REPUBLIC OF INDONESIA
MINISTRY OF FORESTRY

JICA STUDY ON REDD+ IN INDONESIA AND COOPERATION STRATEGY IN FORESTRY SECTOR

FIELD REPORT

SEPTEMBER 2011

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NIPPON KOEI CO., LTD.

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Table of Contents

List of Tables

List of Figures

Abbreviations

BAKOSTANAL	National Coordinating Agency for Survey and Mapping (Indonesian abbreviation)
BAPPENAS	National Development Planning Board (Indonesian abbreviation)
BAU	Business as usual
CCBS	Carbon Community and Biodiversity Standard
COP	Conference of the parties
DNPI	Indonesian National Council on Climate Change (Indonesian abbreviation)
FA	Field Activity
GHG	Green House Gas
GOI	Government of Indonesia
ICCTF	Indonesia Climate Change Trust Fund
ICCSR	Indonesia Climate Change Sectoral Roadmap 2010-2030 (Indonesian abbreviation)
INCAS	Indonesian National Carbon Accounting System
JAXA	Japan aerospace exploration agency
JICA	Japan International Cooperation Agency
LAPAN	National aeronautics and space institute (Indonesian abbreviation)
M&E	Monitoring and evaluation
MOEJ	Ministry of Environment of Japanese Government
MoF	Ministry of Forestry
NAMA	Nationally Appropriate Mitigate Actions
NDP-IRCC	National Development Planning: Indonesia Responses to Climate Changes
NTFP	Non timber forest products
PHKA	Director General of Forest Protection and Nature Conservation (Indonesian abbreviation)
RAD-GRK	Regional Action Plan for Green House Reduction (Indonesian abbreviation)
RAN-GRK	National Action Plan for Green House Reduction (Indonesian abbreviation)
RAN-PI	National Action Plan on Climate Change (Indonesian abbreviation)
REDD+	Reducing emissions from deforestation and forest degradation and plus
REL	Reference emission level
RKPD	Regional Development Work Plan (Indonesian abbreviation)
RPJMN	National Medium Term Development Plan (Indonesian abbreviation)
RPJPN	National Long Term Development Plan (Indonesian abbreviation)
UKP4	Presidential working unit for supervision and control of development (Indonesian abbreviation)
UNFCCC	United Nations Framework for Convention on Climate Change
VCS	Voluntary/Verified Carbon Standard
WG	Working groups

Chapter 1 Backgrounds and objectives of the study

1.1 Backgrounds of the Study

Indonesia has 94,400,000 ha of forests in the country which count 52% of their terrestrial areas. This is the biggest in Asia and placed as the third position in the world following Congo in Africa and Brazil in South America. Because the country extends across the equator the forests has remarkably rich biodiversity which is composed with 325,000 species of fauna and flora. 20% of total species on the globe are said to inhabit in Indonesia. Meanwhile rapid expansion of mining industry and plantation development and forest fires causes deforestation and forest degradation in large scale in the country. The government of Indonesia announced 1.09 million ha of forest has disappeared and converted annually into other types of land uses. Such a rapid and large scale of deforestation and forest degradation causes various adverse and negative impacts to the natural and socioeconomic environments which are loss or decline of biodiversity, increase of natural disasters, decline of social/economic activities and pauperization in the rural communities. Furthermore deforestation and forest degradation is today presumed to be the main source of emissions causing the increase of greenhouse gas in the global environment.

In the circumstances, the REDD+ (Reducing Emissions From Deforestation and Forest Degradation in Developing Countries and Plus) has been focused as one of the countermeasures against climate changes through reducing deforestation/forest degradation and implementing sustainable forest management. Since the first commitment period of Kyoto Protocol will be ended in 2012, REDD+ is considered to be adopted in COP after 2013 as a new method of forestry-related measures to reduce emissions against climate changes.

The concept of REDD+ was proposed by Papua New Guinea (PNG) and Costa Rica in COP11 in 2005. Since then it was approved in COP13 in Bali in Indonesia to be included in the agenda for the discussion of "After Kyoto Protocol from 2013". The concept and framework of REDD+ were continued to be discussed every year in COP and the international consents have been gradually built among the participating countries of the conference. As of July 2011, the AWG of UNFCCC were held in Bon in Germany to discuss further to set clearer framework of the technical and implementation mechanisms to realize the scheme of REDD+.

REDD+ Task Force of the Government of Indonesia has drafted the revised version of "National REDD+ Strategy" in March 2011. It clearly shows the road map and time schedule to present the readiness phase until 2013 followed by the full implementation from 2014. The year of 2011 belongs in the readiness phase to implement the pilot projects (demonstration activities) in the field in order to establish technical methodologies and implementation mechanisms before entering full implementation phase after 2014.

Ministry of Forestry has received several supports provided by the donors/international organizations to REDD+ readiness since 2008 and cooperation in REDD+ in the sector has become the main stream for those entities to show their presence in the donors/international community, which simultaneously gives the Japanese government the issues to have a strategy to support the said sector focusing on assisting REDD+ readiness in the country.

While REDD+ intends to provide an economic incentives by creating carbon credits through natural forest conservation, it also significantly contributes to the forest conservation itself as well as biodiversity conservation of the natural forests. Japanese government hosted COP10 of Biodiversity in Nagoya in October 2010 and is responsible for leading and monitoring the international dialogues and negotiation in accordance with Nagoya Protocol and other relevant agreements made at the conference. Considering this context, it is essential for the Japanese government to have a cooperation strategy for REDD+ in Indonesia to enhance forest and biodiversity conservation at all levels in the country.

In the circumstances JICA decided to conduct the Study to formulate the comprehensive strategy (illustrated as a cooperation framework) and the future projects to support promoting REDD+ readiness in Indonesia which also contribute the conservation of natural forest and environments.

1.2 Objectives of the Study

The Study aims to propose the strategy of JICA (cooperation framwork) to support the foresry sector in Indonesia to promote REDD+ readiness and the future projects to mateialize the strategy through investigating and analyzing the current progresses of REDD+ related activities carried out by the Ministry of Forestry assisted by the international organization, donor agencies, NGOs, etc and the ongoing instirutional setups facilitated by the REDD+ Task Force of the Government.

The study is also carried out simultaenously with the regular dialogues between MoF and JICA to identify the needs for coorperation in the coming year of 2012. The cooperation framework and the projects proposed through the Study will be partly based on those needs identified in the dialogues between the both parties.

Chapter 2 Approach and schedule of the Study

2.1 Basic approach of the Study

One of the objectives of the Study is to formulate the JICA project to facilitate the readiness of REDD+ in Ministry of Forestry (MoF), which is associated with one of the tasks of the Project for facilitating the implementation of National Forestry Strategic Plan (2009-2012, hereafter called FFORTRA project). Therefore the Study team is required to cooperate closely with the FFORTRA project and the relevant departments and the centers of MoF in formulating the future project based on the needs of MoF during the REDD+ readiness phase.

At the meeting held in January 2011 in Cibodas, MoF staffs reviewed and examined the JICA cooperation to the forestry sector in Indonesia. The views and comments presented at the meeting suggested that further involvement of MoF staff into the project formulation process would be necessary so that it could be formulated more exactly based on their recent policy and strategy, and their cooperation needs. Therefore, any ideas and proposed framework of the JICA projects formulated in MoF should be shared, discussed, examined, understood and synthesized among the stakeholders in MoF and this is also the case in our Study.

Hence the Study team decided to take **"work together approach"** in formulating the future project in MoF by requesting the International Cooperation Department (KLN) of MoF 1) to formulate the working group (WG) for the Study consisted of the key staffs of MoF in climate change and international cooperation, 2) to arrange the opportunities to share the study outputs regularly (inception, mid term, and final) with the WG and exchange views and ideas for further improvement of the Study outputs.

2.2 Schedule of the Study to produce the expected outputs

To implement the approaches of the Study proposed in the inception report (Ic/R), the Study team followed the routines of 1) ~ 4) as below to conduct the Study in Indonesia and to produce in most effective manner the expected outputs in the period of the field work in Indonesia from 24 April till 11 August.

1) Data and information collected in MoF and other organizations relevant to REDD+ are shared within the Study team for the references of other members.

2) Results of the interviews and discussions are recorded in a memorandum to keep the views and comments of the key persons of REDD+ in the country and share them within the team members.

3) Data/information and findings are shared within the Study team for further discussion and analysis to draw implications in designing the JICA cooperation of REDD+.

4) Tentative outputs of the Study are summarized as a weekly report and shared with the personnel of JICA.

Following the routine of the Study as described above, work items as proposed in Ic/R were carried out during 8 weeks in the first field survey period in Indonesia as indicated in **Figure 2.1**. The whole survey period is split up into two phases by the interim workshop held on 19 May. The first phase focuses on the basic study to collect and analyze the data and information while the second phase was given over to integrate the results of the analysis into and come up with and upgrade the cooperation framework and to materialize the design of future cooperation project. Around two weeks between 20 June and 6 July were used for the first in-country work to report the outputs of the survey to JICA in Tokyo and prepare the draft field report to be submitted before commencing the second field survey.

