rapid deforestation in Lampung.

From the 1970s, mangrove forests were logged for charcoal production and conversion to brackish ponds for fish farming (*tembak*), agriculture, and settlements (Ilman et al., 2016). During this period, Indonesia’s main export was shrimp and fish, which resulted in widespread exploitation of mangrove forests throughout Indonesia. The government welcomed external investors and encouraged private companies to exploit its vast array of natural resources to spur economic growth. By 1978, about 45,000 ha of mangrove territory was given to 13 companies for logging, mostly in Sumatra and Kalimantan (Ilman et al., 2016). Exploitation of mangrove for timber slowed from 2000 onwards as government took multiple measures to curb deforestation, encourage rehabilitation and introduce silvicultural guidelines. The main triggers

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<sup>9</sup> In Indonesia, the Dutch Government started the transmigration program in the early 19th century in order to supplement the labor in scarcely populated islands such as Sumatra, Kalimantan and Maluccas. The program was downsized between the 1990s and 2015. Peak transmigration was observed during the 1950s, 1970s and 1980s.

for the government initiatives were coastal erosion which negatively impacted local people's livelihoods and the deadly tsunami of 2004, which destroyed lives with greater negative impacts along deforested coastlines. In addition, fast-growing mangrove species were used to recover part of the previously cleared mangrove territory in the region. However, fishponds continued to expand in Sumatra (Ilman et al., 2016). In East Lampung district, about 62,500 ha of mangrove territory was granted to Dipasena (an Indonesian private company), for shrimp farming; it started its operation in 1988 by clearing the mangrove forest and continued to expand its territory under shrimp production up to 2000.

**Table 6. Summary of implementing agencies for mangrove resource management in Lampung province.**

	Fishery and Marine Agency	Fishery and Marine Agency	Mitra Bentala	Lampung Mangrove Center (LMC)	Watershed Management Agency	Way Kambas National Park
Level	National	Pesawaran district, East Lampung province	Lampung province	Lampung province	Lampung province	Lampung province
Type of agency	Government	Government	NGO	University of Lampung	Government	Government
Law and policies	Law No 27/2007 on Management of Coastal Areas and Small Islands President Decree on National Strategy for Mangrove Management	District Regulation on the Establishment, Organization and Working Procedures of Technical Implementing Unit of Pesawaran district	No 27/2007 on Management of Coastal Areas and Small Islands Indonesian Constitution 1945	East Lampung Regent Decree No. B. 303/22/SK/2005 on Determining a Location for Lampung Mangrove Center	Minister of Forestry Decree No. 26/Menhut-II/2010 on the Technical Guidelines for Rehabilitation Forest and Land	Law No. 5/1990 on Conservation of Natural Resources and Ecosystems Law No. 41/1999 on Forestry Minister of Forestry Decree No. 670/Kpt-II/1998 on the Organization of the Way Kambas National Park
Main objective	Improve local economy Mangrove protection Integrated rehabilitation program for tourism	Community empowerment Mangrove protection and controlling erosion	Community empowerment Mangrove protection and awareness	Education Environmental conservation Community empowerment	Improve rehabilitation program by providing data and site information Provide guidance and technical support Provide seedlings	Securing coastal and forest areas Establishment of conservation group The development of endangered species; elephant care, conflict mechanism between humans and wildlife Prevention, extinction, and treatment of post-fire forest; hot spot monitoring and forest fire prevention Development and utilization of nature

	Fishery and Marine Agency	Fishery and Marine Agency	Mitra Bentala	Lampung Mangrove Center (LMC)	Watershed Management Agency	Way Kambas National Park
					Facilitation	

A key outcome of government-issued logging concessions on mangrove forests was coastal erosion due to the powerful tides. This also negatively impacted agriculture and fisheries as many of the fishponds established along the coastline were also swept away because of the strong tides and winds. Therefore, in 1975, the Fishery Department instructed local governments to maintain a 400 m-wide greenbelt in coastal areas, which was also followed by a similar regulation from the Forestry Department in 1978 (Ilman et al., 2016). By the end of the 1980s, the government either revoked the earlier permits or stopped issuing new permits. Thus, even as mangroves were being cleared, the central government initiated measures to control mangrove deforestation such as declaring coastal mangrove forests as protection forest zones, mandating local governments to maintain greenbelts along the coastlines, funding mangrove planting activities and supporting local communities in mangrove forest management.

Currently, the following government and nongovernmental agencies are working on protection and rehabilitation of mangrove forests in Lampung province: Fishery and Marine Agency at the national and district levels, the NGO *Mitra Bentala*, Lampung Mangrove Center, Watershed Management Agency under the MOEF and Way Kambas National Park. Table 6 provides a summary of the implementing agencies including the governance level (district, province or national) in which they are positioned, the legal basis of their operation and their key objectives. With the exception of the national park, all the other agencies are working with local communities in mangrove management and community empowerment activities. Most of these organizations overlap in supporting local communities. For example, while the Watershed Management Agency provides mangrove seedlings to a community in State forest zone, NGOs offer social mobilization and institutional development support to the same community. However, there are no reported partnerships between the Watershed Management Agency and Fisheries and Marine Agency as they are operating in exclusive territorial jurisdictions in relation to mangrove forests. Nonetheless, the Fisheries and Marine Agency offers support to communities that are located outside of mangrove territories outside of ‘State forest zone’.. In very rare cases do they work in the same communities where the Forestry or Watershed Management Agencies have been supporting communities in State forest zones. In Purworejo village, for example, local communities have secured support of the Fisheries Agency and the Forestry Agency. Receiving sustained support for mangrove management by local communities from government agencies in a *de facto* community ownership area is a big challenge. In Pahawang village, for example, while *Mitra Bantala* is supporting them, their attempts at securing technical and funding support from the Forestry Agency has been unsuccessful mainly because their village falls outside the State forest zone. Local government is also unwilling to offer support as they consider the community mangrove area outside of their jurisdiction.

In Lampung province, mangrove forests are located both in the State forest zones, *de facto* communal land as well as in the territories that are formally categorized as areas for other land uses (APL). In the State forest zone, the Watershed Management Agency, the District Forestry Agency and NGOs are involved in mangrove management. Similarly, in *de facto* communal land area, NGOs, and village authorities are the main actors while communities also draw some

support from the external donors based on the personal connections of leaders. In APL territory in Margasari village, while local government owns the mangrove land territory, the main management responsibility has been given to Lampung Mangrove Center of the University of Lampung and other stakeholders such as the District Fishery Agency and Marine Agency, NGOs, and communities that are involved in mangrove management. Our study sites were selected to represent these categories (Table 7).

**Table 7. Population and mangrove forest area in study sites.**

Village	Sub-Villages	Total households	Population			Mangrove forest area (ha)
			Male	Female	Total	
Pahawang	6	452	827	849	1,676	142
Purworejo	8	984	1,898	2,140	4,038	300
Margasari	12	1,859	3,741	3,830	7,571	700

**Table 8. Key features of the study sites.**

Features	Pahawang village	Purworejo village	Margasari village
Establishment	1980	1956	1981
Location	Sub-district Marga Punduh, Pesawaran district	Sub-district Kotagajah, East Lampung district	Sub-district Labuhan Maringgai, East Lampung district
Village area	1,084 ha	525 ha	1,002 ha
Sub-village	6 hamlets	6 hamlets	12 hamlets
Ethnicity	West Java (Banten), Central and East Java Lampung, Bugis and Padang,	Lampung, Java, Bali, Palembang, Sunda and Tiong hoa.	Sumatra (Metro, Palembang), Serang, Cilacap, South Sulawesi and Java
Main livelihood	Agriculture, fishery, labor, trading, teachers, and government service holders.	Fishery, shrimp farming, agriculture, and labor.	Fishery and agriculture (paddy field).
Public facility	Elementary school (1985), secondary school (2000), high school (2012), village health center (1995).	Kindergarten school (1995/1996), village health center (2010), secondary health post (2001), mosque (2000s), village hall, village road (2013), highway of East Lampung district (1990s).	Alfa supermarket (2013), ice factory (1980s), bank BRI (2015), gas station (2015), fish auction (1980s), village health post (2010), village hall (1980s), mosque (1980s), Fisheries and Marine Office/General Works Office/Forestry Department Office (2015), LMC (2015) Trans Kuala/Translok (1988), village road (2009)

Features	Pahawang village	Purworejo village	Margasari village
Tenure category	de facto community controlled territory	Mangrove territory falls under State forest zone	Mangrove territory falls under APL
Total mangrove forest area	142 ha mangrove forest (area of island is 1,047 ha)	300 ha mangrove forest managed by the community	700 ha of mangrove territory
Mangrove development activities	Ecotourism development	Ecotourism development	NA
Population composition	Inhabited by predominantly customary community (over 90%)	Predominantly immigrants, non-customary people	Predominantly immigrants, non-customary people
Local leadership	NGO support local leader to lead mangrove development (Mr. Isnaen)	Self-initiatives of local leader in mangrove development (Mr. Samsudin)	Ex-village leaders taking initiatives in mangrove development (Mr. Sukimin)
External support	NGO's support for community institution building	Collaboration with a range of external actors, both governmental and nongovernmental	Translocated households from nearby national park
Legal basis	Village regulation and permit from bupati as legal basis for mangrove management	Conservation group has prepared rules of mangrove forest governance in line with the existing State forest regulation	The agreement between the community, UNILA, and local Government of East Lampung gives the overall coordination role of mangrove management to University of Lampung through Lampung Mangrove Center (LMC)

Out of the three villages selected for this study, Pahawang village is located in Pesawaran district and the remaining two villages are in East Lampung district. East Lampung district has an area of 2,730 ha of mangrove forest. Over 2,000 ha of mangrove forests is found within *kawasan hutan* including 1,000 ha in the Way Kambas National Park. About 1,000 ha are outside the national park. This includes 700 ha under the Mangrove Rehabilitation Center, which is managed by the University of Lampung in collaboration with the District Forestry Agency, local people, and NGOs (Margasari village). About 300 ha are managed by the District Forestry Agency by mobilizing local communities (Purworejo village).

Lampung province is largely inhabited by immigrants from other islands or from other parts of Sumatra Island. The population of the two study villages is comprised entirely of migrants; the third village comprises a majority of indigenes (Pahawang village). Purworejo was established in the 1950s while the other two were recognized as villages only in the 1980s. Similarly, Purworejo and Margasari villages were set up for aquaculture while Pahawang village has a

strong agricultural component. The main features of our selected sites, including mangrove tenure, coverage, and demographics are presented in Table 8 below.

While there are some initiatives of developing marketable non-timber products from mangrove (such as crackers, juice, and artifacts) in these villages, market outlets for mangrove products do not exist. The scale of production, limited capital to promote the products and high transaction costs add challenges to increasing income through mangrove in the villages.

In the next section, we will describe the actual practices of mangrove governance including the rights of local communities and tenure security on the ground.



# 5. MANGROVE GOVERNANCE IN PRACTICE IN LAMPUNG PROVINCE

Taking Pahawang, Purworejo, and Margasari villages as cases representing community-owned, Ministry of Environment and Forestry-owned, and local government-owned mangrove territories, respectively, this section examines the governance arrangements for mangrove management among communities. It explores the history of mangrove management and the emergence and functioning of local-level institutions and structures. It also highlights local tenure rights to mangrove resources and considers the gender dimensions of rights and participation in governance. It discusses local-level efforts at mangrove rehabilitation and their linkages to external actors and resources in order to identify some of the key factors that influence rehabilitation efforts.

## 5.1 History and Motivation

A major motivation for mangrove management and rehabilitation by the communities was the coastal erosion effects of mangrove loss and degradation. Mangrove loss was the result of timber extraction and logging in the 1970s, 1980s, and 1990s as well as fishpond construction (*tambak*) primarily by migrants from East Java. Charcoal production and the harvesting of mangrove bark for dye production were additional causes of deforestation and degradation. Negative impacts of coastal erosion included washing away of fishponds, houses, and agricultural land by seawater as well as disease outbreaks such as malaria and dengue. Mangrove loss also destroyed fish breeding grounds that necessitated fishers going further out to sea to fish. By the early 2000s, the erosion had substantially affected local economies and livelihoods. It sharpened the focus on the importance of mangrove forests and the urgent need for sustainable management and protection. In Purworejo Island for example, in the period 2002–2009, community incomes from fishponds declined by a drastic 40% compared to 1998, while in Margasari a total of 500 m of land area was lost to the ocean.

Village leaders spearheaded rehabilitation and conservation management activities. In Purworejo for example, from 2005, Mr. Syamsudin planted mangrove seeds within State forest in order to protect the village's land and assets. He began receiving State support for this initiative 2 years later. Similarly, Mr. Isnain of Pahawang Island began rehabilitation activities in 2000 with the support of *Mitra Bentala*, a local NGO that focuses on environmental management and community empowerment. In Margasari village, Mr. Sukumin initiated erosion control by planting *Avicennia* spp. and installing bamboo poles to break the force of the seawater. This created new land upon which natural regeneration of mangrove occurred. This initiative received further support from the University of Lampung (UNILA), which provided technical advice and diversified mangrove planting to include *Rhizophora* spp.

