

# Tropical Forest Conservation for Reducing Emissions from Deforestation and Forest Degradation and Enhancing Carbon Stocks in Meru Betiri National Park, Indonesia

Source(s):

[ITTO Project Proposal \(PD 519/08 Rev.1\(F\)\)](#)

[ITTO news release \(English\) \(\\*2\)](#)

[ITTO Program PD 519/08 Rev.1 \(F\) BRIEF INFO No.1, February 2010 \(\\*3\)](#)

[ITTO presentation file July 2010 \(\\*4\)](#)

[ITTO Program PD 519/08 Rev.1\(F\) BRIEF INFO No.23, January 2012 \(\\*5\)](#)

[ITTO Program PD 519/08 Rev.1\(F\) BRIEF INFO No.10, December 2010 \(\\*6\)](#)

[ITTO Program PD 519/08 Rev.1\(F\) BRIEF INFO No.9, November 2010 \(\\*7\)](#)

[ITTO Program PD 519/08 Rev.1\(F\) BRIEF INFO No.8, October 2010 \(\\*8\)](#)

[ITTO Program PD 519/08 Rev.1\(F\) BRIEF INFO No.5, June 2010 \(\\*9\)](#)

[ITTO Program PD 519/08 Rev.1\(F\) BRIEF INFO No.3, April 2010 \(\\*10\)](#)

## Project location

Meru Betiri National Park (MBNP) is located in the southern part of East Java province, surrounded by the districts of Jember and Banyuwangi with relatively high accessibility (p.12).



Location of Meru Betiri National Park (p.47)

## Forest area and types

MBNP has a total area of approximately 58,000 ha, and rich biological diversity across the landscape that consists of several vegetation types including highland vegetation, lowland and coastal vegetation, swamp and mangrove (p. 3).

The topographical condition is from hilly areas to lowland areas, coastal and mangrove, facing the Indian Ocean. The Park area consists of a tropical rainforest ecosystem with high diversity of floristic species (more than 500 identified plant species), such as medicinal plants, ornamental plants, bamboo and various small to relatively large animals (p. 12).

MBNP contains mangrove forest, swamp forest, and lowland rain forest ecosystems. This Park is also home to several protected animals, including 29 species of mammal and 180 species of birds (p. 14).

The Park is well known as an important source of local medicinal plants. Research from Lembaga Alam Tropika Nusantara (LATIN) and Bogor Agricultural University (IPB) observed that there are 331 species of medicinal plants in this area (p. 14).

### ***Forest management and use context***

Local communities living inside and in the surrounding area of Meru Betiri National Park are highly dependent on natural resources (state forests as main sources of income) (p. 9).

In terms of functions, the area of the MBNP is divided into 5 zones, namely core zone, intact forest zone, utilization zone, rehabilitation zone and buffer zone. Each zone is managed according to its specific function.

The core zone with a total area of 27,900 ha is a strictly protected area where only research and education activities are allowed.

Research and education, and limited utilization for ecotourism are allowed in the intact forest zone, which has a total area of 22,622 ha.

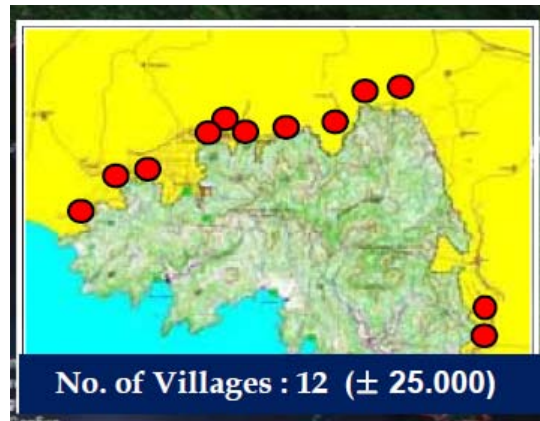
The utilization zone with a total area of 1,285 ha is assigned for research and education, and intensive but wise and sustainable utilization for highland and coastal ecotourism.