Work items	1st week	2nd week	3rd week	4th week	5th week	6th week	7th week	8th week	9th week	10th week
	April 25-May 1	May 2-8	May 9-15	May 16-22	May 23-29	May 30-June 5	June 6-12	June 13-19	June 20-26	June 27-July 3
1. First field survey in Indonesia										
1-1. Kich off meeting/Dicsussion on Inception Report										
1-2. Collection and revew of data/information on REDD+										
1-3. Interview & discussion with DG/institutions of MoF										
1-4. Interview & discussion with other government institutions relating REDD+										
1-5. Interview & discussion with donors/Int'l organization, embassy and NGOs										
1-6. Workshop to identify needs of MoF										
1-7. Workshop to report interim results of the Study										
1-8. Discussion with JICA mission & Embassy of Japan in Jakarta										
1-9. Design & revision of cooperation framework and future project										
2. First incountry work in Japan										
2-1. Prepration of the Study report (draft)										

Source: JICA Study team

Figure 2.1 Work schedule of the first field survey and in-country work

The first field survey and the in-country work were followed by the second field survey which major purposes were to conduct the field visit to specify the ideas for the proposed future project in the potential areas for REDD+ activities. The second survey was started on 7 July with the preparation of site visit to the provinces. Two weeks were allocated to visit three provinces which were Central Kalimantan, Jambi in Sumatera island and Gorontalo province in Sulawesi island. Final workshop was held on 8 August to share the findings in the field visit and proposed framework for the future JICA cooperation project. Around one month from mid of August was allocated for the final in-country work to complete the filed report and the final report of the Study. **Figure 2.2** indicates the schedule of the second field survey and the in-country work following thereafter.

Work items	11th week	12th week	13th week	14th week	15th week	16th week	17th week	18th week	19th week	20th week	21st week	22nd week
	Jul 4 - 10	Jul 11 - 17	Jul 18 - 24	Jul 25 - 31	Aug 1 - 7	Aug 8 - 14	Aug 15 - 21	Aug 22 - 28	Aug 29 - Sep 4	Sep 5 - 11	Sep 12 - 18	Sep 19 - 25
3. Second field survey in Indonesia												
3-1. Prepration of the Field visit												
3-2. Field visit to the potential province/district for REDD+ DA												
3-3. Collection of data/information on proposed market mechanism												
3-4. Finalization of proposed framework for the future project												
3-5 Final workshop to share the results of the Study and followup meeting												
4. Second incountry work												
4-1. Preparation of the field report												
4-2. Discussion with JICA (HQ) and submission of the field report												
4-3. Preparation and submission of the Final Report												
Due date to submit the Final Report (September 20)												

Source: JICA Study team

Figure 2.2 Work schedule of the second field survey and the final in-country work

2.3 Composition of the Study team and the sharing of the works among the experts

The Study team is composed of the following experts who are assigned partly or whole period of the field survey and in-country work. The whole period of the first field survey is mainly covered by the team leader, Mr. Yasu and the expert of private sector partnership, Mr. Kubo. The expert of carbon offset (1), Mr. Imai was assigned in the first half the period, which was followed by the second expert, Mr. Ishikawa. The biodiversity expert, Mr. Suzuki was assigned mostly in May.

The site visit was done in the second field survey by the three experts, namely forestry (Mr. Imai), biodiversity (Mr. Suzuki) and Private sector partnership (Mr. Kubo). The carbon offset expert (Mr.Ishikawa) was based in Jakarta to prepare and have interviews to the personnel of DNPI and UKP4 on the readiness for the carbon trading market by the Government of Indonesia. The team leader supervised overall the Study to produce the final outputs as scheduled in the Ic/R. He stayed in Jakarta until 10 August to hold the final workshop of the Study and the follow-up meeting with the Ministry of Forestry to share the findings of the team and make sure the consensus on the conclusions of the Study.

Table 2.1 Assignment of the experts in the first field survey in Indonesia

Position	Name	Actual assignment period
Team Leader/Forestry measures against climate changes	Hiromi Yasu	24 April – 19 June, 17 July - 11 August
Forestry/carbon offset (1)	Hideki Imai	24 April – 20 May, 7 July – 31 July
Carbon offset (2)	Masaru Ishikawa	22 May – 10 June 14 July – 28 July
Biodiversity conservation	Tsutomu Suzuki	1 May – 8 June 7 July – 28 July
Private sector partnership	Hideyuki Kubo	24 April – 18 June 7 July – 28 July

Source: JICA Study team

Following table indicate the main work items actually done by the experts in the Study team. Because of the crosscutting and inter-sectoral nature of the Study of REDD+, works were shared in a flexible manner among the experts within the manageable areas of each expert. Although the sharing presented in the table looks to be changed from the tasks of the experts initially proposed, those works basically cover the contents which were described in the Ic/R.

Table 2.2 Works done by the experts of the Study team

Position (Name)	Works done by the experts
Team Leader/Measures in the forestry against climate changes (Hiromi Yasu)	1) Leading and supervision of the Study 2) Collection of data and information on the progress of National Forestry Strategic Plan (RENSTRA) in MoF 3) Collection of data and information on the progress of REDD+ program/projects funded by donors and international organizations 4) Analysis of data/information collected by the team members 5) Organizing of the workshops to identify the cooperation needs of MoF in order to implement RENSTRA in relation to REDD+ readiness 6) Organizing of the workshops to share the interim results of the Study with the personnel of MoF and other government institution in relation to REDD+ 7) Preparation of presentation materials for the workshop and the Study reports 8) Continuous communication and correspondence with FFORTRA project, JICA Indonesia office as well as its head quarter in Tokyo 9) Preparation of weekly and monthly report to submit to JICA 10) Presentation at the workshop and reporting to JICA
Forestry/carbon offset (1) (Hideki Imai)	1) Collection of data/information and their analysis on forest and forestry in Indonesia 2) Designing of the GIS works to identify the potential areas for REDD+ demonstration activities 3) Preparation of the report on the initial assessment of forest resources and peat land distribution in the country 4) Preparation of the site visit 5) Site visit to Central Kalimantan and Gorontalo provinces 6) Preparation of the report on the site visit to the said provinces

Position (Name)	Works done by the experts
Carbon offset (2) (Masaru Ishikawa)	1) Designing of the proposed market mechanisms for REDD+ with the comparison to other schemes of climate change schemes in several sectors. 2) Designing of the approaches of data/information collection and interviews to the government personnel on the possible future market mechanisms for REDD+ and other schemes of climate change 3) Comparison of the possibility to introduce the market mechanisms for REDD+ in Indonesia 4) Interviews to DNPI and UKP4 and updating of the readiness for carbon trading market initiated by the Government 5) Preparation of the Study report
Biodiversity conservation (Tsutomu Suzuki)	1) Collection of data/information and their analysis on biodiversity conservation and national park management in Indonesia 2) Collection of data/information and their analysis on conservation projects focusing on the national parks in the country 3) Initial assessment on the priority of the national parks from the view of conservation of biodiversity, flagship and rare species in the area 4) Initial review of the PDMs and the progresses of the ongoing JICA technical cooperation projects. 5) Site visit to Central Kalimantan and Jambi provinces 6) Preparation of the report on the site visit
Private sector partnership (Hideyuki Kubo)	1) Collection of data/information and their analysis on the REDD+ demonstration activities supported by the donors, international organizations and NGOs 2) Investigation of overall REDD+ frameworks including MRV, fund instruments, market mechanisms and nested approaches connecting central and local levels in the country 3) Designing of the provisional cooperation frame work and future JICA project to support REDD+ readiness in Indonesia 4) Preparation of draft PDMs and PBIS for the proposed JICA cooperation projects 5) Site visit to Central Kalimantan province 6) Preparation of the report on the site visit

Source: JICA Study team

2.4 Composition of this report

This report summarizes the findings and the final outputs of the Study which was produced during the first and second field survey period from 24 April to 11 August, 2011 in Indonesia. It is composed of eight chapters as follows.

Chapter 1: Backgrounds and objectives of the Study

Chapter 2: Approach and schedule of the Study

Chapter 3: REDD+ in Indonesia

Chapter 4: Review of the forestry sector in relation to REDD+ in Indonesia

Chapter 5: Identification of cooperation needs

Chapter 6: JICA cooperation through the Project on REDD+

Chapter 7: Provisional overall framework of JICA cooperation on REDD+ in Indonesia

Chapter 8: Conclusion and further steps after the Study

Chapter 1 and 2 is an introductory section to give a brief clarification on the backgrounds, scope and basic approach of the Study, which were followed by the **Chapter 3 and 4** focusing on the review of the key government documents, the current progress of readiness for REDD+ demonstration and ongoing/planned activities on REDD+ managed by the donors, international organizations, and NGOs, in Indonesia.

Chapter 5 describes the cooperation needs of Ministry of Forestry presented at the workshop held on 19 May. The needs of REDD+ related organizations of the Government were also analyzed according to the results of the interviews/discussions and updated information. Together with their needs, JICA cooperation in the forestry sector through technical assistance and grant aid were examined from the view of utilizing those experiences and knowledge accumulated for the REDD+ related activities.

Chapter 6 describes the process to select the potential target areas for the field visits and its results and outputs. Based on the findings it illustrates the provisional framework of the future technical cooperation project and their components in detail needed in REDD+ field activity and supports to the local governments.

Chapter 7 describes proposed ideas for cooperation under the umbrella of the Climate Change Program formulated by JICA which covers Ministry of Forestry and REDD+ related institutions in the Government. Although no designation has been made to formulate "REDD+ Agency" by the Government since the role of REDD+ Task Force was terminated at the end of June this year, the frame of cooperation is drawn assuming UKP4 under the presidential office further takes an initiative to promote the government's efforts in REDD+ readiness phase until the end of 2013.

Chapter 8 gives the final conclusion of the Study and the further steps to be followed after its completion.