## 5.2 Tenure and Property Regimes

While village leaders and external support were the key factors in initiatives in mangrove rehabilitation, these villages fall under different land tenure status. Therefore, current mangrove tenure regimes in the study sites differ quite markedly and include *de facto* community control (previously customary territory on Pahawang Island), State forest zone/*kawasan hutan* (in Purworejo) and local government forest managed jointly with the University of Lampung in areas classified as “other land uses” (APL).

In the customary territory, indigenous people traditionally held *de facto* ownership of the entire island collectively. At the time, mangrove forests were treated as open access and were accorded low value since communities had access to terrestrial land for agriculture and only caught fish, crabs, and prawns opportunistically. Over time, the land was parceled out to individual households and most of the territory is now under individual parcels. Only a small portion of the total of 1,046 ha is community land and about 140 ha of that is mangrove forest. The community land that is held and managed collectively is located in the coastal area and has been assigned for mangrove forest development.

The mangrove forest which is in the State forest zone (*kawasan hutan*) legally falls under the jurisdiction of the Ministry of Environment and Forestry with the District Forestry Agency bearing responsibility for its management and conservation. The District Forestry Agency of East Lampung district officially declared the area as a protected zone in 1990 under Presidential Decree 23/1990. Ten years later, the government surveyed and demarcated the mangrove forest area and reached an agreement with community members. The agreement allowed them to use fishponds they had constructed in the forest before its designation as a protected zone. These fishponds had survived the excessive seashore erosion in the period 1995–2000. In return, community members were required to plant mangrove trees in and around the fishponds.

The mangrove forest area that is managed collaboratively by local government and UNILA is designated as *Kawasan Lindung* (Protected Zone) and faces severe restrictions in the use of mangrove forest. Therefore, apart from the public/State-owned land, land in the area is individually held and titled with no collective ownership.

Despite the differences in broad tenure categories (customary, State, local government), the bundle of rights available to communities are restricted since all three areas are protected – two by law and one through local community restrictions. Community members can collect aquatic fauna (e.g. fish, crabs, prawns, etc.) and other NTFPs (e.g. leaves, fruits, seeds etc.) from the mangrove area but cannot harvest mangrove trees. The perceptions of tenure security vary with the tenure regime. Communities perceive mangrove forests that are under State land as insecure due to a limited bundle of rights restricted mainly to access rights and the collection of fallen or dead products. Outsiders also frequently use the area for fishing and illegal timber extraction. Communities in the customary rights area perceived their rights as secure mostly because the rules defining their rights and authorities of different actors are clear. Community members agree with the rules, which are also enforced. Women here feel that village regulations are sufficiently strong to exclude outsiders. Local people are increasingly confident and feel relatively secure as they have cultivated good relationships and joint activities with external actors, which tends to lower threat levels.

Similarly, the community in the area jointly managed by UNILA and the local government indicated that they felt secure against external threats because of the active presence of the Lampung Mangrove Center and the District Forestry Agency. Across all three tenure regimes, external, private investments were identified as the biggest threat to local rights. Illegal timber harvesting and fishing by external fishermen is also perceived as a threat. Table 9 and 10 below summarize the key factors influencing perceptions of tenure security in Pahawang and Purworejo villages.

**Table 9. Rationale behind perception of tenure security in different territories in Pahawang village.**

Area	Tenure security status	Reason for tenure security/insecurity
Mangrove area (30 ha)	Secure	The area is under the management of BPDPM; zoning created opportunities for conservation and use; local people comply by the rules
Mangrove area (about 110 ha)	Secure – inside BPDPM but threats posed by external pressures	Utility zone under the management of BPDPM is secured; demand for more mangrove area by external investors is posing threats to local tenure security
Private land (about 700 ha)	Secure – titled settlements	Land for housing are certified, land for public facilities and social facilities are owned commonly
	Insecure – gardens and farmland	Farmlands mostly do not have ownership titles.

**Table 10. Rationale behind perception of tenure security in different categories of land in Purworejo village.**

Area	Tenure security status	Reason for tenure security/insecurity
Mangrove forest (State land)	Insecure	<ul style="list-style-type: none"> <li>• Limited bundle of rights (only access rights and the dead and fallen products)</li> <li>• Environmental security (protection from erosion)</li> <li>• External people frequently use the area for fishing and timber extraction</li> <li>• Agreement with local government with unlimited time frame</li> </ul>
Fishponds in individual land located outside Register No. 15	Secure	<ul style="list-style-type: none"> <li>• Titled land</li> <li>• Distance from fishponds to the sea is quite far, so less risk of erosion</li> <li>• No overlapping claim or risk of limiting rights by other parties</li> </ul>
Fishponds inside the individually parceled out land but located inside Register	Not Secure	<ul style="list-style-type: none"> <li>• Located inside Register No. 15, so legally is State-owned land</li> <li>• Do not have land certificate</li> </ul>

Area	Tenure security status	Reason for tenure security/insecurity
No. 15		
Wet rice field (individual land)	Secure	<ul style="list-style-type: none"> <li>• Have land certificate</li> </ul>
Settlement (individual land)	Secure	<ul style="list-style-type: none"> <li>• Ownership certificate</li> <li>• Recognized by the village leader who issued the village land certificate</li> </ul>
Settlement (individual land)	Not secure because of infrastructure development	<ul style="list-style-type: none"> <li>• Located on the west side of trans road</li> <li>• The settlement may be affected by the new road construction</li> <li>• Potential for landslide</li> </ul>

### 5.3 Institutions for the Governance of Mangrove Forests

Local-level institutions that govern mangrove management bear strong resemblance to each other with respect to when they were established, the organizational structures designed to guide and enforce management activities and the mechanisms for legitimating them within the broader context of mangrove management in the country.

The institutions were formed about 2005 through joint efforts of community leaders and external actors. In the customary territory a local NGO supported the community to develop a mangrove-focused organization called *Badan Pengelola Daerah Perlindungan Mangrove* (community institution for mangrove protection and management or BPDPM). BPDPM is headed by a chairman and consists of four divisions (Figure 3).

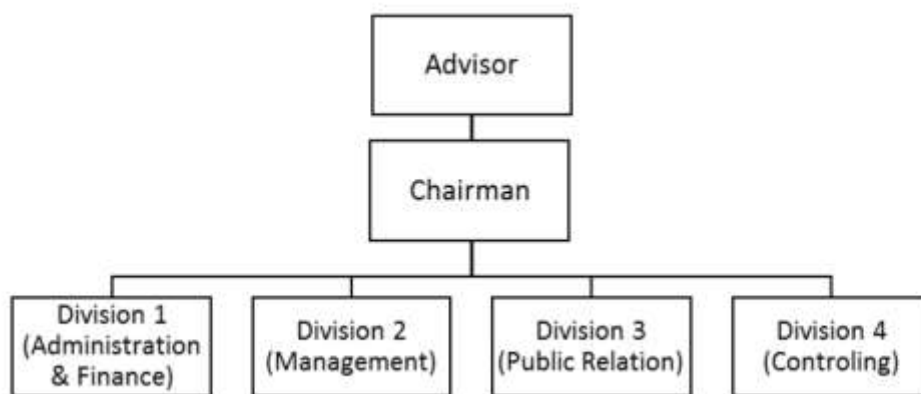


Figure 3. Organizational structure of BPDPM in Pahawang village.

The village head and village council nominate the committee. BPDPM conduct their activities based on an annual and a five-year program. Through the establishment of a joint task force comprising community leaders, youth leaders and six hamlet heads, BPDPM led the

development of village-level regulations (i.e. *perda* short form of: *peraturan daerah* or local government regulation) for mangrove protection, rehabilitation and utilization, including rules for the harvesting of timber and other mangrove products such as fish, shrimp and sea worms.

Similar initiatives were instituted in areas under State forest zones and in local government mangrove areas managed by Lampung Mangrove Center, although the pathways used to arrive at community organization were slightly different. In the State forest zones, the District Forestry Agency organized a workshop with village leaders in order to create a critical mass of individuals who would champion mangrove protection and rehabilitation. An outcome of the workshop was the establishment of groups in at least five villages. Each group includes a group leader, a secretary, a treasurer and 11 members. The number of groups has expanded and one particular village, Purworejo, which began with one group in 2007, now has three groups (two groups were added in 2011) with 15 members in each group. In the local government mangrove forest, there is currently a formal, registered institution for mangrove management – the Lampung Mangrove Center (LMC) – which was established through a Decree of East Lampung Regency in December 2005. However, prior to the establishment of the LMC, village leaders had established four groups between 1993 and 2005 as a precondition for government support and funding for mangrove rehabilitation activities. Upon the enactment of the LMC, which has formal authority to manage local government mangroves jointly with communities and other relevant actors, pre-existing community mangrove groups entered into formal agreements with UNILA for mangrove management. This agreement is reviewed every 5 years. All the institutions/organizations are located at the village level and are autonomous, functioning independently of the village government structure.

Regulations for managing mangroves specify who has monitoring and sanctioning authority (such as BPDPM), who can harvest what products in what way (e.g., selective harvesting of branches, collection of fallen branches) and the equality of every village member in gaining benefits from mangroves. In addition, the regulations specify obligations including planting mangroves around shrimp farms and prohibitions such as felling mangrove trees, clear-cutting mangroves for pond establishment or using poison for shrimp fishing. Table 11 provides an illustration of the local rules of Pahawang Island in the community-managed territory. Generally, outsiders are not allowed to extract resources without permission from group leaders and unsanctioned extraction involves levying stiff penalties. Timber extraction is generally prohibited. Some groups require that anyone who cuts must plant at least 150 mangrove seedlings that are usually supplied by the group. Repeat offenders are usually sent to the District Forestry Office for further legal action.

Table 11. Local rules and practices in Pahawang village.

Aspects of mangrove governance	Is there any provision?	If yes, what exactly is mentioned	Practice (if different from the rules)

Aspects of mangrove governance	Is there any provision?	If yes, what exactly is mentioned	Practice (if different from the rules)
Bundle of rights and duration (access, use, manage, alienate, compensate)	Yes	Village officials and BPDPM are authorized to take an appropriate measures to revert illegal activities within mangrove forests Rules of use and restrictions are included; access of people to core zone is prohibited, NTFPs collection is allowed in the buffer zone and all forest products from utilization zones are permitted for its members only	Utilization is only permitted for Pahawang village people. The area of mangrove protection zone in Pahawang is a public good. So they can't sell the land.
Tenure security (authority, protection of rights, assurance of rights)	Yes	The BPDPM is an autonomous institution and is empowered to make and revise rules.	The organization of BPDPM is recognized by sub-district and district officials.
Gender equality/equity	No		Both men and women are involved in the protection activities. Women's participation is largely confined to mangrove forest products processing and men are mainly involved in the decision-making process. Women also participate in training in mangrove product processing at the provincial level.
Community level governance: Representation and participation	No		The committee is comprised of Pahawang village member. All of the members are encouraged to participate in every program, but the level of participation depends on their interest.
Delivery of multiple benefits from mangroves	Yes	Major benefits recognized by local communities include mangrove products mainly from selective harvesting of branches, limited harvesting of timber, ecotourism and research	People know the territory and rules and they abide by the rules
Benefits distribution	Yes	Every village member has an equal right to access, use or harvest products from mangrove areas	As mentioned in the rules and community decisions

Aspects of mangrove governance	Is there any provision?	If yes, what exactly is mentioned	Practice (if different from the rules)
Incentives for conservation and management	No	Rules do not specify the incentives of mangrove management but obliges groups to maintain a greenbelt	As a group they got financial support from Mangrove Center in Medan (BPHM) for rehabilitation program by providing mangrove seedlings
Community/ customary systems and authorities	No		Recently, they are not tightly bound in the customary system, as they are now mixed with migrants and Lampung people.
Coordination and collaboration with other agencies	Yes	Leaders are aware that BPDPM is an autonomous institution and therefore can establish a relationship with external agencies and seek funding. Monitoring of mangrove area in Pulau Pahawang can be done by an NGO, village authority or research organization.	In addition to Mitra Bentala, they have also networked with agencies such as: BPHM Medan UNILA scientist LMC
Rehabilitation and restoration of mangrove	Yes	People who have carried out shrimp pond or fish cultivation should rehabilitate/replanting mangrove areas on their land	
Biodiversity conservation and ecological integrity	Yes	Protection of mangrove forests is aimed as a joint effort for saving small island ecosystems that are highly vulnerable Protecting the diversity of the coastal village of Pahawang Island In this mangrove forest area, activities that disrupt and damage the function of mangrove forests are not permitted; disruption and destroying of mangrove is defined as felling of the mangrove trees, harvesting worms by cutting mangrove trees, catching small shrimp using poison around mangrove and clear cutting mangrove areas for use as a fishpond.	
Conflict resolution	No		When there is conflict, BPDPM decides after consultation with conflicting parties

Aspects of mangrove governance	Is there any provision?	If yes, what exactly is mentioned	Practice (if different from the rules)
Monitoring and review	Yes	The village head and BPDPM are authorized to conduct monitoring The village head, village officials and BPDPM must raise awareness of protection of mangrove forests, especially for people who conduct their activities around mangrove and coastal areas	

Timber extraction is however allowed by the BPDPM, which manages the community territory. Here, the mangrove forest has been divided into three zones (core, buffer and utilization). The use of mangrove forest or aquatic resources is prohibited in core and buffer zones. Collecting mangrove products for fuelwood, timber for house construction (Layos tree, *Rhizophora mucronata*) and establishing fishponds in the utilization zone require permission from the BPDPM authority. Timber extraction is permitted in the utilization zone with the caveat that a person who extracts mangrove trees is required to plant at least an equal number of trees that he/she cuts. The seedlings will be provided by BPDPM. If someone extracts trees for the first time without permission, he/she will be asked to plant 50 mangrove seedlings in a designated area. If the same person extracts mangrove again without permission, he/she faces a fine of IDR 50,000,000. Third time offenders are reported to a higher-level authority (e.g., the police) for further action.