The rehabilitation zone consists of 4,023 ha where forest and land rehabilitation (agro-forestry cultivation) involving local communities are taking place to strengthen and protect the inner zone. Rehabilitation activities are carried out in this area to restore forest cover from illegal conversion and illegal cultivation from the early 1990s. Rehabilitation involves planting species with economic potential under agro-forestry plantation models for community benefits and protection/conservation for the MBNP. In this rehabilitation zone, six agro-forestry models have been introduced by LATIN in cooperation with IPB.

The buffer zone has a total area of 2,155 ha and functions as a place for the interaction between community activities and conservation. Several eco-tourism and agro-tourism activities and medicinal plant cultivation have been introduced in this area (pp. 12-13).

The three outer zones, which are utilization, rehabilitation and buffer zones, received more pressure from illegal harvest of biological diversity, deforestation and encroachment. These illegal activities have caused significant reduction of ecosystem functions of the Park. Unfortunately, serial data and information on the overall landscape changes are still lacking and they are not regularly updated (p. 14).

The MBNP is surrounded by two districts, Jember and Banyuwangi. 11-12 villages with a total population of 23,800 directly border the Park (p. 13) (see map below). The majority of the communities are living as land owning farmers (40%) and land laborers (40%) and the rest are traders, construction laborers and others. The average community income is very low, approximately US\$150 per year. To support day-to-day living, most community members search for alternatives sources of income and frequently through illegal logging/harvest in the MBNP for both timber and non-timber forest products including biological diversity (p. 14). Some of the community members are working in Park rehabilitation activities as an additional source of income. The population increases from year to year causing poverty to intensify and the dependency of the communities on the resources of the MBNP will also increase (p. 13).



Map of village locations (\*4).

### **Rates and drivers of deforestation and degradation**

The more serious threat of deforestation and degradation is in the utilization zone, the rehabilitation zone and the buffer zone. Illegal logging and illegal harvest also threaten genetic resources in the strictly protected area (core and intact forest zone). According to the Strategic Plan, the threat from local communities to the Park area includes illegal harvesting of biodiversity, unsustainable collection of firewood and hunting of wildlife species, and forest encroachment for planting agricultural crops. Poverty seems to be the strongest driver for illegal harvest of biodiversity and forest encroachment (p. 6).

Data on the rate of deforestation, degradation, biodiversity loss and climate change are not available or not regularly updated (p. 6).

The factors that combine to allow for illegal logging and encroachment are lack of enforcement, insufficient incentives for communities and governments for maintaining conservation forest, and low capacity of institutions in charge of managing the forest (p. 12).

### **Project proponents**

Executing Agency: Forestry Research and Development Agency (FORDA), Ministry of Forestry, Indonesia (p. 1)

Project activities will be carried out by FORDA in collaboration with Meru Betiri National Park (under the Directorate General of Forest Protection and Nature Conservation - FPNC) and LATIN (p. 36).

**Implementation timeframe**      4 yrs (Jan 2010-Dec 2013) (\*5)

**Project goals**      (p. 5)

#### **Development Objective**

The development objective of this project is to contribute to reducing emissions from deforestation and forest degradation and enhancing forest carbon stocks through enhanced community participation in conservation and management of the Meru Betiri National Park as an integral part of the larger landscape in which they live.

#### **Specific Objectives**

The specific objectives of the project are:

- (i) To improve the livelihoods of local communities living inside and in the surrounding area of the MBNP through participation in avoiding deforestation, degradation and biodiversity loss
- (ii) To develop a credible measurable, reportable and verifiable system for monitoring emission reductions from deforestation and forest degradation and enhancement of forest carbon stocks in the MBNP.

### **Implementation activities**

A community self-controlling ecosystem that brings benefits to communities, stakeholders, forest services, and climate by developing MRV systems is intended. To achieve this, the demonstration activity is structured as a Four Year 3 Stage Plan (\*3).