Chapter 3 REDD+ in Indonesia

3.1 Target and progress of emission reduction in Indonesia

After ratification of the United Nations Framework Convention on Climate Change (UNFCCC) in December 2004, the Government of Indonesia (GOI) has played an active role on mitigation countermeasure to combat with the climate change. At the 13th Conference of the Parties (COP13), the GOI contributed significantly to be a host country and coordinate the Bali Action Plan that requires the developing countries to enhance mitigation actions in the context of the global sustainable development and adopt the Bali Road Map as a two-year process to finalize a binding agreement in 2009 in Copenhagen.

After COP13, the GOI has prepared the following policies/plans which contain the concept of climate change mitigation and adaptation and assists the relevant sectors and local governments.

Table 3.1 Green House Gas (GHG) emissions reduction policies/plans in Indonesia

#	Policies/Plans	Year	Outlines
1	National Long Term Development Plan 2005-2025 (RPJPN)	2007	RPJPN described the various development plans for disasters caused by extreme climate events in Indonesia, including the recent floods and droughts etc. that have brought about heavy losses to the national economy.
2	National Medium Term Development Plan (RPJMN)	2010	RPJMN is a mid-term national development plan. Currently, RPJMN 2010-2014 is under implementation. It is the elaboration of the vision, mission, and program of the President.
3	Indonesia Climate Change Sectoral Roadmap 2010-2030 (ICCSR)	2010	ICCSR supports the GOI's development vision related to climate change for the next 20 years. ICCSR will be implemented through the practical national development plan. The plan consists of nine (9) priority sectors such as energy, forestry, industry, transportation, waste management [mitigation aspect], agriculture, marine and fishery, water resources, health [adaptation aspect].
4	National Development Planning: Indonesia Responses to Climate Change (NDP-IRCC)	2007	NDP-IRCC is intended to strengthen the RPJMN 2004-2009 as well as to include inputs for the preparation of RPJMN 2010-2014 in the context of integrating climate change.
5	National Action Plan on Climate Change (RAN-PI)	2007	RAN-PI was prepared in Nov. 2007, and its objective is to be used as guidance to various institutions in carrying out a coordinated and integrated effort to tackle climate change.

Source: NAMA prepared by the GOI

Note 1: "Year" indicates the year prepared and authorized by the GOI.

Note 2: Abbreviations indicated in parentheses are Indonesians abbreviation of the policies/plans.

As for legislation, the GOI enacted the Presidential Regulation No.46 in 2008 in order to coordinate the council over climate change and to strengthen the position of Indonesia in international forums on climate change. The Regulation states the establishment of national council for climate change, the formulating mechanism and the procedure for carbon trade as well. Working Groups (WG) were also proposed by the Regulation to assist the council as listed in the followings.

1 Adaptation WG

5 WG on Post-2012

2	Mitigation WG	6	WG on Forestry and Land Use Change
3	WG on Technology Transfer	7	WG on Basic Sciences and GHG Inventory
4	Funding WG	8	Marine WG

3.2 Needs for REDD+ Implementation in Indonesia

The GOI prepared and submitted NAMA[1] to UNFCCC in January 2010 with indicating the following targets. Detailed explanations of NAMA are presented in **Chapter 4.1.1.**

Table 3.2 Target presented in NAMA formulated by the Government of Indonesia

The emission reduction will be achieved through the following actions:

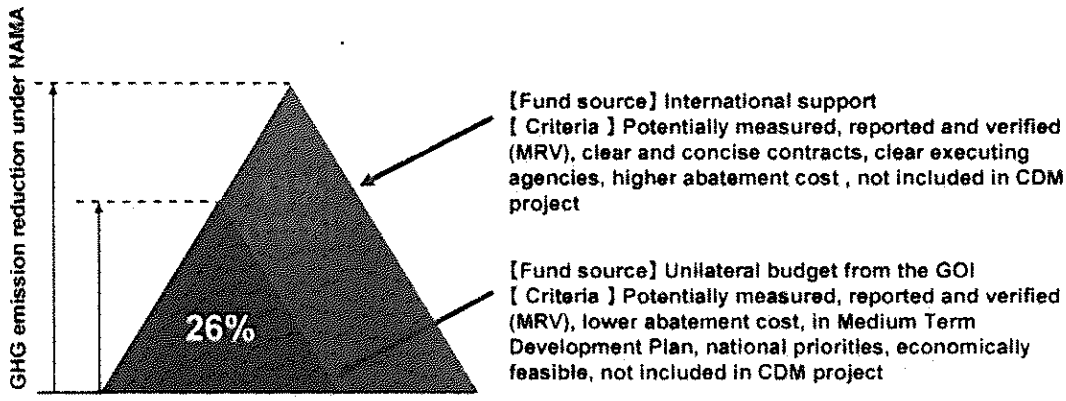
1. **Sustainable peat land management**
2. **Reduction in rate of deforestation and land degradation**
3. **Development of carbon sequestration project in forestry and agriculture**
4. Promotion of energy efficiency
5. Development of alternative and renewable energy sources
6. Reduction in solid and liquid waste
7. Shifting to low-emission transportation mode

With the above items, total 26% of GHG emission reduction will be achieved by 2020 compared with business-as-usual (BAU) basis.

Source: NAMA prepared by GOI

Note: Items with bold face are relating to the forestry sector.

Before official submission of NAMA, the GOI formulated the "National Action Plan for Green House Effect Reduction (RAN-GRK)". In RAN-GRK, further targets are clearly mentioned based on the mitigation action target (26%) by 2020 in NAMA[2] and aims to mitigate by 41% further under the support of international cooperation. Image of RAN-GRK targets are presented in the next figure.



Source: NAMA prepared by GOI

Figure 3.1 Image of RAN-GRK targets

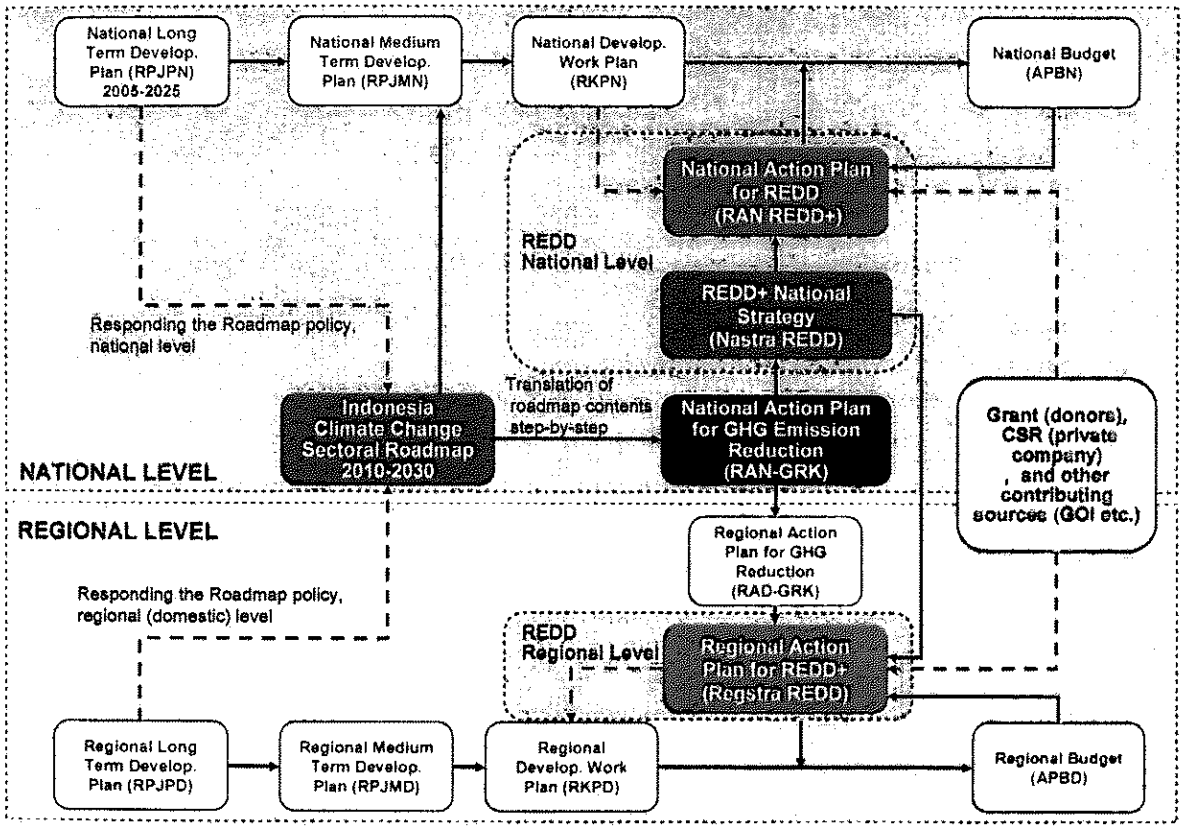
Currently, RAN-GRK is regarded as the ground plan of the climate change activities in Indonesia. The detailed descriptions of RAN-GRK are presented in **Chapter 4.1.3.**

[1] Non-Annex I parties (countries) should implement national GHG mitigation actions depending on the effective implementation of the commitments by the parties in provision of financial resources and transfer of technology.

[2] The president of GOI announced its policy, which is GHG emission reduction target (26%) from BAU by 2020, and is expected further emissions reductions (41%) with international support, at the G20 meeting in Pittsburgh in 2009.

To clarify the climate change system in Indonesia, its relationships in national/regional levels are summarized as below.