Village-level regulations for mangroves (and the village organizations that implement them) enjoy strong recognition from village authorities, district-level authorities, and even central government. Village regulations have been formally approved and endorsed by village leaders as well as by district-level authorities (*bupati*). In the customary territory, BPDPM has even obtained a local government decree. Community institutions in the State zone forest aligned their local mangrove rules with national policies and regulations. Generally, the level of rule compliance is high; mangrove-related conflicts are few and enforcement is effective. Both enforcement and conflict resolution are enhanced by the multi-level nature of the actors that cooperate with the mangrove management institutions. For example, in the local government forest which is managed by the LMC, monitoring and rule enforcement is conducted by a network of forest safety guards (*pamswakarsa*) comprising community group leaders and forest rangers established through the district government. In the State forest zones, a similar structure exists, which is further developed to handle conflicts with outsiders; these are the *pamswakarsa*<sup>10</sup> (*voluntary security team*) and *tim terpadu* (integrated team). *Pamswakarsa* is comprised of the leaders of the conservation groups and forest guards. The integrated team consists of village authorities, police representative at the sub-district level and the military commander of the

<sup>10</sup> These are ‘forest guards’ appointed by the district forestry agency for mangrove conservation; they patrol the designated territories and work as the links between the villages and the District Forestry Agency.



territory at sub-district level. Conflicts are primarily solved by the *pamswakarsa*; if they are unable to solve a conflict, then the integrated team is approached. The District Forestry Agency intervenes if both the *pamswakarsa* and *tim terpadu* fail to resolve a conflict. At the village level, *pamwakarsa* is responsible for monitoring rule compliance and for conducting regular patrols.

The institutions and organizations for mangrove management described here are reasonably well designed and appear fit-for-purpose. They all share strong similarities with each other with regard to their emergence, development, and structures adopted for resource management. All of them demonstrate the importance of focused leadership. All are linked to external actors who appear to endorse them and to offer them complementary services and support that are critical to the functioning of the institutions. Moreover, the organizations here have reached out and supported the development of similar mangrove management institutions and groups in other villages, thus scaling out mangrove protection and management and achieving some coordination with neighboring villages.

However, several weak points are evident. First, none of the organizations have changed their leadership since they were constituted (i.e. in at least 10 years). Moreover, the process through which leadership positions are acquired and maintained are generally unclear, although in the case of BPDPM, the committee is nominated by the village head and the village council, which contradicts the notion that BPDPM is independent of the village government structure. Second, none of the organizations have women in their leadership and all the village level mangrove regulations are gender blind. These are serious flaws, which can potentially undermine the groups' functioning in the future. Several mechanisms may be at work to produce and perpetuate gender blindness. Cultural tradition and custom, where women are expected to automatically follow and support men's decisions or to limit their activities in the public sphere coupled with the traditional view of forestry as a male enterprise are some of the reasons why village-level regulations are gender blind. The main result of gender blindness is that it conceals inequality i.e. the complete absence of women in decision-making positions. The longer term danger is that women's interest in and incentives for adopting sustainable mangrove management practices will be stifled.

#### 5.4 Gender and Mangrove Governance

The rules for mangrove conservation management and protection are applied uniformly across all community members, men, women, and youth although local social norms usually determine the distribution of rights, responsibilities, interactions, and knowledge in mangrove governance. The leadership of mangrove institutions claims to involve all community members (i.e., men, women, old, and young, migrants) but the participation of men and women in mangrove-related management and decision-making activities differ. Only the men (older and young) participate in planting activities. Women participate in seedling preparation and polybag filling and seldom attend planting or other training activities (such as developing food crackers, juice or souvenirs mainly from mangrove leaves and fruits) and are not given the responsibility of patrolling. They are not represented on committees and executive bodies and are not invited to mangrove management meetings that decide on issues such as seedling production, where to plant and when/how to monitor. They are thus solely dependent on their male family members to access any information related to decisions or plans. Men consider this exclusion of women as normal and rationalize it thus:

It is difficult to ask women to attend meetings because women are busy taking care of their houses.

(Participant in the focus group discussions, older men category, Pahawang village)

Women agreed they would definitely attend meetings if they were invited. They claimed to know their rights and responsibilities in village mangrove forests largely through their interactions with their male family members. They lack knowledge of higher level rules and regulations issued by the *bupati* (regent), the governor or at the national level. Young women had the least amount of knowledge of local rules and were mainly invited to participate in seedling planting activities. They reported that the rules of mangrove harvesting were stricter following the creation of the mangrove management institutions.



The limited involvement of women in management and decision-making is thought to be related to their household role, which is primarily as the family caregiver within the household, while men deal with external affairs. Older women thought that women were not sufficiently empowered to secure public decision-making spaces and therefore needed external support to strengthen their capacity and confidence. Some women reported that they were not interested in participating in mangrove management because they were busy, sometimes going out to sea to fish with their husbands. Others preferred to conduct their activities from home, e.g. preparing commercial products from mangroves or salting fish and peeling crabs for sale.

In Margasari village, three women's groups (30 people, 10 people in each group) have been established, which are involved in running environmental education programs for children. These women also attend training programs run by UNILA on processing forest products. Efforts at building women's capacity to diversify their use of mangrove products have also been run by the Medan Mangrove Center in Bandar Lampung. Through these programs, women are now able to process mangrove products such as syrup, crackers, and sticky food from leaves and fruits,

mostly for subsistence since they have little information about markets for those products and because the products cannot be stored for long as they don't use preservatives, which further limits production for markets. UNILA has set up these groups to empower women through organizations, giving training and providing support for income-generating activities. Women are also active in managing a library that was established with the help of UNILA.

Young women are taking part in tourism-related activities and unlike the older men, view private investment in tourism as a valuable opportunity. They believe that if external investors are permitted to come to the area, the land value will appreciate significantly. Young men seem to have more knowledge and experience in mangrove management than young women do. They are actively involved in community groups promoting ecotourism activities including coral reef restoration. Young men worry that if property related decisions continue to be made by individual landowners, the pressure to change land use will be much higher than the motivation to maintain the mangrove forest ecosystem. Young men indicated that:

Pahawang community as a group cannot prevent land selling in the village, as they relate to the interests of the landowner of the land itself. When a landowner sells it to the outside investor, then the mangrove would be threatened because external investors may not recognize the environmental values of mangrove forests to local communities. We hope all of the stakeholders will take care of mangrove protection efforts.

Overall, gender differentiation is clearly evident in mangrove management, but the rules crafted for mangrove management are gender blind. As women do not have a seat at the decision-making table, they have to depend on their male relatives to articulate their differentiated needs for them. Thus, while their practical needs that are linked to their gender roles might be met, their strategic needs and aspirations are probably stymied. External support seems largely to be focusing on developing skills for income generation.

## 5.5 Coordination and Collaboration in Mangrove Management

Because the legal and institutional framework as well as the authority for mangrove management is fragmented among a range of actors, there is need to understand how local, village-level institutions navigate this complex landscape of actors, rules, and authorities.

The establishment of formal and functional organizations and structures that are focused on mangrove conservation management, protection, and rehabilitation provides a good basis for collaboration i.e. a recognized structure and a reference point. In addition, communities have over the years sustained contact with the actors that contributed and helped to establish their mangrove institutions, i.e. *Mitra Bentala* (customary territory of Pahawang), District Forestry Agency (State forest in Purworejo) and Lampung Mangrove Center (local government forest in Margasari village). These actors have served as an important bridge between communities and other actors who have supported the achievement of community goals such as rehabilitation initiatives, capacity building, budgets, recognition, endorsement by village and district authorities and so on. Some of these actors include various national agencies (such as Mangrove Center, Medan, Forest and Land Provincial Departments, District Forestry Agency, various State-owned agencies and NGOs (e.g. Watala, *Mitra Bentala*). Private companies do not work directly with communities but instead fund NGOs who work with communities.

Local community institutions reach out to and coordinate with a broad range of actors at multiple levels many times through their intermediaries of choice. There does not appear to be a systematic mechanism for coordination between communities and other mangrove stakeholders on a regular basis or a formal network that would allow and support interaction in a more focused and deliberate way. This is critical for sustaining and scaling-up current initiatives and ensuring that communities have the requisite technical, institutional and budgetary support for their mangrove conservation management and rehabilitation efforts.

## 5.6 Community Efforts at Mangrove Rehabilitation

Mangrove rehabilitation initiatives in Lampung district have a modest history, with the earliest established about 20 years ago in 1995 and the others in the 2000s i.e. five and 10 years later. However, the effectiveness of these efforts is variable, with the ones that are directly connected to government (local or central) through land ownership and funding arrangements being more effective i.e. ability to: plant more and more consistently, rehabilitate larger areas, offer payment for labor invested and have a broader range of activities in their rehabilitation programs. In all cases, the rehabilitation programs are managed by the village-level organizations that were established for mangrove conservation management and protection (as discussed in earlier sections).



Three different approaches to rehabilitation programs are evident. The first one is reliant on school programs and opportunistic integration of planting into ecotourism programs; the second is a hybrid program that relies on mandatory planting by primary beneficiaries of mangroves (fishers) as well as payment/compensation for the labor of those in planting; while the third is an integrated model which is voluntary, depends on paid labor, includes awareness campaigns and training in the ecology and economics of mangroves. The last two models have achieved more in terms of rehabilitation but they require more capital input.

In Pahawang Island, which is receiving NGO support, the community institutions were heavily reliant on school programs and programs that engaged youth, such as ecotourism guides who integrated mangrove planting into visitors' programs. Targeted awareness-raising programs were conducted among primary and elementary schoolchildren. The main species planted by these groups were *pidada* (*Sonneratio caseolaris*).

In the second model, which was practiced in State-owned forests, a mandatory planting program was the main feature. Each time a person goes fishing they are required to plant five trees, which are totaled up over a month. This mandatory planting applies to all the people from the village, irrespective of their fishing location, i.e. they will still be given an area to plant even if they go fishing in the deep seas. In the areas where local communities have already built shrimp ponds inside the "State forest zone", their expansion is prohibited. Rehabilitation is also conducted at the shrimp ponds located inside the State forest zone, which is mandatory. These programs here pay for labor in addition to sharing knowledge about mangrove forest management. The main species planted here are: *Rhizophora apiculata* and *Sonneratia* spp., but women reported that it was difficult to plant the seedlings as changing tidal levels damaged or killed the seedlings. They found it much easier to plant on newly reclaimed land.

The program on local government land, which is run by LMC, has a central planting component that pays for labor. It includes a strong education component, which trains communities in the ecology and economics of mangroves, including ecotourism development. Alongside this are community and school awareness programs as well as infrastructure development e.g. the construction of bridges, shelters, and watchtowers. Although the community in the State mangrove forest does not have a strong mangrove education program, they have established a mangrove arboretum, which is part of the awareness program, have constructed a monitoring tower and infrastructure aimed at breaking the waves such as wave breaks, embankments, dikes/levees etc. and is the only community we visited that had a tree nursery of its own.

Support for these community rehabilitation efforts are skewed towards the program that is being conducted in and around State forests, which explains the diversity of its rehabilitation interventions, including various forms of infrastructure aimed at controlling wave speed and force. This program receives support (e.g. seedlings) from various government agencies such as the Medan Mangrove Center, BAPPEDA, Forest and Land Rehabilitation Department at provincial level, the Indonesian Army, and several State-owned enterprises. It has been able to reclaim up to 350 ha of new land from the sea on which the group started planting in 2011; so far they have planted 328 ha, with a seedling survival rate of 90%. The group in the customary territory has only received sporadic and insufficient support from the District Forestry Agency, the Medan Mangrove Center, the Fisheries and Marine Center and *Mitra Bentala*. This lower level of support is undermining local enthusiasm for mangrove rehabilitation efforts and BPDMP is thought to be less effective today. One of the key informants from Pahawang village stated:

So far we are not satisfied with the recent status of BPDPM, because BPDPM is currently not strong anymore. We need to examine both the actors and institution of BPDPM in order to revitalize mangrove rehabilitation initiatives.

The LMC planted 325 ha of *Avicennia* spp., *Rhizophora* spp. and *Nypa fruticans* between 1995 and 2007. The survival rate was about 60%, even with enrichment planting, due to high tides and

shellfish that suppressed root growth. Mangrove planting programs succeeded when seeds were planted in the newly reclaimed land (*tanah timbul*).