#### **Phase 1 (2010-2011)**

Establish comprehensive framework and stakeholder engagement

Establish permanent sample plots (PSPs) and data collection for carbon accounting

#### **Transitional (2011-2012)**

Consolidate Phase 1

Develop activities for Phase 2 (apply methods for carbon accounting)

#### **Phase 2 (2012-2013)**

Develop comprehensive capacity (communities, public and private)

Develop comprehensive capability (all pools and applied tool)

Dissemination

### **Outputs and Activities (pp. 16-18)**

Output 1.1. Participation of community in conservation forest management improved

Activity 1.1.1. Review existing schemes and lessons learned from the surrounding areas

To ensure the effective empowerment of local communities related to the MBNP in conservation and forest management practices, the objective of this activity is to review the existing schemes and lessons learnt on how local communities are involved in conservation and forest management that provide benefits and balance between the objective of conservation and the needs of the local communities. This balance is of critical importance for successful and long-term participation of the local communities in the effort to reduce emissions from deforestation and forest degradation and enhance carbon stocks in the MBNP. The review will include participatory benefit sharing approaches such as a village fund with a revolving mechanism.

Activity 1.1.2. Carry out stakeholder consultations to identify the most viable scheme for the MBNP

Activity 1.1.3. Establish partnership for conservation of MBNP

The lessons learnt from Activity 1.1.1 will be used to develop a model or form of partnership between management and local communities to achieve successful management of MBNP both in relation to biodiversity conservation and climate change mitigation.

Activity 1.1.4. Scale up lessons learnt and good practices gained and disseminate them

**Output 1.2. Alternative sources of income to improve the livelihoods of local communities living inside and in the surrounding area of MBNP**

#### Activity 1.2.1. Enhance potential economic activities through community forest partnership programmes

All potential economic activities will be further explored and developed to improve livelihood of local communities and to reduce the pressure on the MBNP, not only by wise use of natural resources but also through other activities such as home industry. The positive economic activities of local communities will include restoration of degraded forest areas with indigenous species.

#### Activity 1.2.2. Promote community-based forest enterprises for domestication and plantation of potentially valuable species of the MBNP

To strengthen the empowerment of local communities in forest management practices, a specific training and other types of community empowerment will be conducted. The training includes the domestication and cultivation of medicinal plants species that are familiar to local communities and initiated by a local NGO, LATIN.

\*Possibility of Charcoal Application for Sugar Palm Industry: About 600 household within and surrounding MBNP are sugar palm producers. They need a substitute for firewood, which they use for producing brown sugar (coconut sugar). One feasible alternative is using coconut shell available in the area. Coconut shell or processed coconut charcoal has higher calorific value than fuel wood. Coconut charcoal can also be used for other purposes, e.g. producing wood vinegar. Use of fuel wood can also be continued, but the sources should be sustainable, e.g. "energy plantations" developed by the communities supported by public private partnership, and not from the MBNP. The area needed to provide the necessary fuel wood is about 2,200 ha. Energy plantations not only supply fuel wood but also contribute to fulfilling other community needs such as food and wood (\*9, p.3).

### **Output 1.3. Illegal logging and forest encroachment reduced and reported**

#### Activity 1.3.1. Conduct awareness raising programme

This activity is intended to reduce illegal logging and land encroachment through awareness raising on the importance of maintaining ecosystem functions (the National Park forest), through workshops, training, forest extension and community gatherings, etc. This activity will be executed by experienced parties, such as professional organizations, local community leaders, and NGOs that have been close to the local communities.

#### Activity 1.3.2. Conduct training for community leaders, police and other local government staff on MBNP protection

#### Activity 1.3.3. Enhance community level institutions to reduce illegal logging and empower them

### **Output 2.1. Capacity in resource base inventory and carbon accounting improved in a measurable, reportable and verifiable form**

#### Activity 2.1.1. Review the existing methodologies of resource base inventory for carbon accounting – Intergovernmental Panel on Climate Change (IPCC), Voluntary Carbon Standard (VCS) and others

This activity aims to review the methodologies for resource base inventory that support the carbon accounting system. The methodologies developed by IPCC, VCS, etc. will be reviewed and developed as necessary to be implemented at the project site.