In February 2007, the GOI issued Law No. 17 of 2007 on National Long-Term Development Plan (RPJPN) Year 2005-2025, and also issued the National Action Plan on Climate Change (RAN-PI)[3] in November 2007, which contains the initial guidance and multi-sectoral coordination effort to address mitigation and adaptation to climate change. Then, the National Development Planning Agency (BAPPENAS) published a document "National Development Planning: Indonesia Responses to Climate Change (NDP-IRCC)[4]" in 2008, that is first set to be the guidelines to integrate climate change programs into national development process. Especially for the National Medium-Term Development Plan (RPJMN) 2010-2014 was followed by the Indonesia Climate Change Sectoral Roadmap 2010-2030 (ICCSR, purple box in the next illustration) in March 2010. ICCSR covers not only climate change mitigation measures but also adaptations and is indirectly compiled its essence into National Long Term Development Plan (RPJPN) 2005-2025. Then, ICCSR is interpreted into the RAN-GRK (black box in the next illustration), and RAN-GRK is a document which indicates the specific step-by-step direction based on the ICCSR.



Source: An illustration in the National REDD+ Strategy in Indonesia, modified by JICA Study team

Note: Dotted line indicates in-direct relationship between two boxes, and solid line indicates direct relationship between two boxes.

Figure 3.2 Relationship of national/regional plans and REDD+

As mentioned above, it can be said that the GOI is one of the most progressive counties in terms of the climate change commitment, such as challenging commitment at G20 meeting in 2009.

3 RAN-PI is designed to be used as guidance to various institutions in carrying out a coordinated and integrated effort to tackle climate change, and will be opened to the public later from BAPPENAS.

4 NDP-IRCC (yellow book) has the following objectives; (i) to integrate climate change programmes as a part of national development planning process; (ii) to present sectoral and cross-sectoral top priorities on climate change within the framework of sustainable development; (iii) to provide an overview of funding mechanisms and institutional arrangements; and (iv) to provide clear guidance for development partnership on climate change.

Especially, Reduced Emissions from Deforestation and forest Degradation (REDD) and REDD plus (REDD+) are indispensable activities to achieve the targets in NAMA (26%GHG emission reduction).

REDD is an effort to create a financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. In addition, REDD+ goes beyond deforestation and forest degradation and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.

With the pristine wilderness area, it is therefore understandable that REDD+ is a top priority countermeasure in NAMA activities in Indonesia from the viewpoint of GHG emission reduction potential. Activities under REDD+ are undertaken by national or local governments, dominant NGOs, the private sector and so on. There are many players are already commenced the REDD activities in Indonesia. Therefore, policies and plans should be systematically to take the lead of players, the GOI has developed the above diagram to conduct the REDD+ strategy.

In the diagram above, there are two (2) parts of REDD process in Indonesia: national level and domestic regional level.

As for national level, REDD+ National Strategy (Nastra REDD+, blue box) is taken over the RAN-GRK directly, based on the ICCSR contents. Nastra REDD+ states the implementation of REDD+ in Indonesia and consists of three (3) phases:

Phase 1	Preparatory Phase [2007-2008]	Identification of the status of science & technology and relevant policies
Phase 2	Readiness Phase [2009-2013]	Preparation of REDD+ methodology and policy
Phase 3	Full Implementation [2014-]	Full implementation phase according to COP regulation when REDD becomes part of UNFCCC scheme

Then, the National Action Plan for REDD+ (RAN REDD+) itemizes the essence of Nastra REDD+ from the viewpoint of technical aspects.

Meanwhile, at regional level in Indonesia, based on the Regional Long Term Development Plan (RPJPD), the following plans such as Medium Term Development Plan (RPJMD) and Regional Development Work Plan (RKPD) are prepared in each regional government/level. ICCSR was referred to the contents of RPJPD indirectly.

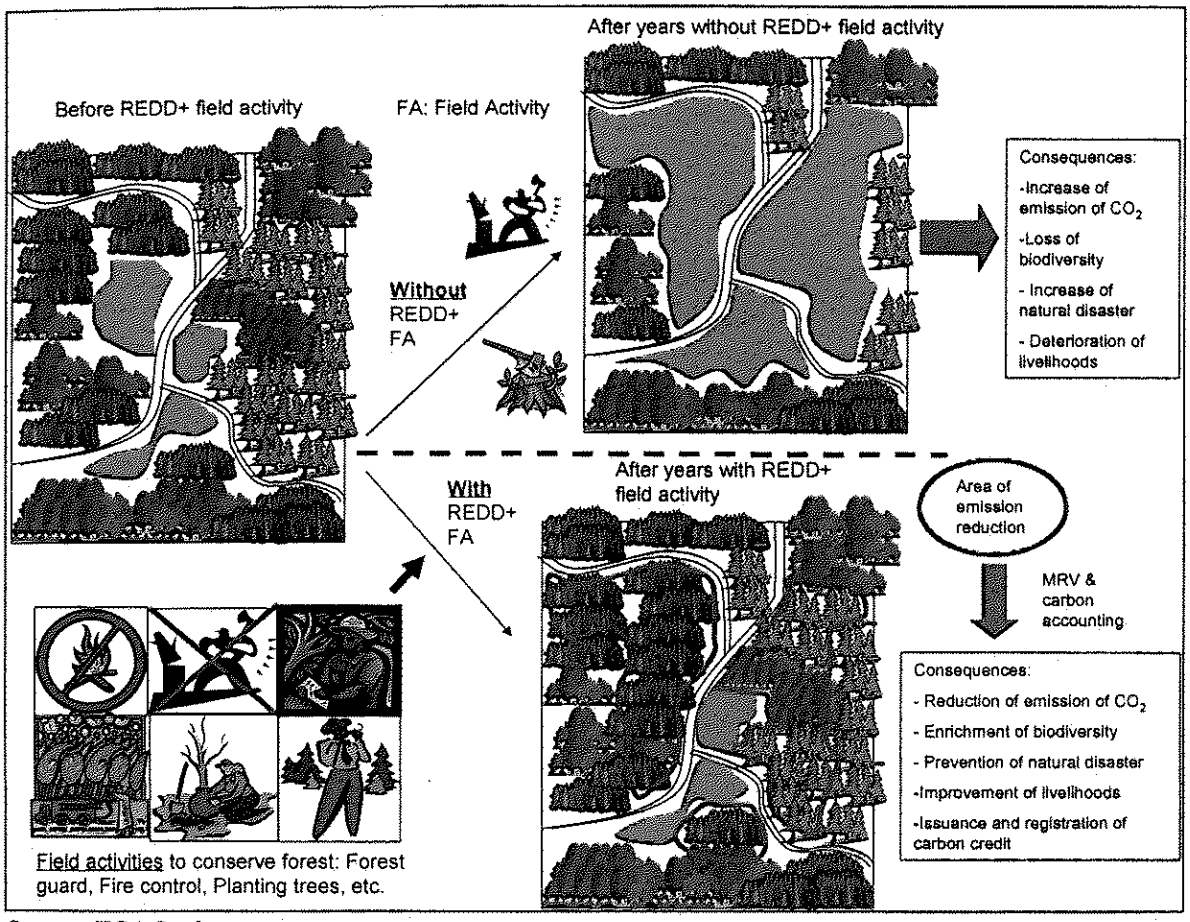
Also, the RAN-GRK is translated through the Regional Action Plan for Greenhouse Gases Reduction (RAD-GRK), in which both documents only deal with regional climate change management. Then, RAD-GRK is translated into the Regional REDD+ Strategy (Regstra REDD+, green box). Rengstra REDD+ is directly synchronized the contents of Nastra REDD+, theoretically REDD+ policy in national level is materialized and practiced in the regional level in Indonesia. However, detailed contents of Registra REDD are not confirmed yet.

Based on the result of document review, further confirmation with interview survey will be done in the next field survey in July.

3.3 Understanding of REDD+ in Indonesia for the purpose of the study

3.3.1 General understanding of REDD+

The figure below shows the general understanding of what the REDD+ is.



Source: JICA Study team

Figure 3.3 REDD+ field activity and its anticipated consequences

There are three major characteristics that are particularly specific to REDD+ in comparison with conventional conservation and sustainable forest management approaches. They are: (1) "Area-based" aiming at combating deforestation and forest degradation rather than conventional issue-based approaches such as fire prevention or forest rehabilitation; (2) "Large scale" like more than 100,000 ha rather than conventional pilot based small-scale like less than 50 ha; (3) Combination of combating deforestation, forest degradation, enhancement of carbon stock, MRV and funding mechanism. It should be noted that REDD+ adopts an incentive approach toward forest conservation and sustainable management rather than a command-and-control or regulatory approach by the Government.

3.3.2 An overall framework in the context of Indonesia

This section aims to depict the understanding of the Study team on a REDD+ framework in Indonesia during the first phase of the study implementation. Since the evolution of a REDD+ scheme is still at the mid-stage of development, it is not yet clear how the scheme is exactly structured when it is fully put into implementation. However, the government of Indonesia has been drafting a National REDD+ Strategy that shows an overall framework of a REDD+ scheme in the foreseeable future. Although the picture in the Strategy is just a draft idea that may be further elaborated or revised, it is rational to start the efforts of understanding a REDD+ framework based on this Strategy. Excerpts from the National

REDD+ Strategy[5] which the Study team finds as core elements for understanding are as described below, and a REDD+ framework is constructed based on these elements as depicted in **Figure 3.4.**

- REDD+ programs, projects and activities are managed by Implementing Agencies.
- The institution which specifically handles the implementation of REDD+ programs, called the REDD+ Agency, is established as an institution which shelters all REDD+ activities.
- The REDD+ Agency has several mandates as below:

    1) To develop and manage data/map integration system and approve/register the system for REDD+ programs/projects and VER/CER.

    2) To develop protocols required for data/map consolidation, REDD+ project approval/registry processes and VER/CER registry.

    3) To establish MRV implementation institution and system.