Overall, mangrove rehabilitation programs in Lampung district have received acclaim from researchers and other actors from provincial and national level for their work. In 2010, for example, community groups in Pahawang Island (customary territory) received a prestigious environmental award called *Kalpataru* established by the then Ministry of Environment for their self-organization and efforts in protecting the mangrove forest on Pahawang Island. Similar recognition has been won by LMC groups in Margasari – both at national and district level.

# 6. OPPORTUNITIES AND CHALLENGES FOR THE GOVERNANCE OF COASTAL MANGROVE FORESTS

This section reexamines some key thematic issues (such as tenure and rights, coordination, gender and benefits distribution) and highlights lessons that can be drawn for the governance of coastal mangroves. In particular, this section analyzes whether and to what extent national regulations and programs are permeated through a range of layers of actors and institutions before reaching the communities. As we have seen in Section 5 above, the rules of mangrove governance are being negotiated at the village level with or without the awareness of the regulatory frameworks emanated at higher levels. In this section, therefore, it is imperative to critically analyze national and subnational level policies, regulations, institutional arrangements, and activities and understand why certain aspects of mangrove management get more attention than others and the effects on the mangrove resource and the community's well-being.

## 6.1 Rights Distribution and Tenure Security

Since all coastal mangroves are legally classified as protection zones, severe restrictions on rights apply. In addition, when the mangrove forests fall under "State forest zone", Forest Law 41/1999 takes precedence. When mangroves fall under APL, Regional Autonomy Law 23/2014 is relevant and local governments have authority to make land-use decisions. However, the Presidential Decree of 1990 keeps the coastal mangrove areas as protected zones, restricting land conversion and requiring the maintenance of a greenbelt along the seashore. Thus despite some specific laws providing avenues for expanding the rights of local communities and the range of uses of coastal mangroves, the operational laws are overwhelmingly protectionist, restricting local communities' rights and concentrating ownership and authority in government agencies.

Although mangroves are under the authority of government agencies and are classified as protected zones, with restrictions against consumptive use, communities have been able to negotiate management and exclusion rights (in addition to use rights) for them. They also have management responsibilities such as monitoring and sanctioning and rehabilitation of degraded mangroves etc. Communities have drafted regulations for mangrove conservation and management, which have been incorporated into overall village regulations and recognized and accepted by higher level authorities in which the communities are embedded, such as village leadership, district authorities, and provincial-level authorities. Certificates of endorsement have also been provided and in one instance mangrove village regulations have been aligned with national and subnational legislation. Monitoring and enforcement of village rules is conducted jointly with external agencies such as the District Forestry Agency, which also contributes to a system of forest guards. The lack of a mangrove specific law or policy at national level is aptly substituted for by mangrove-specific regulations at village level. Thus, despite the protectionist

character of the decree, space has been made for the forging of a management regime that gives communities a considerable degree of management authority.

Communities feel that their rights to mangrove forests are secure for several reasons: (i) village regulations are recognized and supported at higher levels, which suggests that any challenge to their rights will be countered by the higher level authorities that back up these regulations; (ii) monitoring and enforcement are conducted and there are clear and visible structures (such as watchtowers) as well as individuals (guards, committees) tasked with monitoring and ensuring that violators are disciplined. Sanctions are well known and are graduated and the severity increases with the magnitude and/or frequency of the violation; and; (iii) village regulations were defined jointly, rather than imposed from outside and are well known to community members. In addition, the initiatives in each of the three villages were taken by local leaders, who, over time cultivated and expanded their relationship with external actors, including the District Forestry Agency, NGOs, local government (village, sub-district and district level), BPDAS, Department of Fisheries, Tourism Agency, Mangrove Center in Medan (under MOEF), researchers and international organizations (e.g. JICA, Yokohama University and Kyoei University). Because of these relationships, leaders do not feel anxious despite concerns raised about the shifting authority over mangroves from the Ministry of Environment and Forestry and the Marine and Fisheries Departments (see Box 1). It is because of this strong leadership and their ability to foster strong, external linkages that they feel secure although they do not hold the full bundle of rights to mangrove forests; indeed the continuation of their program is at the discretion of the District Forestry Agency.

The communities claimed that equal rights (between men and women, young and old, local population and migrants etc.) persist as supported by the regulation. However, it is evident that these village regulations are silent in terms of acknowledging gender, and broader social differentiation. Without such acknowledgement and active inclusion, it is unclear as to how groups that have been systematically excluded can then participate in overall mangrove governance.

When tenure rights security under the different tenure regimes is compared (i.e., community-controlled vs State forest area vs local government), community-controlled areas are perceived to be most secure. Here, communities have full control over mangrove territory; they have also designated zones including a utilization area where they can harvest timber and they can collaborate with any external agency without approval from government agencies. They have their own regulations for mangrove use and management, which is endorsed by the village and district governments, making them legally strong in excluding outsiders. Communities managing mangroves under State forest are the least secure because their area is under the authority of the District Forestry Agency. Here, local people have very limited rights over forest resources and can only collect fallen and dead products. In addition, the agreement between the District Forestry Agency and community groups doesn't specify the duration of rights.

The basis for community rights rests on recognition of village regulations by higher-level authorities rather than on direct signing of an agreement with the management authority (i.e., the District Forestry Agency). Thus the bundle of rights for communities as well as tenure security is



technically much lower compared to community forestry models practiced in terrestrial forests, where communities have had much stronger rights for a longer period (about 35 years).

**Box 1**

On changing authority from district forestry agency to department of fisheries:

*We don't care who is the prime authority because we have been working with both the agencies and have already established very good relationship with them.*

Mr Samsudin, Head of the Motiara Hijau 1 group and Coordinator of the four groups within Purworejo village in East Lampung district

## 6.2 Benefits Capture and Distribution

Communities appear to value environmental services or non-consumptive use (e.g. ecotourism) more than the direct economic returns from the mangrove products (e.g. mangrove forest products and aquatic resources). Mangroves provide a protective cover, which reduces the pace and extent of coastal erosion protecting farmlands and fishponds, thus helping to assure critical livelihoods activities. Protecting against the negative impacts of coastal erosion is a major motive for community involvement in mangrove protection and rehabilitation activities. While leaders have been active in initiating and sustaining mangrove conservation activities in their respective locations, they see the challenges in retaining the support of community members if there is no external support available to complement internal, voluntary efforts.

Since the economic returns from the mangrove forests are marginal largely because of the restrictions to timber harvesting, communities expect support from external agencies in producing seedlings, paying labor costs for planting and providing funds for protection and development activities in order to incentivize local people's continuous participation in mangrove management and rehabilitation. Areas that fall under the category of "State forest" appear to have regular access to government resources for mangrove conservation and management. Communities in other categories of forests i.e., customary forests, have much less access to external agencies, mostly on an *ad-hoc* basis.

The limited benefits to local communities from mangrove resources are also linked with limited market access. Women groups in all the three villages shared the concern of not having a market outlet for their products, they have limited resources and capacity to influence market and the scale of the products is too small to cover the transaction costs.

In the absence of limited rights for extraction of resources from the mangrove ecosystem, communities have turned to ecotourism which has had very limited returns to date. Overall, communities are shouldering the burdens and responsibilities of protecting, conserving and

rehabilitating mangroves that are clearly owned by different categories of government –local and national – and their management agencies. It is unclear how much longer community institutions and initiatives will last without clear, substantive returns.

### 6.3 Cross-Sectoral Coordination

A major explanation for the effectiveness of community institutions is their strong and clear coordination with district-level agencies such as forest agencies, NGOs and BPDAS. The endorsement and acknowledgement of village-level mangrove regulations by village leadership, district-level leadership (*bupati*) and district-level forest agencies is one example of effective coordination. In one community, village regulations were aligned with subnational and national legislation. Such endorsements and alignment help to ensure that village regulations are consistent and not in conflict with broader regulations that also apply. Moreover, they allow for even further coordination in practice, for example the system of forest guards which mobilizes both communities and forestry agencies. The forest guards work jointly with local communities to monitor, apprehend violators and protect mangroves. The village leaders and the forest guards also coordinate conflict resolution efforts – while sanctions for violations are issued from the village level, repeated violations are reported to and handled by public law enforcement mechanism e.g. the joint team (*purworejo*) or the police (*margasari* and *pahawang*).

There is a modest level of coordination among district-level actors. As mentioned elsewhere, this is evident in how village regulations are recognized at district level by the district and provincial heads. Some private companies appear to channel support for community mangrove rehabilitation through local NGOs who are in direct contact with communities. However, private companies involved in shrimp farming and other forms of aquaculture development (who would have a strong incentive to support mangrove as they protect the development/investments from destruction by strong waves) were not interviewed in this study, which remains a major gap.

There is no single authority and policy on mangrove forest management. Since the 1980s, there has always been multiple government authorities in mangrove governance (Kusmana, 2014). However, the sectoral ministries have their own upward accountable structures and budget disbursement mechanism, creating no incentive for cross-sectoral coordination. Recognizing the role of different government agencies and non-State actors, the recent National Strategy for Mangrove Ecosystem Management (Pres. Regulation 73/2012) sets up a national multi-sectoral coordination team with a separate steering committee and implementing team. The steering committee is coordinated by the Minister for Economic Affairs and the Minister of Environment and Forestry, Minister of Home Affairs, Minister of Finance, Minister of Public Works and Minister of National Development Planning/ Head of National Development Planning Agency; the implementing team is led by MOEF together with another 19 members from MMAF and other ministries. A similar cross-sectoral body has been envisioned for provincial and district level in order to coordinate and streamline mangrove management activities. In practice, however, these bodies either do not exist or are nonfunctional (see Box 2 below). Nonetheless, promotion of such bodies with the required budget, authorities, and linking mechanisms across sectors and levels of government could resolve the existing lacunas of coordination and joint initiatives that are critical in effective mangrove management.

## 6.4 Change in Mangrove Forest Cover and Biodiversity

Positive outcomes in terms of improved status of mangrove forests were reported in all the three villages, both in terms of increased area and improved forest cover including spatial area over which successful rehabilitation efforts have been completed. A number of factors contributed to these improvements: solid motivation, secure rights, participation and institutions for collective action, strong and committed leadership, knowledge, and technology, availability of resources, external support, and coordination across sectors.



Due to strong leadership and regular technical and funding support from the District Forestry Agency, communities have reclaimed land (*tanah timbul*) and planted mangroves. In the absence of full rights, communities can successfully protect and rehabilitate mangroves motivated by the need to prevent harm to themselves, their property and their agricultural land. Community rehabilitation efforts in Lampung had their origins in efforts by individual community leaders who were determined to avert the negative effects of coastal erosion on community lives and livelihoods.

Rule compliance in terms of abiding by the harvesting restrictions and contributing time and effort to mangrove protection and management activities was generally high in each village. This compliance is largely attributed to dynamic and charismatic local leaders, joint determination of rules, agreement with and knowledge of the rules and effective enforcement of the rules. The role of local leaders is a key factor in the success of rehabilitation efforts. However, strong leadership may come at the expense of deepening and broadening participation. Groups did not change leadership over long periods of time, which may indicate the benefits of continuity or even elite capture.

Collaboration and especially the role of external actors in lowering the transactions costs of organizing by providing capacity building/training, planting materials are additional factors that seem to affect the performance of mangrove governance in terms of the actual forest condition. At village level, rules are very targeted and specific to the mangrove resource, but their application is sufficiently coordinated with higher level actors.

Rewards and recognition for effort and achievements are important in sustaining motivation in protecting and maintaining mangrove ecosystems in these villages. Environmental rewards, visits by representatives of external agencies to see and learn from their efforts and highlighting of their activities in the public sphere have been additional incentives for local communities to continue their support for mangrove management, although they face restrictions in harvesting products from the mangrove ecosystem.

## 6.5 Gender Equality

All the national policies and regulations that are relevant to mangrove use and management are silent in terms of women's rights over land and forest resources.

Similarly, local village regulations are gender blind – gender equality is assumed rather than actively sought after. Community-level practices are rooted in local social norms, which are based on gender roles and the activities that men and women can appropriately perform, in line with broader social expectations. NGOs have provided training to women on alternative products that can be obtained from mangrove leaves, barks, and fruits using processing techniques. But because no further capacities have been developed to orient production towards markets, these products and processes have remained at a subsistence level. As has been described in the context of three villages above, women are trapped in low-skilled activities such as polybag filling and seedling planting and are completely left out of decision-making processes. Because women have been excluded from decision-making processes and structures, they are less aware of existing rules and programs related to mangrove ecosystem management compared to men. Young women are probably the least knowledgeable group in the community.

## 6.6 Conflict Resolution

All villages have hierarchical institutional arrangements for conflict resolution. The main mechanism used across the communities for conflict resolution is the committee that oversees mangrove development activities. When the committee fails to resolve a conflict, the village and sub-district level authorities become involved. District authorities only become involved in conflict resolution in rare cases.