#### Activity 2.1.2. Develop standard operation procedures for field measurements

#### Activity 2.1.3. Organize and conduct training workshops on resources base inventory for related stakeholders

#### Activity 2.1.4. Organize and conduct training workshops on carbon accounting for related stakeholders

**Output 2.2. Report on comprehensive baseline data and estimation of emissions reduction and carbon stock enhancement of the national park prepared**

Activity 2.2.1. Conduct remote sensing analysis

Activity 2.2.2. Determine project boundary to facilitate measuring and monitoring of carbon stocks

Activity 2.2.3. Establish the project baseline to analyze land-use and land cover change and the associated carbon stock change

Activity 2.2.4 Estimate emission reductions and enhancement of carbon stocks in the MBNP

**Output 2.3. System for monitoring emission reduction and enhancement of carbon stocks established and validated**

Activity 2.3.1. Set up an institutional system for monitoring of forest carbon stocks

Activity 2.3.2. Conduct validation to assess the applied methodologies by a selected standard

Activity 2.3.3. Identify measures to enhance the sustainable emission reductions and enhancement of carbon stocks in the MBNP

To support the management objectives, the MBNP has set out an Action Plan as described below: (p. 41)

a. Stakeholder-based National Park area management

This is based on the fact that current biodiversity loss and ecosystem degradation are mainly related to the activities of local communities. The approach to solve the problem is through the establishment of self-sufficient community models, which will be able to improve community prosperity without disturbing forest resources. LATIN has facilitated initiatives to establish self-sufficient community models in 2-3 villages with several core activities.

b. Better management of existing biodiversity

In order to protect and conserve biodiversity and genetic resources, baseline data should be collected and regularly updated through monitoring. To enable regularly updating of data, the biodiversity information system (*Sistem Informasi Keanekaragaman Hayati - SIK*) will be further developed through capacity building, collecting baseline data and monitoring.

**Actors' roles and responsibilities**

Ministry of Forestry	Facilitate discussions; prepare and formulate project proposal; provide general guidelines for overall management; take lead in the implementation and dissemination of project outcomes (p. 9).
FORDA, a subsidiary body of the Ministry of Forestry	Executing Agency Facilitate discussions; prepare and formulate project proposal; take lead in the dissemination of project findings as lessons learned for other sites; take lead in operational activities together with the management of the MBNP (p. 9). FORDA is the holder of scientific authority on forestry and is therefore responsible for the availability of scientific information and technologies to be used for the basis for decision making as well as for practical uses (p. 40)
Meru Betiri National	Collaborating Agency



Park-DG FPNC	Provide necessary data and information required for project implementation; facilitate the collection of data and monitor the operational activities (p. 9). Meru Betiri National Park is under the Directorate General of Forest Protection and Nature Conservation- DG FPNC (p. 40).
Lembaga Alam Tropika Indonesia (LATIN)	Collaborating Agency Involved in community development and income generating activities; continue and expand the existing initiatives (p. 9).
Universities / Research Institutions	Involved in various assessments and development of monitoring system, resources base inventory, etc. (p. 9).

### **Community participation**

Local communities will be directly involved in the implementation of many project activities to achieve project outputs 1.1, 1.2 and 1.3 (p. 9).

Attention will be given to improving the economic viability of 11 local communities, with an approximate population of 23,800, related to MBNP through the implementation of Activity 1.2.2 to ensure the effective conservation of the Park in partnership with the local communities (p. 9).

Currently, agro-forestry models using medicinal plants, *Parkia*, *Pangium*, *Enterelobium*, bamboo and some other plants, have contributed to the improvement of community prosperity in the pilot site of the Park. However, due to limited resources, the models have not been expanded to other areas of the Park. Intervention by this proposed project will significantly accelerate the enhancement of the models and good practices to wider areas of the Park (p. 15). Land use rights in the buffer zone of the national park are rewarded to the community. They will grow agricultural plants and fruit trees (and also medicinal plants, if they intend to). They are interested in enrichment planting with high-value medicinal plants existing in the Park area. Through the project, the community will grow shade tolerant medicinal plants and be able to harvest fruits, bamboo, rattan and the medicinal plants with the development of community-based forest enterprises and with the engagement of local NGOs (p.15). Local communities utilize the land by planting medicinal plants such as spices and herbs. This type of land use system should be promoted because of its advantages in improving the economic value of the land as well as increasing carbon stocks on the rehabilitated land (\*10, p.2).