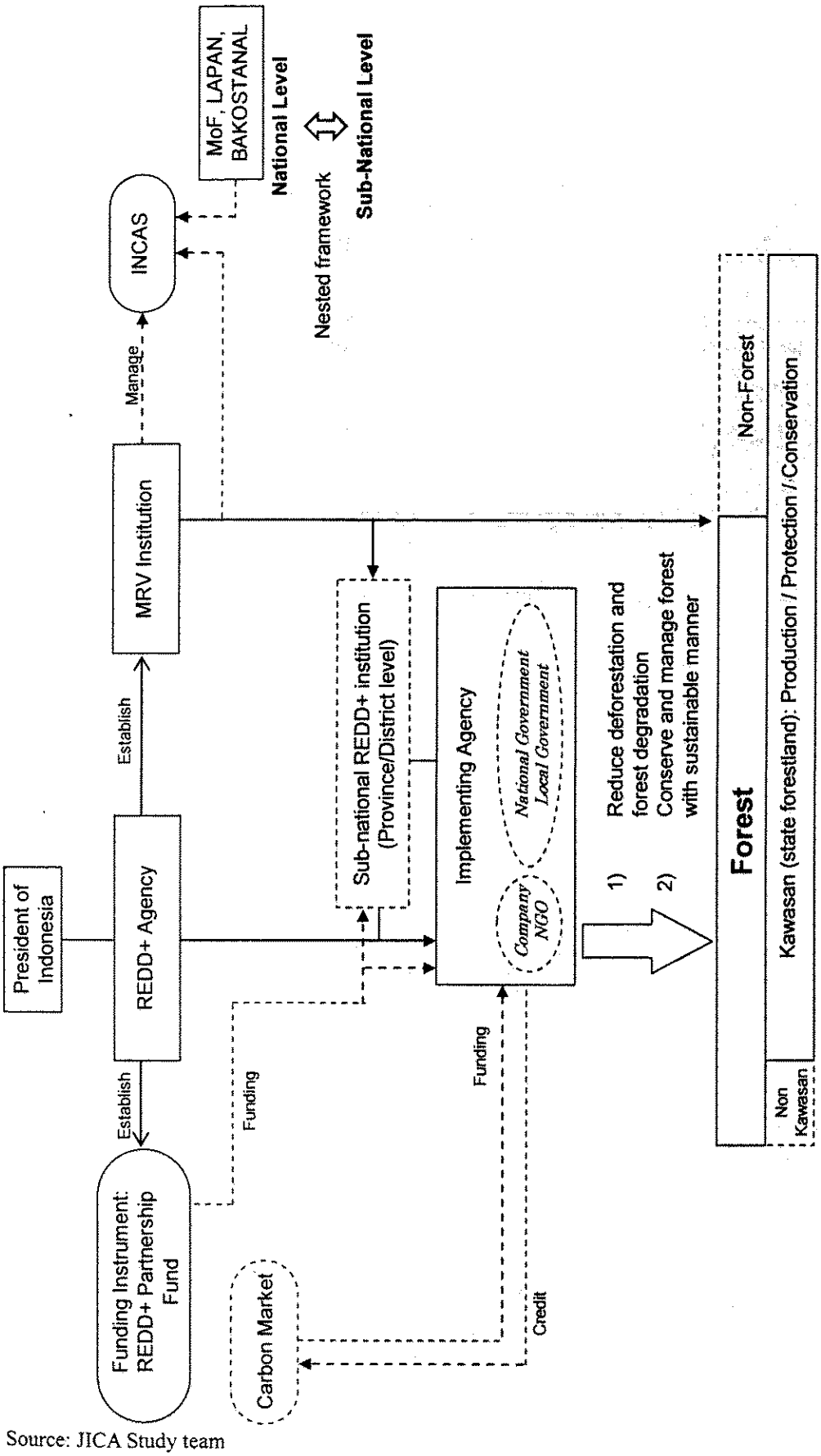
    4) To establish REDD+ fund management institution and system called the "Indonesian REDD+ Partnership Fund."

    5) To develop and coordinate an integrity system – i.e. safeguard and audit from the financial, social and environment viewpoints – in the implementation of REDD+ programs/projects.

    6) To report to the President of the Republic of Indonesia.

- Indonesian REDD+ Partnership Fund is required to support REDD+ programs/projects according to Indonesia's potential to reduce emission from forestry and peat-land sectors.
- The MRV Institution needs to utilize INCAS for ensuring the quality of data, especially in order to improve emission factors and activity data of land use change.
- The MRV Institution has mandates of formulating national standards to measure changes in forest carbon stocks.
- The MRV Institution can determine REL following various approaches.
- The national level MRV Institution needs to coordinate with REDD+ Institutions at sub-national level to develop a MRV system at the sub-national level.
- Indonesia is ready to implement tier-2 MRV system at site and landscape level for sub-national aggregation requirement in the two pilot provinces by January 2013, and in all nine prioritized forested provinces by January 2014.

[5] The draft used for this analysis is the March 30th version. All excerpts are from the section 4.2 (page 36-47).



Source: JICA Study team

Figure 3.4 Exploring a REDD+ framework

3.3.3 Implications of the framework: A change in a modality of forest management

The framework depicted in **Figure 3.4** is largely different from an existing modality of forest management. Currently, forest management or forestry in Indonesia can be more or less equated with "*Kawasan*" (state forestland) management, which includes both forest and non-forest areas, and is governed by the framework of three functioning categories; production forest; protection forest; and conservation forest. Conservation forest, including national parks, is directly managed by Ministry of Forestry and *Kawasan* management in the other two categories is decentralized to provincial/district governments although its final decision-making authority rests in Minister of Forestry. The existing modality described here is illustrated at the bottom of **Figure 3.4.**

In understanding an emerging REDD+ framework in Indonesia, we need to look at both the existing modality of forest management and the proposed REDD+ ideas described in the National REDD+ Strategy. Although they are not confirmed at this stage, we can draw various implications through the analysis of both the Strategy and the existing modality. In addition, there are at least thirty-four demonstration activities (DA) that are relevant to REDD+ (further details are discussed at the section 4.3) and their experiences are conducive to this analysis. The following is major implications of the analysis:

- While Ministry of Forestry is responsible for *Kawasan* management, REDD+ Agency is responsible for monitoring field-based projects that manage "forest" to reduce CO_2 emissions. The implication is that an implementing agency of a REDD+ project which is supposed to operate at *Kawasan* requires to deal with two types of administrative arrangement: one is to secure the access to *Kawasan* in order to operate REDD+ activities in the field and the other is to obtain the recognition as a REDD+ project to ensure the issuance of carbon credit in the future.

- Any organizations such as private companies, NGOs, research institutes or government bodies can hold a position of an implementing agency for the operation of REDD+ activities by procuring funding from external funds and/or carbon market although international investors need local partners to secure their access to *Kawasan*.

- A new modality of forest management under REDD+ would require the integrity of an existing tripartite framework (production / protection / conservation) due to the requirement of overcoming potential leakage from one management category or unit. In addition, the development of MRV system as well as carbon accounting system at the sub-national level (provincial and/or district levels) requires the coordination and synthesis of respective REDD+ projects at this level. This indicates that the introduction of the REDD+ scheme, in principle, inevitably facilitates concerned organizations to work together for achieving common purposes.

It is critical to note that the above understanding is the tentative one for the purpose of the study and due to the evolving nature of and political uncertainty on a REDD+ scheme in Indonesia, the actual framework that will be confirmed might be different from that illustrated in **Figure 3.4.**

3.4 Ecological Service and REDD+ in Indonesia

Human beings benefit from many of resources and processes that are supplied by natural ecosystems. These benefits are known as ecosystem services and include products like clean drinking water and processes such as the decomposition of wastes. These services were popularized and their definitions formalized by the United Nations 2004 Millennium Ecosystem Assessment (MA). The Assessment groups ecosystem services into five broad categories and examples as in **Table 3.3**.

Table 3.3 Categories and examples of ecosystem services

Categories of Services	Examples
Provisioning services	- food (including seafood and game), crops, wild foods, spices - water - minerals (including diatomite) - pharmaceuticals, biochemical, and industrial products energy (hydropower, biomass fuels)
Regulating Services	- carbon sequestration and climate regulation - waste decomposition and detoxification - purification of water and air - crop pollination - pest and disease control
Cultural Services	- cultural, intellectual and spiritual inspiration - recreational experiences (including ecotourism) - scientific discovery
Supporting Services	- nutrient dispersal and cycling - seed dispersal - primary production
Preserving services	- securement of usage of natural resources - cushion against natural disaster

Source: JICA Study team

Forests in Indonesia also has been provided rich and diversified ecological services as mentioned above as well as timber and non-timber forest products (NTFP). Among the ecosystem services, in conjunction of biological diversity, it is especially important that original species of plants and animals, as medicinal plants and animals, pharmaceutical materials in Indonesia. Also many local people directory relay on these none timber forest products. Historically people of Indonesia enjoy these gifts of nature in sustainable manner but rapid population growth and economic activities associated with forest clearings affect critically the sustainability of utilization of forest resources in the country.

The Draft National REDD+ Strategy classifies the typologies of activities which are supposed to cause deforestation and forest degradation in the country. The most influential activity is area development for agricultural and any other purposes for production and economic activity such as forest clearing in peat land for oil palm plantation and commecial timber ecxploitation. Those are classified as planned deforstation and forest degradation. Meanwhile clearings and illegal cutting done by the local communities, and therefore in most cased taking plase in a smaller scale are classified as unplanned deforestation/forest degradation as shown in **Table 3.4**.