When members of the communities don't comply with the rules, they are normally warned or given soft punishments but the penalties are increased significantly for repeated rule breaks. In the case of Purworejo village, for example, if the members break the rules, the committee forces the transgressor to plant mangrove seedlings in the mangrove territory. If the violator doesn't comply with their penalty, the village authority will step up to penalize the offenders. In general, if the violator is a member of the community or neighboring village, the conflict over mangrove resources is normally solved at the village level. The case would only be brought to higher level authorities when the local authorities could not maintain the compliance or the violator comes from outside the sub-district.

## 6.7 Monitoring, Review and Learning

Recent policies related to coastal management and initiatives since the deadly tsunami of 2004, have called for streamlining of rehabilitation efforts. As shown in Section 5.9 above, Law on Coastal Areas and Small Islands Management and Presidential Regulation 121/2012 in relation to Mangrove Governance gives the mandate to central and local governments to monitor mangrove rehabilitation activities every 6 months.<sup>11</sup> However, the villages reported that they did not know whether local and central governments conducted the monitoring and evaluation in their villages. In the villages, they have committees to monitor the rehabilitation activities. When

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<sup>11</sup> Presidential Regulation 121/2012, Art. 14.

there is support from an external agency, monitoring and evaluation is carried out jointly by the community leaders and representatives from the respective agency.

# 7. CONCLUSION AND RECOMMENDATIONS FOR POLICY, PRACTICE AND RESEARCH

This section summarizes the key findings of this assessment and offers some recommendations for policy, practice, and future research. Increasing focus on mangrove at the national policy level, creation of a number of multi-stakeholder structures to offer concerted efforts for mangrove management, new regulations promoting mangrove rehabilitation with coordination across different sectors and levels of government, increased involvement of civil society and increased awareness on values of mangrove forest by local communities – often beyond the direct material returns – are some of the critical arenas making mangrove governance a very complex field of study. Multiple regulations and overlapping jurisdictions, missing data on the status of mangrove resource, limited attention to tenure issues and a lack of gender focus, are some of the critical issues that this section reexamines; it also offers some pragmatic recommendations.

## 7.1 Multiple Regulations and Overlapping jurisdiction

Since the mangrove ecosystem is juxtaposed between terrestrial and marine resources, various national level policies and laws regulate its conservation and management. Most notable sectoral laws are related to environment and forestry as well as fisheries and marine resources. In the mangrove ecosystem, the trees are under the jurisdiction of Ministry of Environment and Forestry while the water is under the Ministry of Marine Resources and Fisheries.

There is considerable confusion in defining mangroves as primarily terrestrial or marine. If a mangrove forest is inside the “State forest zone”, which presupposes that it is predominantly terrestrial, Forest Law 41/1999 and subsequent regulations apply and the main authority remains with the Ministry of Environment and Forestry, whose frameworks are primarily designed for terrestrial forest ecosystems. If an area with mangroves is classified under APL, the mangrove forest falls under the jurisdiction of the district government. Since Presidential Decree No. 32/1990 categorizes coastal mangrove forests as protection areas, restrictions are imposed on how the area is managed i.e. no conversion to other land uses are allowed and timber harvesting is prohibited. Only non-consumptive uses are permitted.

However, when mangrove forests are considered to be part of the marine ecosystem, a number of laws and regulations related to fisheries and marine resources are relevant such as Law 27/2007 on Coastal Areas and Small Island Management, Presidential Regulation 121/2012 on Rehabilitation of Coastal Areas and Small Islands and a few regulations from the Minister of Marine and Fisheries (17/2008, 12/2013, 34/2014 and 40/2014).

These sectoral laws and overlapping jurisdiction pose major coordination challenges across line ministries. Recognizing this, the recent Presidential Decree 72/2012 on National Strategy for Mangrove Ecosystem Management provides a multi-stakeholder mechanism at national, provincial, and district level to oversee initiatives related to mangrove ecosystem management. The performance of the new institutional arrangements is not yet apparent as the mechanism is not adequately integrated at the sectoral level.

Paradoxically, despite this plethora of national and subnational rules that apply to mangroves, at the local level, village regulations for mangrove protection and conservation are designed specifically for mangroves and are implemented as such. Moreover, they are integrated into broader resource management rules at village and district levels. We argue that this bottom-up approach which is nested in higher-level regulations and authorities and which involves extensive coordination with higher-level authorities and actors, mitigates the potential confusion about mangrove management that may be conferred by the multiple authorities and jurisdictions. Therefore, while there may be need to harmonize and better coordinate national and subnational laws and policies and to better attune them to the dual character of mangroves (i.e. to reduce the fragmentation), an even stronger case can be made for further strengthening local-level institutions and increasing their capacities to interact, collaborate, and coordinate with national and subnational agencies. Similar initiatives that strengthen the capacity of subnational and national actors to support local-level initiatives and to reinforce community incentives for protection, management, and rehabilitation are necessary. Further research and experimentation (including piloting programs) can generate specific insights on how best to design institutions in support of local-level conservation management.

## 7.2 Data on Status of Mangrove Forests and Rehabilitation Efforts

One of the key challenges of developing a national-level strategy and action plan is that there is no single entity that assesses the status of mangrove forests in Indonesia. Various agencies are using their own maps and methodologies to assess mangroves. This has implications for monitoring deforestation and rehabilitation efforts and for generating reliable data for informing policy and program development.

Differences in mangrove forest cover are also driven by how analysts define forests. From a legal perspective, an area irrespective of its vegetation cover is “forest” if the land falls under a “forest” category (such as sandy dunes, rocky mountains, cleared land, river, lakes, etc.). Forest Law 41/1999 defines a “forest area” as, “any particular area determined or designated by the government to be permanent forest”. However, professional organizations such as FAO and other agencies consider “tree canopy cover” as the basis for defining a “forest”. FAO (2000) defines forest as “Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 hectares (ha)”. Different tenure arrangements for land, trees and associated resources requires that data on mangroves are unified and that overlapping claims over land and other resources are resolved.

### 7.3 Governance, Leadership, Rights Distribution and Tenure Security in Mangrove Management

Strong local leaders are crucial for the success of mangrove rehabilitation efforts. Their relationship with community members are based on trust and confidence; the cooperation and links they forge with external actors are important for ensuring local people's support in rehabilitation efforts and channeling necessary technical and financial support.

Support from external stakeholders has a positive influence on various aspects of local-level mangrove management and protection including community mangrove rehabilitation efforts, the tenure security of local people, building technical capacities and access to financial resources. However, the communities are receiving the support on an *ad-hoc* basis, based on their leaders' personal contacts, which is not very enduring. Therefore, there needs to be a mechanism that offers the required budgetary and other support the communities want. The establishment of a formal and functioning coordination mechanism between communities and other mangrove stakeholders is also critical for joint learning, sustaining of community-based mangrove management initiatives and scaling-up of tested approaches and initiatives.

Local communities are very aware of the environmental services offered by mangrove forests and are subsequently putting considerable time and effort into their conservation, management and rehabilitation. However, in the absence of direct economic returns and clear incentives, these efforts may not be sustained. A regular funding mechanism to support community efforts is necessary to reduce future uncertainty of mangrove rehabilitation efforts. Other avenues for strengthening incentives and reducing uncertainty over the future viability of current efforts include: (i) expanding the range of rights that communities hold to mangrove resources and in particular expanding their income generation possibilities; and (ii) taking advantage of existing laws and mechanisms that require the provision of special incentives to encourage and sustain environmental conservation e.g. PES and REDD+.

### 7.4 Gendered Dimensions of Mangrove Management

Most of the national policies and laws as well as the local rules and institutional arrangements related to mangrove forest governance are gender blind. However substantial differences exist between men and women in levels of participation in decision-making, knowledge and information as well as in operational management.

A major focus of mangrove-related activities for women have focused on economic empowerment (in an incomplete manner) and imparting forest product processing skills. Very little has been done to expand their political space in mangrove forest governance. In order to improve women's participation in decision-making, specific legal and institutional provisions as well as incentives are required in order to assure women's participation in mangrove forest governance.

Concrete proposals for institutional arrangements that enhance women's inclusion in decision-making and overall mangrove governance can be generated through careful piloting.



## 7.5 Tenure Arrangements and Mangrove Rehabilitation

Community-based rehabilitation efforts have been shown to have great promise for conserving mangrove forests in Lampung province. The overall area of mangrove forest has increased significantly in all the communities after they launched a range of activities such as planting, restricting access and use in certain areas and constructing wave barriers. Clearly, there is value to granting local people management and exclusion rights. Rights to exclude outsiders is important for mangrove rehabilitation efforts because local people perceived external people and investors as the main source of threats to tenure security. These rights should be more formally granted in law and be less a matter of the discretion of line agencies or local governments.

Furthermore, broad tenure categories (i.e. State forest-owned vs local government vs *de facto* customary) are generally useful, but the rights bundles held under each of these broad categories are probably clearer and more useful. Regardless of these categories, the outcomes for communities are similar and are driven by measures that are in place to secure their investments in protection and rehabilitation, which include a clear right to manage and exclude, as well as get alignment and back up from higher authorities.

## 7.6 Recommendations for Future Research

Recent policy developments around mangrove management in Indonesia places emphasis on multi-stakeholder processes. However, despite having 4 years of a new, coordination strategy for mangrove ecosystem management, implementation is still slow. A limited budget for implementing the strategy and sectoral silos and mandates have been largely responsible for the slow implementation of the strategy. A careful assessment of the constraints (and enablers) of the implementation of this mangrove strategy merits significant analytical attention. This research should also integrate multi-level governance issues.

Improving the current, limited contribution of mangroves to local economies requires additional attention in future research on market access for mangrove products as well as processing and storage technologies.

Piloting and careful analysis of different modalities that incentivize women's participation is recommended. In particular, there is urgent need to establish the mechanisms that give rise to and perpetuate gender blindness in local-level institutions and structures as a basis for the design of incentive mechanisms.

Further research on the conditions that foster the emergence and flourishing of enthusiastic and committed leaders can be useful not only for mangrove management but also for broader community-based natural resource management.

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# Annex 1. Data Collection Instruments

## Instrument 1: Guidelines for Interviewing (I) NGO Professionals

### Basic Information about the Respondent

Date of interview	Location of interview	Duration of interview
Name (optional)	Sex ( )	Age( )
Telephone number (optional)		
Name of organization ( )		Distance to nearest forest from office ( )
Official designation ( )	Total length of time with the organization ( )	Length of time at organization in the current position ( )
Highest level of education attained ( )	Subject studied with respect to highest educational attainment: ( )	

### Background Information

- What is the primary purpose of your organization/ office/entity? In particular, what are your aims, if any, in regard to mangrove forests and related resources? Please describe.
- Please indicate the thematic areas in which the mangrove-related activities you implemented last year (e.g. community forestry; fisheries; illegal logging; rehabilitation/restoration, gender and women's empowerment etc.).
- Who are your target beneficiaries and what supportive service/s do you provide to them? Please provide examples.
- In what locations does your organization/project operate? Under what kinds of tenure/management regimes do these areas fall? Please provide names of forests and relevant villages.
- Has mangrove forest cover in this province/district changed over the past xx years? In what direction, positive or negative? What are the key drivers of this change? If negative, what measures have you put in place to stem mangrove decline? If positive, what practices do you have in place to safeguard against the risk of reversal?

### NGO Practices for Mangrove Management

- What projects have you implemented in the past that specifically target mangrove forests or have implications for the use and management of mangrove forests and related resources? Did you work with communities, village leaders and other government

agencies? With whom in particular? How did you work with these different actors? Please describe. Did the project adopt a gender perspective? Please describe some of the activities you conducted in order to have a gender perspective. How would you rate the participation of the different actors that you worked with? Overall, how would you analyze past experience (of mangrove projects) in terms of successes and failures? What were your greatest successes and what were your greatest failures and why?

- Does your organization do anything specific to encourage community participation in forest/environment/land management? Please provide examples. How about with regard to women?
- Which other organizations or State/regional entities do you work with, particularly those that work on natural resources or gender? What kinds of projects and programs do you collaborate in? What are the responsibilities of these other organizations relative to your own in these projects/programs? How do you evaluate these collaborations? What aspects of the collaborations need to be improved? How?
- What are some of the main mangrove management needs and problems facing communities where you work (may be local, subnational, national). Please describe some of the ways, if any, that you/your office/your organization have addressed communities' needs and problems. In your opinion, have these needs and problems increased, decreased or stayed the same over the past 10 years?
- Please describe the activities you have implemented with respect to tenure and rights of communities to mangrove forests. Overall, how effective have the activities you (or your organization) implemented been in promoting communities' participation in mangrove management? Did the activities give special consideration to women, low-income groups, migrants, indigenous groups? How? What are/have been some of the constraints/obstacles to implementing these activities?
- What are some of the measures you (or your office) have taken to ensure that the rights granted to communities to forest resources are safeguarded and/or even guaranteed? What challenges do you face in implementing measures for safeguarding community rights to forests?
- What type of information does your office provide to community members? In general, how frequently (often) do you/your office provide information to the communities? What are the most common ways in which community members express their needs and concerns about mangrove forests (or other related resources) to your organization or office? Do they do this frequently? What are some of the needs and concerns that communities bring to you? How do you address them?
- What are the main mangrove-related conflicts you are called on to manage and/or resolve? What are some of the ways in which you solve the conflicts? In your opinion, have these been effective? In what ways can conflict resolution be improved in order to make it effective? Please mention some key challenges you face in resolving conflicts.
- Are there currently conflicts (disagreements) between your office or organization's practices and what communities would like/expect in terms of mangrove management? Please explain. Which practices contradict with community expectations? In what ways?
- Do you work with traditional leaders/customary authorities in the management and administration of mangrove forests? Please describe. If you do not work together with traditional/customary authorities in any way, please indicate why not.