To ensure the sustainability of the programme, teamwork will be used to monitor and to ensure the continuation of the project after the completion date. Relevant stakeholders including local community groups and NGOs (especially LATIN) will be part of the work team (p.37).

The following activities have been undertaken: Awareness raising programmes; Training for community leaders, police and other local government staff on MBNP protection; Training workshop on carbon accounting for related stakeholders (\*6, p.3).

The MRV system needs the active participation of communities and other stakeholders within and surrounding MBNP. One of the challenges of developing the MRV system is how the community and related stakeholders could be engaged in measuring and monitoring for the GHG inventory, and simultaneously continue and improve economic development. To improve community participation in MRV, MRV training has been undertaken, in collaboration with the Faculty of Agriculture, Brawijaya University (\*7,p.2). Effective local community participation in carbon accounting will decrease leakage as well as improve the effectiveness of the MRV system in MBNP (\*8,p.1).

### **Project financing**

Budget: Total (US\$ 973,388): ITTO (US\$ 814,590), Government of Indonesia (US\$ 158,798) (p.1)

The Ministry of Forestry and ITTO aim to contribute to conservation of the MBNP with financing from 7&i Holdings Ltd (\*2).

## Benefit sharing

See sections on implementation activities and community participation for planned benefits for communities.

## Emissions and removals with and without project

The existing baseline data of the MBNP are incomplete and in many cases are no longer valid (p.6).

In order to enhance the development of credible carbon stock monitoring systems, existing methodologies such as those developed by the IPCC and others, such as the VCS and the Climate Community and Biodiversity Alliance (CCBA) guidelines will be reviewed and applied in the proposed project work with the technical assistance of a team of international and national experts in the area of carbon offsetting activities. Indicative guidance from the Annex of UNFCCC Decision 2/CP-13 on Reducing Emissions from Deforestation in Developing Countries will be used and reviewed in this project. Indonesian policy on REDD implementation supports national accounting with implementation at sub-national level (p.16).

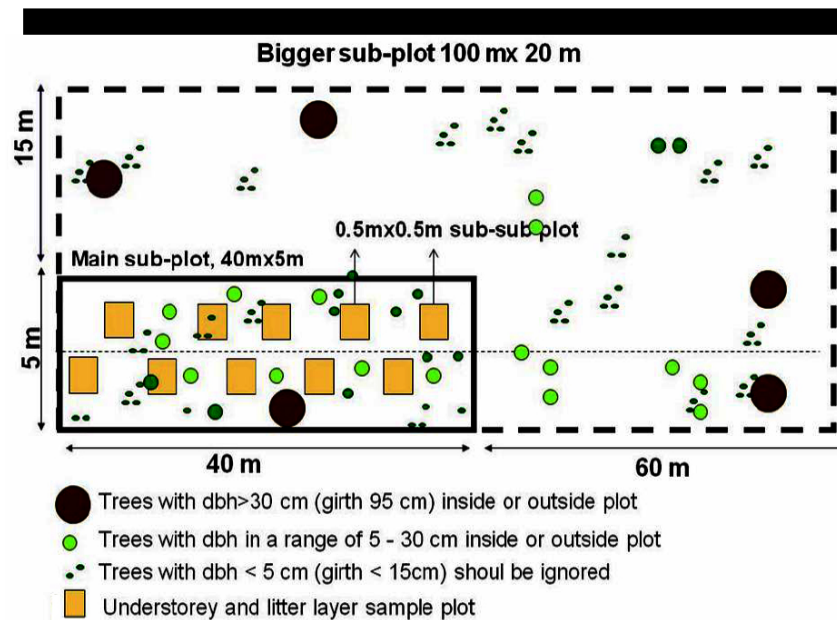


Figure of PSP structure (\*4).

20x100 m PSPs are used, with a sampling intensity of 0.011%. there are 40 PSPs across the 58,000 ha of MBNP (\*4): 17 PSPs in the nucleus zone, 14 PSPs in the forest zone, 3 PSPs in the rehabilitation zone, 4 PSPs in the utilization zone, and 2 PSPs in the special utilization zone (\*6, p.2).