Table 3.4 Typology of activities causing deforestation and forest degradation

Deforestation and forest degradation		Activity
Deforestation	Planned	1. Area Development 2. Approved forest conversion in forest areas 3. Forest conversion in non-*Kawasan* area (non-forest area) 4. Mining Permits in forest areas 5. Plantation Permits in forest areas
	Unplanned	1. Clearing 2. Forest fire 3. Claim over land which results in conversion
Forest Degradation	Planned	1. *"IUPHHK HA"* (Commercial Timber Forest Products Utilization for Natural Forest) in natural forests 2. *"IUPHHK HTI"* (Commercial Timber Forest Products Utilization for Industrial Timber Plantations) in natural forests which conditions are still good
	Unplanned	1. Illegal cutting (harvesting outside allowable cut) 2. Illegal logging

Deforestation and forest degradation		Activity
		3. Small forest fire due to natural factor 4. Small forest fire for land clearing

Source: Draft National REDD+ Strategy in Indonesia, March 2011.

In the recent decades large scale forest clearing and permanent conversion has been taking place in Sumatra and Kalimantan, which is attributed to the oil palm plantation development. The clearing extends maily in the peat land in those areas and frequently causes the forest fire in dry season. It is said that the bulk of CO_2 emission in the country comes from the deforestation and forest degradation in the peat land.

In the circumstances the idea and concept of REDD+ in Indonesia has been developed based on the facts of these large scale forest clearing and its degradation taking place in the peatland. REDD+ aims to reduce or even stop the deforestation and forest degradation by applying any possible measures/solutions in target area to reduce the CO_2 emission, which can directly contribute to enhance the ecosystem services of natural forests and as descied above.

Chapter 4 Review of the forestry sector in relation to REDD+ in Indonesia

4.1 National policy and program

To scrutinize REDD+ in Indonesia, it is necessary to review current policies and programs relating to forest sector from overall climate change policy to the practical policies on REDD activities. It is therefore the policy of forest sector was reviewed from overall climate change policy in Indonesia in this Sub-section. Then, the major seven (7) documents are summarized as below.

4.1.1 Nationally Appropriate Mitigation Actions (NAMA)

Nationally Appropriate Mitigation Actions (NAMA) is voluntary GHG emission reduction measures undertaken by developing countries that are reported by the states to the UNFCCC. NAMA is expected to be main driving force for mitigation action in developing countries in the period after the termination of the first commitment period of the Kyoto Protocol (~2013, hereafter it is called as "post Kyoto Protocol"), and could play a key role in leading mitigation measures in national, regional, or local levels.

NAMA was taken as a key document in the Bali Action Plan as part of the Bali Road Map which was agreed at the COP13 in December 2007 and also formed part of the Copenhagen Accord issued in December 2009. At the COP15, the concept of NAMA was retained in a narrower definition only applying to non-Annex I countries such as Indonesia etc, by the Accord negotiated by approximately 30 countries which has collectively responsible for more than 80% of global GHG emissions.

Major non-Annex-I countries are already submitted to UNFCCC with the following conditions below. However GHG emission reduction in Indonesia can be reached 41% with international supports in accordance with RAN-GRK.

Table 4.1 NAMA Target of major non-Annex I countries

Country	NAMA targets
Indonesia	26%, BAU basis
China	40 to 45% of CO_2 emission per GDP, based on the year 2005 level
South Korea	30%, business-as-usual (BAU) basis
India	20 to 25% of CO_2 emission per GDP, based on the year 2005 level
Brazil	36.1 to 38.9%, BAU basis

Source: UNFCCC NAMA website (http://unfccc.int/meetings/cop_15/copenhagen_accord/items/5265.php)

As is obvious from the next table, most contribution of GHG emission reduction in post Kyoto Protocol is consisted of forest and peat land.

Table 4.2 Sector wise target of GHG emissions reduction

Sector	Emission reduction plan [10^9 tonCO_2]		Major elements of action plan
	26%	41%	
Forestry and Peat-land	0.672 *(87.6)*	1.039 *(87.4)*	Forest and land fires control, water management and network system management, forest and land rehabilitation, forest plantation, community forest, illegal logging eradication, deforestation prevention, community empowerment.
Agriculture	0.008 *(1.0)*	0.011 (0.9)	Introduction of low emission rice variety, irrigation water efficiency, organic fertilizer utilization
Energy and Transportation	0.038 *(5.0)*	0.056 *(4.7)*	Biofuel utilization, high fuel efficiency standard machine, improve TDM, road and public transportation quality, demand Side management, energy efficiency, renewable energy development
Industry	0.001 *(0.1)*	0.005 *(0.4)*	Energy efficiency, renewable energy utilization, etc
Waste	0.048 *(6.3)*	0.078 *(6.6)*	Construction of final disposal site (TPA), waste management with 3R, integrated wastewater management in urban area
	0.767 *(100.0)*	1.189 *(100.0)*	

Source: National Action Plan for Green House Effect Reduction: DRAFT, BAPPENAS, October 2010
Note1: Above percentages (26% and 41%) of emission reduction plans are calculated

4.1.2 Indonesia Climate Change Sectoral Roadmap (ICCSR)

In Indonesia, it can not be said that all the climate change policies/plans are originated from the Indonesia Climate Change Sectoral Roadmap (ICCSR). ICCSR was prepared in December 2009, in order to elaborate further on the National Medium-Term Development Plan (RPJMN) until 2030 and to speed up the implementation by the various activities of relevant sectors such as the forestry, energy, industry, agriculture, transportation, coastal area, water, waste and health. As stated above, ICCSR shows the various sectoral roadmaps. In this Sub-section, description of forestry sector is taken up below.

To address the climate change issues, it is difficult to tackle the challenges without sustainable forest management. In the roadmap, the Ministry of Forestry has proposed some activities in order not only to protect natural forest resources but also to facilitate new forest business below:

a) Sink enhancement
   - Forest rehabilitation activities mostly on protection forest and watershed
   - Development of industrial plantations, plantations with private entrepreneurs and communities on production forest
   - Stimulate plantations outside forest lands for rehabilitation or wood production
   - Management of natural secondary forests in production, protection and conservation forests.
b) Emission reduction
   - Improved silviculture and logging activities in productive natural forest
   - Reducing emissions form forest land conversion particularly on peat forest land
   - Reducing emissions from illegal logging and fire.
c) Strengthening Forest Area
d) Development of KPH (Forest Managing Units)
e) Capacity building
f) Research and development on forest & climate change
g) Forest enforcement

To identify sustainable support and deliver budget to priority factor effectively, the following mitigation scenarios were prepared in ICCSR. These assumptions will be referred to as further actions by BAPPENAS and relevant organization/ministries.

Table 4.3 Scenario analysis in ICCSR forest sector

#	Scenarios	Evaluations					
		Outlines	Total emissions 2010-2019 in $MtCO_2$	Annual emissions $MtCO_2$	Avoided annual emissions in $MtCO_2$	Estimated annual cost in Trillions IRD	Annual cost in USD/ tCO_2
0	Business-as-usual	--	8,000	800	0	5.01	---
1	Increasing the sink capacity through forest rehabilitation activities (current trends)	This scenario is the most expensive scenario and is not efficient in terms of mitigation as trees are not properly managed by someone once they have been planted.	6,944	694	106	6.51	6.2
2	Increasing the sink capacity and creating a resource for industries	This scenario intends to develop sinks by increasing efforts in plantations but with insufficient efforts to develop KPHs and lacking improvement forest management the gain in mitigation is modest.	6,049	605	195	6.01	3.1
3	Increasing the sink capacity and creating conditions for preventing further deforestation (KPH - HTI sustainable forest management scenario)	This scenario, which is an improvement of forest management in KPH areas, is a feasible scenario to reach the target of Indonesia to reduce emissions by 26%. This is the lowest abatement cost per unit of emission reduction.	4,961	496	304	6.28	2.1

Source: Indonesia Climate Change Sectoral Roadmap (ICCSR), Synthesis Report, December 2009

According to the table below, it can be said that Scenario 3 has a maximum of emissions reductions and is the most cost-effective.

As for REDD+, ICCSR mentioned that REDD activities including peat land degradation are the most promising mitigation measures. Also, REDD is far more effective to avoid deforestation than to rehabilitate forestland. In ICCSR, REDD defines involving 1) to build up a National REDD Architecture, 2) a reference emissions level and 3) an Indonesian National Carbon Accounting system.

Finally, activities of long term development plan under forestry sector are mentioned clearly in every five (5) years until 2029 (See the table below).

Table 4.4 Activities of long-term development plan in forestry sector

Category	Strategy	Activities	2010-2014	2015-2019	2020-2024	2025-2029
Information and knowledge management	Strengthening forest institutions	Forest management unit development per year	199	244	340	340
		Forest area enforcement in million ha (Cumulative)	90	93	126	126
		Capacity building master degree	1,992	1,293	1,500	1,500
		Capacity building doctoral degree	352	32	420	420
Planning and policy, regulation and institutional development	Increasing carbon absorption capacity/sink	**Reforestation / afforestation**				
		a. GERHAN / RHL	5,000,000	**5,000,000**	5,000,000	5,000,000
		b. 1 million trees program	100,000	**100,000**	100,000	100,000
		c. Industrial plantation forest (HTI).	2,000,000	**2,000,000**	1,100,000	1,000,000
		d. People plantation forest (HTR)	3,650,000	**850,000**	850,000	850,000
		e. Community forest (HR)	2,600,000	**1,700,000**	1,700,000	
		f. Community forest (Hutan kemasyarakatan)	2,099,404			
		g. Village forest (Hutan Desa)	2,000,000			
		h. Natural forest (HA: SILIN)	500,000	**750,000**	500,000	
		Increase stock on degraded forest land under SFM				
		Protected forest stock enhancement	1,100,000	**1,700,000**	1,700,000	2,600,000
		Conservation forest stock enhancement	2,000,000	**1,300,000**	1,200,000	1,300,000
Implementation and control with monitoring and evaluation	Reducing emission/ conservation of carbon stock	Increase of protection forest land under SFM:	1,760,000	2,120,000	2,120,000	2,380,000
		Increase of conservation forest land under SFM:	5,920,000	2,120,000	2,110,000	250,000
		Prevention of forest fire	37,440	28,600	26,000	23,400
		Management of productive natural forest	23,120,000	23,120,000	23,120,000	23,120,000
		Reduction of forest fire	10,132	9,599	9,066	8,533
		Management of peat land area	7.2 million ha in Sumatra, 5.8 million ha in Kalimantan and 8.0 million ha in Papua			

Source: Indonesia Climate Change Sectoral Roadmap (ICCSR), Synthesis Report, December 2009

Note1: Unit of numbers is mentioned hectare [ha] to be conducted the activities.