## Social, Political and Economic Context

- From your perspective, how do social factors – at either local or national levels –facilitate or hinder your individual or your organization’s ability to implement support and/or advocate for mangrove management? Please consider religious practices or beliefs, gender norms, cultural practices, ethnic affiliations, or social status. Please indicate the effect i.e., if it is enabling or hindering. Also describe the effect on your ability to support/advocate for management. If it is a hindrance, what do you do to minimize the effect?
- In your opinion, how do political factors – at either local or national levels –facilitate or hinder your individual or your organization’s ability to implement support and/or advocate for mangrove management? Please take into consideration changes in government, decentralization, policy environment and international agreements (e.g. REDD, United Nations declarations e.g., on indigenous peoples, Millennium Development Goals). Please indicate the effect whether enabling or hindering. Also describe the effect on the ability to advocate. If it is a hindrance, what do you do to minimize the effect?
- In your opinion, how do economic factors – at either local or national levels – facilitate or hinder your individual or your organization’s ability to support and/or advocate for mangrove management? Please take into consideration domestic economic issues, budgetary issues, as well as global priorities and mechanisms. Please indicate the effect whether enabling or hindering. Also describe the effect on the ability to implement. If it is a hindrance, what do you do to minimize the effect?
- In your view, does the nature of the mangrove resource (i.e. at the interface of the landscape and seascape/terrestrial and marine systems) present any particular challenge or opportunity in its management? Please explain. If yes, is this a dimension that requires special practices or further legal/policy consideration?

## Leadership Support for Mangrove Management

- In your understanding, what is the lead institution for mangrove management? Please explain. How effective is this institution’s leadership in implementation? Please explain.
- Are there any opinion leaders and influential institutions from any sector that you directly interact with in your advocacy work? Please name the leaders or institutions supporting implementation. How do they support advocacy and how has this affected you/your organization? Please name the leaders or institutions opposing advocacy. How do they oppose and how has this affected you/your organization?

## Stakeholder Involvement

- In your view, are there other State agencies that should be playing a more central role in the management of mangroves (note levels, e.g. at the national level and at the district level). Please explain why.
- To what extent are different sectors within the government currently involved in mangrove management?
- To what extent are other stakeholders outside government involved in mangrove management, including the intended beneficiaries? How? Please explain. Ask about different stakeholders, as appropriate: Other NGOs, women’s groups, the private or

commercial sector, groups representing the poor and other vulnerable populations and others.

- Are there other civil society or community-based organizations/groups advocating for mangrove management? Please describe the effect of their advocacy efforts on your work.

#### Coordination with Other Agencies

- Is there any formal agreement/arrangements to coordinate among the various NGOs that are advocating for mangrove management? How effective is the coordination among the various organizations that are involved? Please explain.
- Why do you coordinate or collaborate with other organizations (other government agencies and NGOs)? What have been the challenges to your collaborative efforts? How can collaboration be improved?

## Instrument 2: Guidelines for Interviewing Forestry Authorities and Other Government Agencies

### Basic Information About the Respondent

Date of interview	Location of interview	Duration of interview
Name (optional)  Telephone number (optional)	Sex ( )	Age ( )
Name of organization ( )		Distance to nearest forest from office ( )
Official designation ( )	Total length of time with the organization ( )	Length of time at organization in the current position ( )
Highest level of education attained ( )	Subject studied with respect to highest educational attainment: ( )	

### Background Information

- What is the primary purpose of your organization/office/entity? In particular, what are your aims, if any, with regard to mangrove forests and related resources? Please describe.
- Please indicate the thematic areas in which the mangrove-related activities you implemented last year fell (e.g. community forestry; fisheries; illegal logging; rehabilitation/restoration, gender and women's empowerment etc.).
- What is the extent of mangroves in this area? Have there been any changes in mangrove forest cover in the past 20 years? What have been the main drivers of the changes? If the changes are negative, what kinds of interventions have you undertaken to alleviate the negative? If the changes are positive, what measures have you put in place to reduce the risk of negative change?

### Policies and Laws Regulating Mangrove Use and Management

- Which is/are the main policy/law that you and your office are responsible for implementing with respect to mangrove forests? What are the main objectives of this law/policy? Have these objectives been translated into plans, strategies or programs? Please explain.



- Please describe the four main activities that your organization undertakes in order to implement the law/policy.
- Are you/your office involved in any way in mangrove management? If yes, please provide examples of activities you are involved in. Where are these activities located?
- Are there any areas where you/your organization has direct, legally mandated control over and management responsibility for mangrove management? Are there any areas where you are involved in management but don't have direct legally mandated control over the resource?
- What has been the main policy/law that affects the rights of various actors to mangroves such as communities, customary/traditional leaders, men, women, private sector, District Forestry Agency etc.? Note: Rights may include: the right to use, to harvest NTFPs, to sell NTFPs, to harvest timber, to sell timber, to graze livestock, to collect fuelwood, to sell fuelwood, to collect water, to own the forest etc.
- What projects have you implemented in the past that specifically target mangrove forests or have implications for the use and management of mangrove forests and related resources? Did you work with communities, village leaders and other government agencies? With whom in particular? How did you work with these different actors? Please describe. Did the project adopt a gender perspective? Please describe some of the activities you conducted in order to have a gender perspective. How would you rate the participation of the different actors that you worked with? Overall, how would you analyze past experience (of mangrove projects) in terms of successes and failures? What were your greatest successes and why; what were your greatest failures and why?
- Does your organization do anything specific to encourage community participation in forest/environment/land management? Please provide examples. How about with regard to women?
- Please describe the activities you have implemented with respect to tenure and rights of communities to mangrove forests. Overall, how effective have the activities implemented by you (or your organization) been in promoting communities' participation in mangrove management? Did the activities give special consideration to women, low-income groups, migrants, indigenous groups? How? What are/have been some of the constraints/obstacles to implementing these activities?
- What are some of the measures you or your office have taken to ensure that the rights granted to communities to forest resources are safeguarded and/or even guaranteed? What challenges do you face in implementing measures for safeguarding community rights to forests?
- What are some of the main mangrove management needs and problems facing communities where you work (may be local, subnational, national). Please describe some of the ways, if any, that you/your office/your organization have addressed communities' needs and problems. In your opinion, have these needs and problems increased, decreased or stayed the same over the past 10 years?
- What type of information does your office provide to community members? In general, how frequently (often) do you/your office provide information to the communities? What are the most common ways by which community members express their needs and concerns about mangrove forests (or other related resources) to your organization or office? Do they do this frequently? What are some of the needs and concerns that communities bring to you? How do you address them?

- What are the main mangrove-related conflicts you are called on to manage and/or resolve? What are some of the ways in which you solve the conflicts? In your opinion, have these been effective? In what ways can conflict resolution be improved in order to make it effective? Please mention some key challenges you face in resolving conflicts.
- Are there currently conflicts (disagreements) between your office or organization's policies and what communities would like/expect in terms of mangrove management? Please explain. Which policies contradict with community expectations? In what ways?
- Do you work with traditional leaders/customary authorities in the management and administration of mangrove forests? Please describe. If you do not work together with traditional/customary authorities in any way, please indicate why not.

#### Social, Political and Economic Context

- From your perspective, how do social factors – at either local or national levels – facilitate or hinder your individual or your organization's ability to implement mangrove-related laws and policies? Please consider religious practices or beliefs, gender norms, cultural practices, ethnic affiliations, or social status. Please indicate the effect i.e. enabling or hindering. Also describe the effect on your ability to implement. If it is a hindrance, what do you do to minimize the effect?
- In your opinion, how do political factors – at either local or national levels – facilitate or hinder your individual or your organization's ability to implement mangrove-related laws and policies? Please take into consideration changes in government, decentralization, policy environment and international agreements (e.g. REDD, United Nations declarations e.g. on indigenous peoples, Millennium Development Goals). Please indicate the effect whether enabling or hindering. Also describe the effect on the ability to implement. If it is a hindrance, what do you do to minimize the effect?
- In your opinion, how do economic factors—at either local or national levels— facilitate or hinder your individual or your organization's ability to implement mangrove-related laws and policies? Please take into consideration domestic economic issues, budgetary issues, as well as global priorities and mechanisms. Please indicate the effect whether enabling or hindering. Also describe the effect on the ability to implement. If it is a hindrance, what do you do to minimize the effect?
- In your view, does the nature of the mangrove resource (i.e. at the interface of the landscape and seascape/terrestrial and marine systems) present any particular challenge or opportunity in its management? Please explain. If yes, is this a dimension that requires further legal/policy consideration?

#### Leadership Support for Implementation of Mangrove-Related Policy and Law

- In your understanding, what is the lead institution for mangrove management? Please explain. How effective is this institution's leadership in implementation? Please explain.
- Are there any opinion leaders and influential institutions from any sector that you directly interact with in mangrove management? Please name the leaders or institutions supporting implementation. How do they support implementation and how has this affected you/your organization? Please name the leaders or institutions opposing implementation. How do they oppose implementation and how has this affected you/your organization?

### Stakeholder Involvement

- In your view, are there other State agencies that should be playing a more central role in the management of mangroves (note levels e.g. at the national level and at the district level). Please explain why.
- To what extent are different sectors within the government currently involved in mangrove management?
- To what extent are other stakeholders outside government involved in mangrove management, including the intended beneficiaries? How? Please explain. Ask about different stakeholders, as appropriate: NGOs, women's groups, the private or commercial sector, groups representing the poor and other vulnerable populations and others.
- Are there civil society or community based organizations/groups advocating for mangrove management? Please describe the effect of their advocacy efforts on your work.

### Coordination with Other Agencies

- Is there any formal agreement/arrangements to coordinate among the various organizations with responsibilities for mangrove management? How effective is the coordination among the various organizations that are involved? Please explain.
- Why do you coordinate or collaborate with other organizations (both other government agencies and NGOs)? What have been the challenges to your collaborative efforts? How can collaboration be improved?

### Instrument 3: Guidelines for Conducting Focus Group Discussions (FGDs) at the Village Level

Province	:	
District	:	
Sub-District	:	
Village	:	
Group	:	
Name of participants	:	
Date/Time	:	
Facilitator	:	
Note taker	:	

#### I. Timeline Exercise

- I. Ask participants to name the most important moments in the history of the village. (Try to bring the focus mainly to the past 30 years). Prompt with questions, such as, depending on what is appropriate (use your knowledge of the village):
  - When was the village/community established? When did the first residents arrive?
  - When was the school/health post built?
  - When was the highway built?
  - When did other migrants move to the village?
  - Have there been any changes in the extent of outmigration over time? What is the current status of outmigration from the village?
- II. Ask how livelihoods have changed over time. Use the events identified to establish time periods. What was the main source of income or livelihoods / main product harvested (etc.) in one period versus another.
- III. Ask specifically about use of mangrove forest resources and changes over time.
- IV. Ask about mangrove condition and change over time.
- V. Ask about changes in climate and climate-related events over time, for example droughts, dry and wet seasons, floods, beach erosion etc.
- VI. Ask about conflicts, especially with outsiders, companies, the government and neighbor communities. How have these changed over time?
- VII. Why did these changes occur? What were the drivers or causes of change? What were some of the effects of change on: (a) livelihoods; (b) mangrove forest condition; and (c) resilience/adaptability. For any negative changes mentioned, it would be helpful to get a listing of what they did to try and overcome the negative aspects and their perception of success/or non-success.

## 2. Spatial Extent of Management and Use Rights and Changes Over Time

Present the map drawn during the KII (Map should already be available), showing all the areas that the community/village uses, map should show areas of mangrove forests (identified whether there is more than one forest area), agriculture, water sources, pasture or grazing, housing, garden and hunting. Verify the areas as established through the KII and their labels (a locally recognized name that people refer to). Contextualize the map if needed, indicating the name of neighboring communities/villages. You may use also an existing (official) map as a reference.

*The purpose of this exercise is to understand, in all villages, the extent of management, use and rights and who makes which rules (local people, State agencies, NGO projects or private companies/corporations).*

Note discrepancies among participants with regard to areas; boundary issues with neighboring communities; or conflicts with external actors.

Remember that our primary interest is on mangrove forests; so if there are too many areas to discuss, focus the time on the forest areas and the most important forest areas (note area affected in hectares: e.g. we need to know if we are talking about a very small area or a very large one).

## 3. Mangrove Forest Product Harvesting

Product	Household consumption (How much can be extracted? When can be harvested? Who decides this?)	Where* do they harvest (refer to the community map)? Who decides this?	Allowed to sell (How much are you allowed to sell? Who decides this?)	User group (differentiate whether within or outside the community)	Do you need to ask for permission for harvest? From whom?	Changes over time? (What caused this change?)