The field measurement method aimed to estimate carbon stock in the plots and landscape using RaCSA (*Rapid Carbon Stock Appraisal*). Carbon measurement in the plots include above ground biomass (tree and grass), below ground biomass, necromass (dead organic matter) and soil organic matter (\*8, p.2).

For GIS analysis, SPOT 4 (1997 and 2005), Landsat 7 ETM+ (1997, 1999, 2001, 2002, 2003, 2007, and 2010), ALOS AVNIR-2 (2007 and 2009), and topographical maps (2000) were used (\*6,p.5).

## Monitoring



Project monitoring, review and evaluation will be scheduled in accordance with the Second Edition of the ITTO Manual for Project Monitoring, Review and Evaluation (p.37).

### **Reporting**

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(p.37)

**Progress Reports:** The executing agency (FORDA) will submit to ITTO a bi-annual project progress report no later than 10 weeks before Council Sessions of each calendar year for the duration of the project implementation. Such progress report shall contain all the information relevant to the financing and implementation of the project as set out in the ITTO Manual for Project Monitoring, Review and Evaluation.

**Technical Reports:** This shall be provided as appropriate during the project duration related to the technical activities of the project.

**Completion Reports:** The executing agency will submit to ITTO the project completion report, conforming to the model and content of the ITTO Manual for Project Monitoring, Review and Evaluation within three (3) months after project completion.

### **Verification**

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Verification should be undertaken internally within sub national level, and externally at the national level. The internal verifier can be an independent entity or existing entity in the provincial level (\*7, p.2).

### **Risks and risk management**

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A potential risk may emerge from conflict of interest between local communities and the management of the Park, especially in the utilization of goods and services from the area. The conflict of interest may diminish the participation of the community in field implementation of the project.

To minimize this potential risk, several approaches will be taken.

- a. Conduct consultation with all local stakeholders, and assess future risks and the impacts on community livelihoods.
- b. Promote existing initiatives to empower communities for their involvement in conservation through various schemes.
- c. Enhance community-forest partnership in the development of goods and services which provide various alternative sources of income to communities.
- d. Scale up and replicate the successful lessons learnt and good practices of agro-forestry to wider communities and areas of the MBNP.

To overcome the conflict of local community and illegal logging, an integrated approach involving various stakeholders will be identified and further developed. This will include relevant government authorities (such as police) and key influential community leaders in the area. It will contain both law enforcement and community prosperity enhancement. Successful approaches for the conservation of the MBNP by combating illegal logging will be further developed and implemented, such as building synergy with the upcoming community development project in the surrounding area carried out by LATIN with funding support from the UK Department for International Development (DfID). Discussion on this issue between FORDA and LATIN has been in progress and close collaboration will be enhanced during project implementation (pp. 15-16).

Indonesian policy on REDD implementation supports national accounting with implementation at sub-national level. Ensuring consistency between methodologies developed for the project activities and at the national level will reduce risks related to the development of the monitoring system (p. 16).

The history of low emission levels will make it challenging to demonstrate additionality (\*5).

### **Progress and plans**

- Proposal submitted to ITTO approved
- Project recognised by Ministry of Forestry as an official demonstration activity
- Partnership between ITTO, 7&I Holdings and Indonesia to conserve tropical forests was launched in Oct. 2009. (\*2)
- Draft letter of Ministry Decision for official appointment of DA REDD + in MBNP has been prepared, however the Decision Letter from Ministry of Forestry is still waiting for the umbrella regulation that governs forest carbon activities, including REDD +. So far the existing legal regulations related to REDD + are still inadequate to officially appoint REDD + demonstration activities in Indonesia (\*5)

### **Links:**

#### **Project-related documents**

[ITTO webpage](#)

[Aliadi,A.\(2012\)Community Forestry Supporting Resilience in Meru Betiri park,Indonesia. \*Linking Adaptation and Mitigation through Community Forestry\*. Suzuki R. edited. RECOFTC, Bangkok: pp.27-35.](#)

#### **Others**

[Down to Earth No.84, March 2010](#)

[Forest Partnership Platform:メルベティリ国立公園における REDD プラスと生物多様性保全の推進のための官民パートナーシップ \(Japanese\)](#)