Note2: Numbers with bold face are stronger weight.

Note3: N/A indicates that data/information is not available.

4.1.3 National Action Plan for Reducing Greenhouse Gas Emission (RAN-GRK)

National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK) was prepared and coordinated by Indonesia's National Development Planning Agency (BAPPENAS) with the sectoral development concept in 2009, and is a working document that provides the basis for various Ministries/Institutions as well as the Regional governments to implement various activities that will directly and indirectly reduce the GHG emissions.

RAN-GRK was prepared as part of the Medium-term Development Plan (RPJMN), particularly the National Medium Term Development Plan year 2010-2014 and the Long Term Development Plan (RPJPN) year 2005-2025 and is an integral part of national development plan and updated according to scientific and policy development. Also, RAN-GRK is integrated actions among sectors – environmental carrying capacity and spatial plan. RAN-GRK is focused on "GHG emission reduction" and "increase of GHG absorption capacity (carbon sequestration)".

The Government of Indonesia (GOI) emphasises the following three (3) principles, the RAN-GRK:

(i) should not hinder economic growth, and should prioritize people's welfare, especially in with regard to energy resilience and food security;
(ii) supports protection of poor and vulnerable communities, including environment conservation in the framework of sustainable development; and
(iii) consists of core activities to reduce emissions and supporting activities to strengthen the policy framework.

4.1.4 Draft REDD+ National Strategy (March 2011)

REDD+ National Strategy was at first drafted in 2010 since then it has been revised continuously and the latest version was issued in March 2011.

The REDD+ will be applied as a program to cover 1) Reduction of deforestation, 2) Reduction of forest degradation, 3) Improvement of carbon stock conservation through forest conservation, preserved forest management and carbon deposit enrichment. It also aims to improve the socioeconomic conditions of the local communities whose sources of cash income is largely depend on the forests, and to enrich biodiversity in the given forest ecosystem.

To reduce the emission through REDD+ scheme, following coordinated efforts are required with the main objectives such as;

1) Reducing emissions from deforestation and forest degradation,
2) Improving carbon stock in forest areas,
3) Protecting and improving the benefits of biodiversities and other environmental services of forests, and
4) Maintaining economic growth.

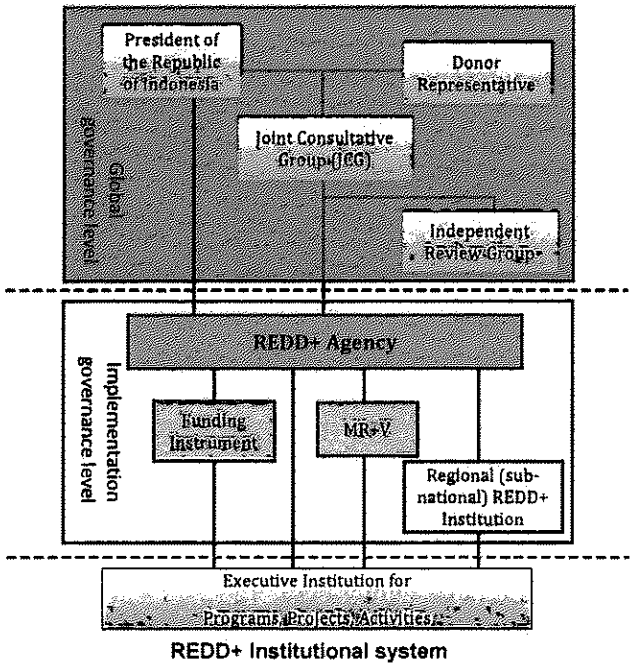
In order to translate these objectives into realistic context, the Draft REDD+ National Strategy proclaimed five pillars such as 1) institution, 2) legal framework and regulations, 3) strategic programs implementation, 4) changes of paradigm and work practices, and 5) involvement of parties. Those five pillars are designed to be supported with the specific activities to develop REDD+ institutional/legal setups as well as implementation mechanisms as indicated in **Table 4.5. Figure 4.1** indicate the basic structure of REDD+ implementation. This figure was illustrated and proposed by the staff of REDD+ Task Force.

Table 4.5 Five pillars of the National REDD+ Strategy and activities to be done

No.	Pillars	Activities to be done
1	Strong institutions	1-1. Strong institutions need to be established in order to work across sectors. 1-2. REDD+ Agency will be established as a presidential work unit which is equipped with financing instruments and a credible MRV system.
2	Legal framework and regulations	2-1. Program to strengthen the legal framework and regulations, process, 2-2. Development of a climate friendly legal framework (CFLF)
3	Strategic programs implementation	The programs focuses the direct implementation of:- 3-1. Sustainable landscape management, 3-2. Development of human resource-based economic systems, 3-3. Conservation and rehabilitation
4	Change of paradigm and work practices	4-1. REDD+ campaign in order for the people to understand importance and benefit of REDD+ through education should be developed. 4-2. REDD+ Agency conducts the campaign to change work practices within the government bureaucracy in terms of sectoral and regional development planning processes.
5	Involvement of parties	5-1. Involvement and communication with the parties should be carried out in every implementation process of all the strategies relating to

No.	Pillars	Activities to be done
		REDD+.

Source: National REDD+ Strategy, March 2011



Source: Modified from "Indonesia REDD+ National Strategy" (Draft, March 2011)

Figure 4.1 Basic structure to implement REDD+ in the future

4.1.5 RENSTRA (Five Year Forestry Strategic Plan 2010-2014)

RENSTRA (Five Years Forestry Strategic Plan 2010-2014) indicate clearly the vision of forestry development as to realize "Sustainable Forests for Equitable Prosperity to the People". To fulfill this vision, six policy areas were identified in the forestry development priorities, such as 1) forest area consolidation, 2) forest rehabilitation and DAS (watershed) support capacity improvement, 3) forest safeguard and forest fire control. 4) Biodiversity conservation 5) forest use and forestry industry revitalization. In corresponding to the six policy areas, following programs form the pillars of the RENSTRA. Those are;

1) Macro forestry planning and forest area consolidation,
2) Forestry business promotion,
3) Biodiversity conservation and forest protection,
4) DAS function and community empowerment,
5) Research and development of MoF,
6) Forestry human resources education and development,
7) Supervision and accountability of forestry ministry's officials,
8) Management supports and the implementation of other technical tasks of MoF

To materialize and implement the programs, targets and activities are set to each program. The detailed contents of RENSTRA area indicated in **Appendix 6.**

4.1.6 Moratorium (Instruction of the President Number 10-2011)

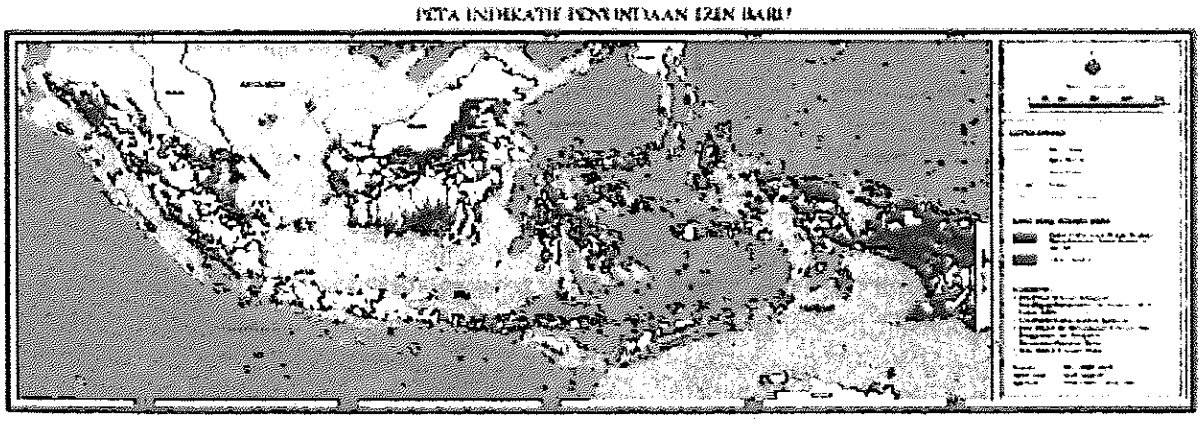
Instruction on the President concerning the suspension of awarding of new licences and improved governance of primary natural forests and peat land was signed in May 2011. It instructs Ministry of

Forestry and other government organizations relevant to REDD+ such as UKP4, REDD+ Task Force, etc. the following three steps;

1) To facilitate the suspension of new licenses over primary natural forest and peat land in conservation forests, protection forests, production and limited production forests and areas of other use (non forest areas) as specified in the indicative map as follows.
2) To suspend the issuance of new licenses in primary forest and peat land yet with the following exemptions such as;
   - Licenses that have already approved in principle from MoF,
   - Implementation of vital national development such as geothermal, oil and gas, electricity land for rice and sugar cane, and
   - Extension of existing forest utilization license and use permit of the forest area as long as they are valid.