\*Later please refer to the ID Code identified in the map from KII.

Please remember to ask participants the extent to which mangroves contribute to their livelihoods. Are mangrove resources important in their livelihood portfolios?  
Who is not permitted to harvest mangrove forest products?

## 4. Management and Exclusion Rights

*Decision-making rules:*

- i. Who makes decisions about mangrove management practices (harvesting—what, when, how much; sale of harvested products; tree planting, restoration, rehabilitation; conversion of mangroves to other land uses)?
  - a. How do village authorities participate in the definition of decision-making rules?
  - b. How do village members participate in the definition of decision-making rules (e.g., via communal assemblies)?
  - c. How does the State participate in the definition of decision-making rules around village forests (are these decisions controlled by the State e.g. District Forestry

- Agency; define the level of autonomy of the village to define these type of rules – which rules are made locally and which are made by the State?)
- d. How do other actors such as NGOs and private companies participate in the definition of decision-making rules around mangrove forests?
  - e. How do women participate in the definition of decision-making rules (e.g., in the communal assemblies, they have specific committees?). How do they feel about their participation? In particular, do they experience any constraints? What are they (if they don't mention, also ask whether lack of time to participate; inability to combine care work with forest management responsibilities; perceived effects of their participation on benefits shared etc. also the constraints)? In their view, how can these constraints be alleviated? Have they tried to address these constraints? Please provide specific examples. Also, please mention if they feel women's participation has been adequate and the conditions that have enabled women's meaningful participation (e.g., location and timing of meetings, sensitivity to women's needs and priorities by leaders, NGO or State agency rules/facilitation etc.). *It is important to note whether women have already been mentioned in the discussion prior to prompting these questions.*
  - f. How do original vs. people that have joined the community by marriage or settlement (or any other customarily approved means) participate in decision making about mangrove forests? If outmigration is an issue, to what extent out-migration has been affecting participation of men and women in decision-making processes?
- ii. Have any of these rules changed over time? (Focus on approx. the last 20 years) Explain changes. What caused the changes?
  - iii. Have there been any conflicts over decision-making? Please describe them, including parties to conflict, causes of conflict and frequency. Were the conflicts resolved? By whom? Who is responsible for resolving decision making conflicts? In your opinion are they effective? Do they resolve conflicts fairly?

## 5. Monitoring and Compliance

- i. Who enforces rule compliance about extraction and forest use and management practices in the village? Note: Refer to specific situations: What happens if I break the rules? Say I take too much timber... is there a sanction? Who enforces it? When was the last time someone was sanctioned; what was the reason, explain. How many people were sanctioned in the last year?
  - a. In case rules are not complied with, what type of sanctions exist?
  - b. Overall, do you think this sanctions are fair? Are they effective? Are they enforced fairly?
- ii. Who has establishes sanctions for rule violations? Are the village regulations written (are there any bylaws)? Are village members aware of them?
- iii. Who monitors rule compliance about extraction/forest management practices in the village?
- iv. Can rights to forests (to extract products) be taken away? What kinds of circumstances prompt a reversal of rights?
- v. Has any external actor (e.g., government, private company, NGO) kept you from extracting products from mangrove forests? If yes, which external actor? For what

products? What were the reasons for imposing these restrictions? What were your responses to these restrictions?

- vi. Have any of these rules or sanctions on extraction changed over time? (Focus on approx. the last 20 years) Explain changes. What caused the change?
- vii. Today, do you think community members follow the rules? (always, frequently, not often, never). Which ones would you say are the most commonly followed/violated? Why?
- viii. Have there been any conflicts over rule monitoring and enforcement? Please describe them, including parties to conflict, causes of conflict and frequency. Were the conflicts resolved? By whom? Who is responsible for resolving conflicts over monitoring and enforcement? In your opinion are they effective? Do they resolve conflicts fairly?

**Alienation: lease, collateral, sale, inheritance.**

- i. Are you allowed to lease mangrove forests areas to another member within the village/person outside the village?
- ii. Are you allowed to use mangrove forest lands as collateral for credit (any other way to put it)?
- iii. Are you allowed to sell forestlands to another member within the village/person outside the village?
- iv. Are rights to mangrove forests transferable within the family (inheritance of rights)? To whom? What about to women (daughters, wives)?
- v. Have any of these rights changed over time? (Focus on approx. the last 20 years) For whom have rights changed? Explain changes. What caused the change?
- vi. Have there been any conflicts over alienation rights? Please describe them, including parties to conflict, causes of conflict and frequency. Were the conflicts resolved? By whom? Who is responsible for resolving conflicts over rights transfer? In your opinion are they effective? Do they resolve conflicts fairly?

**Overall satisfaction with rights.**

- i. If somebody threatens your rights, what can you do about it? Are there any grievance (keluhan)? Have you ever had to use them? What was the result?
- ii. On a scale of 1 to 3, discuss and then vote individually your level of satisfaction with rights (voting should be kept secret). Refer to the following scale:  
1 = as a village, that you are very dissatisfied with the rights to use forest resources that you have currently and would like to see major changes  
2 = somewhat satisfied but you would like to make some changes  
3 = you are very happy and would make no changes, where would you place this village?)
- iii. If you want to make changes, what are the 3 changes you would like to make?

## **6. Tenure Security Exercise**

By tenure security we mean “your confidence that the members of this village will continue to be able to use, at least for the next 25 years, the land and forests you now use and benefit from in that particular area.”

- Going back to the map of the village/community ask participants to discuss for land-use areas identified in the map, rank whether they perceive their rights, as a village, to be secure or not? And why? What do you see as the threats (differentiate between external or internal) that prevent them from enjoying/exercising their right)?
- Make sure to note the area in question (hectares) and the owner of that area.

A. AREA (use name on map; note owner/ hectares)	B. SECURE/ INSECURE/ not sure or cannot agree (both)/Don't know	C. REASON FOR SECURITY AND INSECURITY ANSWER IN (B) – PROVIDE 3 ANSWERS

- Do you think that the way we define tenure security (Moderator should read this definition again) captures the experience of this community or are there other things you would consider more important than effectively protecting/guaranteeing rights into the foreseeable future?
- For example, if the number of years were shorter (say 5 years) would you have answered the question differently?
- Has the security of your village rights changed over time? (Focus on approx. the last 20 years) Explain changes. What caused the change?
- In villages where reform has taken place: how have reforms changed security?

#### 7. Knowledge of Existing Laws that Relate to Mangrove Areas

- Are you aware of any current formal laws (i.e., laws passed by government) related to your use and management of mangroves? Please describe the laws, the year they were passed (or when you got to know about them) and how they have affected your use and management of mangroves. For example, did the law restrict/improve access to products; did the law require specific forms of organization among community members for management and decision making; did the law require that women, youth and marginalized groups are more involved; did the law require that benefits are distributed in a specific way?
- How did you get to know about this/these laws i.e., who informed you about them and how (whether individually, in special meetings)?
- Did you have an opportunity to provide your opinion and participate in shaping this/these laws? Please explain.



## 8. Investments in Mangrove Improvements

- i. Have you participated in any activities aimed at improving mangrove forests in any way? For example improving/enriching tree species, extending mangrove forest cover, increasing/enriching other important animals that reside in the mangroves or others you may name? Please describe the activities. For each activity, mention who initiated it (whether community, State agencies, NGOs etc.), when you started it, when it ended or whether it's ongoing.
- ii. In your view, did having tenure rights influence your decision to engage in the activity? If yes, please explain how. What other reasons did you have for engaging in the activity? Did you have any specific role or responsibility in the activity? Was there any specific focus on women's participation in the activity? Please describe.
- iii. In your opinion, was the activity successful (or not)? What were/are the key factors for success (or failure)? What challenges did you face and how did you (or how do you) overcome them?
- iv. Were your efforts supported by external actors? Which external actors? What kinds of support did they offer?
- v. How does the nature of mangroves (sometimes underwater, sometimes not) affect how you approach improvements (like the ones you stated previously)? How does it affect your overall management practices?

## 9. Effects of Climate Variability

This section explores the most important climatic stresses in the past 20 to 30 years and resource users' experiences with them. Based on the discussions, these may include the frequency and magnitude of extreme climate events such as droughts, floods, wave surges, strong winds and their impacts on mangrove forests and livelihoods. Resource users' responses to these stresses and how mangrove forests and related resources have helped or hindered coping with climate variability are to be discussed.

- i. What have been some of the most common climate-related events you have experienced in the past 20 to 30 years? These events can include drought, flooding, high waves, strong winds etc. Please draw a timeline to illustrate when each event happened. Have these events been increasing in frequency or not? Have they been increasing in severity or not? e.g., rainfall more erratic, droughts lasting longer...
- ii. What were the impacts of these events on the cover of mangrove forest, availability of forest products (e.g. fuelwood, poles, fish stocks)? What were the impacts on other resources?
- iii. What were the impacts of these events on your livelihoods (e.g., amount and type of food; overall income – both income related and subsistence)? Were these impacts the same for everyone or were some community members more affected? Who were the most affected?
- iv. Did the extreme events in any way affect your rights and access to mangrove forests and resources or in your approach to managing the resources? For example, was there greater cooperation to ensure that products are available for all or did conflicts increase? Please provide examples with your explanation.
- v. What did you do to cope with any economic hardships that the event may have resulted in? Please describe what you did individually and also as a group to cope with any

hardships the events may have caused to you. Did any of these coping actions involve mangrove forests and related resources in any way?

- vi. In your view, how important are mangrove forests in assisting you to overcome the effects of climate stress?
- vii. Did you receive support from external actors such as NGOs or State agencies? What kinds of supports did they provide?

## Instrument 4: Guidelines for Conducting In-Depth Interviews with Key Informants at the Village Level

Province:  
District:  
Sub-district:  
Village:  
Name of Respondent/Occupation/Age:  
  
Role in the community/village/clan (e.g. village leader):  
  
Role in mangrove forests (e.g. member of forest management committee):

Date/Time:  
Interviewer:  
Length of interview (Start/Finish):

**Information on Respondent:** Ask questions to gather information on the Interviewee background (gender/age/occupation) as well as the leader's participation/ role in the community/village/clan (e.g., village leader) as well as around forests (e.g., member of forest management committee); role in tenure reform implementation (if applicable).

### I. Background Information About the Village

Some of this information can be collected from review of literature and KII at the regional/district level. In cases where information gaps exist specific questions may be asked to Key Informants. There is no need to repeat these questions to all of the KII, once information is obtained, except to the extent that responses might vary, such as about sources of inequality; in addition, some of this information could be obtained prior to arriving in the village):

- i. Distance/travel time to nearest market, health center, school etc.
- ii. Population of the village members, changes between the population now and 10 years ago; ethnicities represented – which is the most dominant i.e. which has largest proportion of population, which the least; (review census data available from official sources/health posts)
- iii. Proportion of village that is literate etc. . . . (census data?)
- iv. Main products most people take to sell to market (e.g. crops, timber, medicinal plants etc.)
- v. Main economic activities of the village, farming, forestry, fisheries etc. —estimated portion of families doing each.
- vi. Main threats to the community? Main threats affecting the village rights to land and mangrove forests?

- vii. Economic opportunities presented by activities such as (Elicit whether these activities are viewed as an opportunity/threat): aquaculture, timber, oil and gas extraction etc.
- viii. Main drivers of deforestation; main drivers of forest degradation
- ix. Key cleavages/areas of internal differentiation in the village – migrants vs locals, wealth distribution, main source of livelihood, levels of forest dependence, education and literacy, gender etc.
- x. Are there differences in land ownership among villagers and are they small or large? Is inequality in land holdings increasing/decreasing/ not changing?
- xi. In terms of wealth distribution would you say this village is very homogeneous (people have more or less the same level of wealth). On a scale of 1 (very homogenous) to 5 (very unequal)?
- xii. In terms of existing conflict in the community would you say this village is peaceful and harmonious: On a scale of 1 (very harmonious) to 5 (very conflictive)?

## 2. Current Mangrove Forest Resources and Users in the Village and How These Have Changed Over Time

- i. Ask about current mangrove forest resource.
- ii. Ask about changes over time and reasons for change. The changes include changes to the condition of mangrove forests and related resources as well as changes with regards to rights and access of communities, management practices, how communities organize themselves for management, the presence of external actors over time (e.g., which external actors, their objectives and activities etc.). Probe to find out whether there are links between mangrove resources, tenure rights, management rights, external actors etc.

## 3. Draw a map of the land and forest area used by the village (NOT the area to which it has formal rights, but ALL areas used). Then ask about each area:

*The map only needs to be drawn once, then used in other interviews and in the FGD.*

*Information will be collected to elaborate a map before it is used in FGDs. If a map is already available at the village level, you may use it during interview to validate the information and cross check for any variations*

- i. What is each area used for and by whom, note different land uses and proportions e.g., mangrove forests, agroforests, pastures, settlements (gather information on areas: harvesting timber and NTFPs, clearing for farming, pasture or grazing, recreational and spiritual uses, hunting, gardening, housing – add other relevant categories as needed). For future purposes use an ID code for each area identified in the map. Remember our main interests is mangrove forest management. With regard to mangrove forests:
  - a. Who uses the forest/forest resources/forested landscapes for what, when, how, why?
  - b. What external actors use these areas, how and why?
  - c. Gather information on the spatial distribution of these uses (areas identified in map). For instance do they use different forests for timber and NTFPs? Why? YES or No? Gather information on the links between mangrove resources and other terrestrial resources.
  - d. Who is the formal owner of each area: (1) individual – some level of collective action around resources; (2) areas designated for the use of collectives; (3) areas that are the property of the State)

- e. In each of the areas identified, how has use changed over time, when and why? Ask questions about changes in mangrove forest uses, what triggered these changes and when. Allow respondents to recall several episodes of such changes if they can remember but try to at least cover major changes during the past 10–30 years. Focus on the most significant changes that respondents can recall.
  - ii. Which area on the map (in hectares and percent of total area used, percent of total area of village – if these are different) was affected by the change in use? What was the effect of the change in use on people’s livelihoods and on the condition of mangrove forests and related resources?
4. How have men and women’s rights to land and forest resources changed over time?
- i. What were the key reasons driving changes in rights to mangrove resources? Who granted (or removed or modified) the rights (e.g., land agency, court, forest institute or ministry, regional government, village leaders) after a long struggle by village, or by other organization, after conflict with neighbors, etc. ? Explain.
  - ii. How were local residents involved (or not) in rights changes?
  - iii. Did the changes involve the creation of new village organizations/committees and arrangements or strengthening of existing ones? Please explain. What is the composition of these village committees/organizations, roles and responsibilities?
  - iv. What are your overall perceptions of these changes? Have they improved how you use and manage mangroves? In what ways? Have they improved peoples’ livelihoods? Have they improved the status and condition of mangroves?
5. How do women gain access to land and forest resources within the village?
- i. Do they have their own plots separate from men’s?
  - ii. In regards to the access to land and forest resources what happens to women if they marry or their husband dies (or he leaves her)? How about single women?
  - iii. Are women involved in management and decision making? If yes, how? If not, why not?
  - iv. Has there been any change in women’s rights and access?
  - v. If women are involved in decision-making, has this improved women’s rights and access? Why or why not?
  - vi. Are women’s rights provided for in the forest or other related law? What are some of the main obstacles to enforcing women’s rights at the local level? What, if any, is your role in ensuring that women’s rights are protected? If none, please indicate whose responsibility it is to enforce women’s right to land, forests and other natural resources
6. Based on Each Area Identified on the Map, What are the Rules for Forest Use Today?
- i. Who makes the rules for forest use? Are there any special rules that limit the activities carried out in the forests?
    - a. Maintenance/Rehabilitation (e.g. eradicate invasive species; enhance regeneration, build perimeter fences to prevent cattle wandering into the forests, etc.) If yes, explain. Who made these rules? (village leaders, village assembly, forest management committee or local government?)
    - b. Harvesting of forest products (e.g. products to be harvested, harvest time, quantity/year?). If it exists, explain. Who made these rules? (Village leaders, village assembly, forest management committee or local government?)

- c. Are there rules that restrict other activities? e.g., processing and sale of forest products? If yes, please explain. Who made the rules? Village or local government? Are the processed products for personal consumption or trade?
- ii. Who makes the rules regarding who is allowed to access which resources and for what purpose? (or to convert forest; also rules may differentiate between what can be accessed for home use versus sale)

## 7. Conflicts over Mangrove Forest Resources

- i. What were the main sources of mangrove-related conflicts between this village and outsiders/external actors?
  - a. How have these changed over time: type, source, degree and intensity.
  - b. How did you resolve the conflicts? What were the main challenges faced in resolving conflicts?
  - c. Did these conflicts affect how people use and manage mangroves?
  - d. Have these conflicts affected overall forest condition?
  - e. Are there legal guidelines for conflict resolution? How frequently are they applied in the event of conflict? For what kinds of conflicts are they usually applied? In your experience, are legal guidelines/statutory law the main way in which conflicts are resolved? If not, why not?
- ii. What are the main forest-related conflicts inside the village?
  - a. How have these changed over time: type, source and degree/ intensity.
  - b. What were the challenges you faced when trying to resolve the conflict?
  - c. Have these conflicts affected how people's rights to forests e.g., access, use, management?
  - d. Have these conflicts affected overall forest condition?
  - e. Are there legal guidelines for conflict resolution? How frequently are they applied in the event of conflict? For what kinds of conflicts are they usually applied? In your experience, are legal guidelines/statutory law the main way in which conflicts are resolved? If not, why not?
- iii. Over the last 5 years, what do you think of the level of conflict within the group (please explain)? Increased/Unchanged/Decreased/Interfered with daily activities? Channeled in ways that do not interfere with daily activities

## 8. Tenure Security

- i. Do you think that villagers rights to forest resources are secure or insecure and why? By tenure security we mean "Your confidence that the members of this village will continue to be able to use, at least for the next 25 years, the land and forests you now use and benefit from in that particular area").
- ii. What makes tenure secure/insecure? List 3 main reasons.
- iii. For whom is tenure secure/insecure: women, men, migrants, members of ethnic groups, elites etc. ?
- iv. How has tenure security changed over time?
- v. On a scale of 1 to 5 where 1 is very insecure and 5 is very secure, where would you put this village currently?

## 9. Knowledge of Existing Laws that Relate to Mangroves

- i. Are you aware of any current formal laws (i.e. laws passed by government) related to your use and management of mangroves? Please describe the laws, the year they were passed (or when you got to know about them) and how they have affected use and management of mangroves. For example:
  - a. Did the law restrict/improve access to products?
  - b. Did the law require specific conservation measures to be implemented by communities, groups or individuals?
  - c. Did the law require specific forms of organization among community members for management and decision-making?
  - d. Did the law require that women, youth and marginalized groups are more involved?
  - e. Did the law require that benefits are distributed in a specific way? [Probe further to get a sense of the distributional effects of the law]
- ii. How did you get to know about this/these laws i.e. who informed you about them and how (whether individually, in special meetings)?
- iii. Did you and/or others have an opportunity to provide your opinion and participate in shaping this/these laws? Please explain.

#### 10. External Support for Mangrove Forests/Forestry

- i. Which are the most important actors (internal as well as external) to forest use/management/rights and access today in the village? How has this changed over time?
  - a. Do external actors provide financial support, how much, which activities are supported?
  - b. Do they provide technical support to forestry? Of what kind?
  - c. Do they provide support for women's groups? Of what kind?
  - d. How often have village organizations met with officials from the most important external organizations in the past year?
  - e. How many times in past year met with national forestry officials/district forestry officials; provincial level officials?
  - f. Have you requested an intervention related to forest tenure or forestry from district/provincial/national forestry? What was the intervention you requested for; whether it was granted; if happy/satisfied with it?
  - g. Are you satisfied with the range of services and effectiveness of services provided by external actors? Please explain. If appropriate, please indicate some of the things that can be done to improve interactions between external actors and your village
- ii. Was similar support available in prior times? Explain/compare.

#### 11. Effects of Climate Variability

- i. What have been some of the most common climate-related events you have experienced in the past 20 to 30 years? These events can include drought, flooding, high waves, strong winds etc. Please draw a time-line to illustrate when each event happened. Have these events been increasing in frequency or not? Have they been increasing in severity or not? e.g., rainfall more erratic, droughts lasting longer...
- ii. What were the impacts of these events on the cover of mangrove forest, availability of forest products (e.g., fuelwood, poles, fish stocks)? What were the impacts on other resources?

- iii. What were the impacts of these events on villagers' livelihoods (e.g., amount and type of food; overall income – both income related and subsistence)? Were these impacts the same for everyone or were some community members more affected? Who were the most affected?
- iv. Did the extreme events in any way affect villagers' rights and access to mangrove forests and resources or the approach to managing the resources? For example, was there greater cooperation to ensure that products are available for all or did conflicts increase? Please provide examples with your explanation.
- v. What did the village do to cope with any economic hardships that the event may have resulted in? Please describe what was done individually and also as a group to cope with any hardships the events may have caused. Did any of these coping actions involve mangrove forests and related resources in any way?
- vi. Did the village receive support from external actors such as NGOs or State agencies? What kinds of supports did they provide? In your opinion was this support adequate? What were some challenges in coordinating external support when these climate events occurred?

## 12. Customary Authority and Mangrove Management

Questions for elders on customs and change. Refer to information described in 1 above as well as the information gathered during literature review for the existence of customary forest tenure systems - use this information in conducting this interview.

- i. In the absence of introduced forest institutions (such as before colonialism or before de facto penetration of the State forest apparatuses in the village) how did/do people regulate their relations with forests? Here probe on customary forest tenure systems and institutions such as informal rules, taboos, norms, myths, etc. (ask about rules pertaining to women specifically). How did people observe/respect/adhere to these traditional systems in the past? Are these systems still applicable currently? Why YES or NO? Note if some elements of those pre-existing systems still exist and which have been abandoned and why? Note also how those customary systems overlap/interact/conflict with introduced more formal management systems and institutions (if any).
- ii. Ask questions about traditional/customary forest management arrangements that existed in the past or are still in use.



## Annex 2. List of Legislation

Name of legislation	Content of legislation
1945 Constitution	General Policy of Mangrove Management and Protection
Law 32/2009 on Environmental Protection and Management	
Law 26/2007 on Spatial Planning	
Presidential Regulation 73/2012 on National Strategy on Mangrove Ecosystem Management	
Presidential Regulation 2/2015 on Mid-Term Development Plan	Mangrove Management Planning
Law 5/1990 on Natural Resources Conservation	Mangrove Protection and Conservation
Law 5/1994 on Biodiversity	
Presidential Regulation 32/1990 on Protected Areas	
Minister of Environment Regulation 201/2004 on Mangrove Degraded Criteria	
Law 5/1960 – Basic Agrarian Law	Land Tenure in Mangrove Forest
Law 31/2004 on Fishery	Zoning, Utilization and Monitoring of Mangrove in Coastal Areas and Small Islands
Law 27/2007 on Coastal Areas and Small Island Management	
Presidential Regulation 121/2012 on Rehabilitation of Coastal Areas and Small Islands	
Minister of Marine and Fisheries Regulation 17/2008 on Conservation Areas in Coastal Areas and Small Islands	

Name of legislation	Content of legislation
Minister of Marine and Fisheries Regulation 12/PERMEN-KP/2013 on Controlling of Coastal Areas and Small Islands Management	
Minister of Marine and Fisheries Regulation 34/PERMEN-KP/2014 on Planning of Coastal Areas and Small Islands Management	
Minister of Marine and Fisheries Regulation 40/PERMEN-KP/2014 on People's Participation and Empowerment in Mangrove Utilization in Coastal Areas and Small Islands	
Law 41/1999 on Forestry	Utilization and Protection of Mangrove in Forest Areas
Government Regulation 45/2004 on Forest Protection	
Law 23/2014 on Regional Government	Division of Governmental Authority on Mangrove Governance

This report provides an analysis of natural resource governance including land and forest tenure in coastal mangrove forests in Indonesia, as part of a broader study that includes a global review and similar work in the Rufiji Delta in Tanzania. It analyzes national-level legal and institutional frameworks in order to provide an indication of how different sectoral regulations address mangrove governance and tenure, and how respective government authorities implement them. It also analyzes the practice of mangrove management, especially governance and institutional arrangements that are designed and implemented at the local level in order to better understand how they function and, ultimately, how they influence mangrove resources.

The report draws from multiple sources, including a review of relevant published literature, a review of up to 21 national policies and regulations, focus group discussions with communities, and interviews with government and non-governmental officials at national, provincial, and district level working on mangrove governance. Field data collection was conducted in three communities in Lampung province. Lampung province has a relatively large coverage of mangrove forests, diverse mangrove tenure and management regimes, recent mangrove rehabilitation initiatives as well as established CIFOR mangrove project sites.

We find that the legal and institutional framework for the governance of mangroves is characterized by fragmented authority and overlapping jurisdictions, which poses major coordination challenges across line ministries. This confusing multiplicity of laws and authorities across jurisdictions, however, shows no obvious negative impacts on local mangrove governance. Even though mangroves are under the authority of government agencies as protected zones, with restrictions against their consumptive use, communities in Lampung have negotiated management and exclusion rights. They have drafted and are implementing regulations for mangrove conservation and management, which have been incorporated into village regulations and recognized and accepted by higher level authorities.

Communities in the study sites feel that their rights to mangrove forests are secure. They have initiated mangrove rehabilitation programs, which are managed by village-level organizations established specifically for mangrove management and protection. Programs that are directly connected to government (local or central) appear to be more effective; they have higher seedling survival rates, rehabilitate larger areas, offer payment for labor employed and conduct a broader range of activities.

Although gender differentiation is clearly evident in community mangrove management in Lampung, the rules crafted for mangrove management do not recognize that differentiation. Women are not only trapped in low-skilled activities such as polybag filling and seedling planting, but are completely left out of the decision-making processes at the village level.