Other than the suspension of new licenses, further instructions are provided particular to MoF such as;

1) To improve governance policies for the awarding all forest utilization licenses in natural forest areas,
2) To increase the effectiveness of critical lands management with particular attentions to policies that affect the governance of forests and peat lands through ecosystem restoration,
3) To carry out revisions to the Indicative Suspension Map for New Licenses every six months (the first version is indicates next to this paragraph),
4) To determine and sign off on the Indicative Suspension Man for New Licenses for primary natural forest and peat lands inside the forest area (kawasan hutan) in accordance with those provisions.



Source: Presidential instruction No. 10-2011

Figure 4.2 Indicative Suspension Map attached to the "Presidential Instruction No.10-2011"

Other ministries and government institutions are listed in the moratorium such as 1) the Ministry of Environment, 2) Ministry of Home Affairs, 3) National Land Agency, 4) National Spatial Planning Coordinating Board, 5) Coordination Agency for Survey and Mapping Agency, 7) Governors, and 8) District heads/Mayors.

The suspension of new permits, recommendation and location licences are valid for two years from the issuance of this instruction.

4.1.7 RENSTRA of PHKA version; Environmental service of conservation area and protection forest

PHKA prepared "Strategic Plan of Directorate of Environmental Service of Conservation Areas and Protection Forest, Years 2010～2014". This document is placed on the two basic documents, those are the "Five Year Forestry Strategic Plan 2010 ~ 2014" formulated by MoF and the "Strategic Plan of Directorate of Forest Protection and Nature Conservation (PHKA) Year 2010～2014". The document particularly focuses on the objectives, target, implementation plan, methodologies responsible departments and sections in PHKA for the national parks conservation and management.

Current Condition Minister of Forestry re-organized a Work Procedures of the administration. Directorate of Environmental Services and Nature Tourism (PJLWA) is changed to Directorate of Environmental Service of Conservation Areas and Protection Forest (PJLKKHL) thus the regulation includes environmental services in conservation area and protection forest.

Government Regulation about division of duties determined. Government Division between Central Government, Provincial Government, and City/District Government mention that the authorities on forest area utilization of protection forest are standard determination, procedure and criteria, management of concession of forest area utilization, retribution of non-wood forest products in un-protected forest and it is not included into appendix CITES, also environmental services in national scale.

Government Regulation No.4 and 5/1990 mention that environmental services could be conducted in Protection Forest and nature conservation area, and hunting parks in Indonesia.

Problems and Strategic Issues About water environmental services utilization in nature reservation area, nature conservation area, and hunting parks has not optimal because it has not strong legal basis and it is not completed by implementation of technical guidance.

Regulation of water environmental services utilization in nature reservation and nature conservation area revised. Government regulation No. 68/1998 is still under process, but water environmental services utilization and construction of supporting facilities in natures reservation area and nature conservation area have been conducted. Information is limited on Ministry of Forestry policy regarding with climate changes and carbon trading for technical effectors in regional level. It is a challenge of non-tax revenue enhancement through enhancement of nature tourism businesses. There are conflicts of interest between local government and community on nature tourism utilization. Development of partnership on nature preservation has not optimal. There are also pressure of area utilization by community in and around area caused by condition of low income and limited access and facilities. Partnership participation has not optimal in community development. Community development program require huge funding, but achievement has not measurable and integrated with PNPM Mandiri (community development program).The function of institutional community development in village level has not optimal.

PHKA-RENSTRA set the target to implement two REDD+ demonstration activity (REDD+ DA) in conservation areas by the end of 2014. To attain this target, it selected eight priority technical implementation units (UPT). They are listed as follows.

1) Riau Nature Conservation Area,
2) Tesso Nillo National Park,
3) Berbak National Park,
4) Bromo Tengger Semeru National Park,
5) Meru Betiri National Park,
6) Kayan Mentarang National Park,

7) Sebangau National Park,

8) Betung Kerihun National Park

Budget is allocated for developing REDD+ DA based in agencies or offices listed above. It is Rp. 200 million per year with consideration those UPTs have already donors in DAs REDD preparation thus require budget sharing on its implementation. Budget sharing on DAs REDD implementation is budget for financing components which have not been allocated by donor budget such as preparation, transformation, and contribution payment to verify emission reduction. During 2011-2014 total budget allocation for 8 priority UPTs is Rp 6.4 Billion because for each UPT is allocated Rp. 200 million per year.

Minister of Forestry re-organized a Work Procedures of the administration. Directorate of Environmental Services and Nature Tourism (PJLWA) is changed to Directorate of Environmental Service of Conservation Areas and Protection Forest (PJLKKHL) thus the regulation includes environmental services in conservation area and protection forest.

Government Division between Central Government, Provincial Government, and City/District Government mention that the authorities on forest area utilization of protection forest are standard determination, procedure and criteria, management of concession of forest area utilization, retribution of non-wood forest products in un-protected forest and it is not included into Appendix of CITES, also environmental services in national scale.

Government Regulation No.4 and 5/1990 mention that environmental services could be conducted in Protection Forest and nature conservation area, and hunting parks in Indonesia.

Expected Condition

1) To increase utilization of environmental services of water, carbon and biodiversity in conservation forest areas and protection forests based on regulations and determined utilization guidelines and regulation which are implemented properly and correctly by all parties.
2) To decrease the threat and disruption to the preservation of forest areas conservation and protection forests through the establishment and empowerment of nature preservation partners in supporting the conservation of natural resources biodiversity and natural ecosystems.
3) To increase utilization of environmental services through the promotion and marketing of responsible environmental services.
4) To promote activities of environmental services carried out in accordance with planning program drawn up and evaluated by appropriately thus the utilization of environmental services will be encouraged in the most efficient and effective manner.

Vision and Mission

It is presented that the formulation of environmental services in carrying out the mandate during the next five years, commencing from the establishment of a vision statement as a manifestation of the target to be achieved, and the choice of how to achieve the vision of a mission statement, and the formulation of strategic objectives which is the achievement of performance indicators Strategic Plan to end of year 2014.

Vision: The vision is sustainable utilization of environmental services for the preservation of the area and people's welfare. **Mission:** To achieve the vision, the directorate determine mission such as;

1) To strengthen the precondition of effective utilization of environmental services,
2) To encourage diversification and improvement of investment climate of value-added and competitive environmental services

3) To encourage increasing promotional and marketing efforts for responsible environmental services
4) To encourage the development of partners' participation in quality of nature preservation development

4.2 Current status of forestry and biodiversity conservation

4.2.1 Forest and Forestry

Current situation of forests, forestry, forest policy and biodiversity in Indonesia

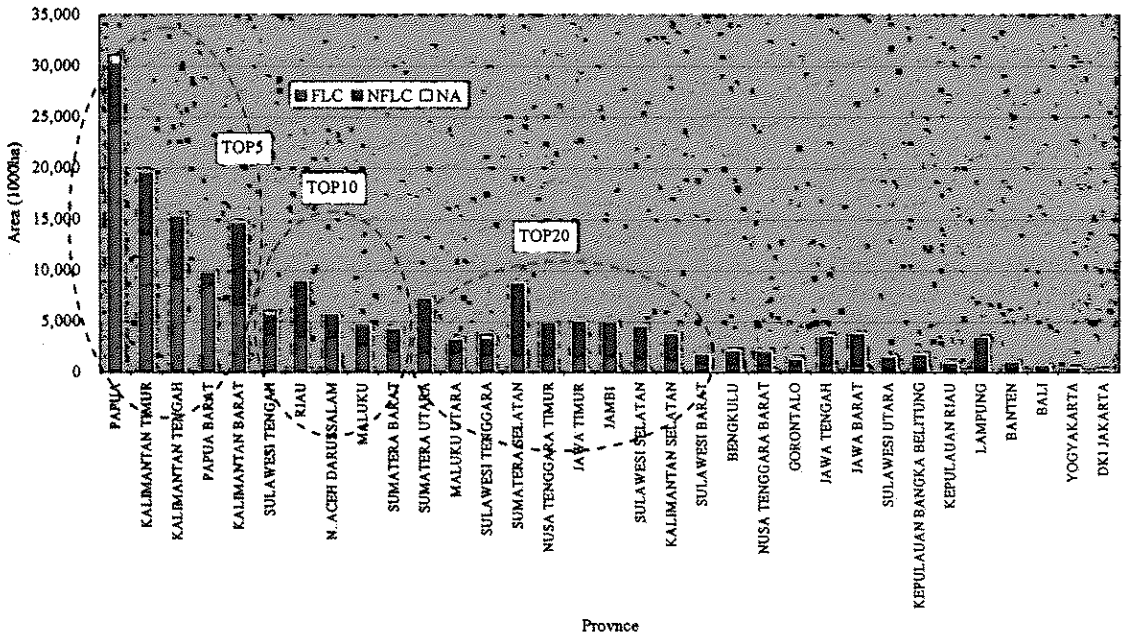
Table 4.6 indicates the area of three types of forests extending in the country. It is considered that approximately one hundred twenty million ha (120 million ha) of forests distributes in the country. However, these figures are based on the areas officially allocated as a forest land in the land use planning hence they do not always reflect the actual forest cover/vegetation. So far no nation wide survey to assess exactly the forest resources has been done in the country.

Table 4.6 Area of three types of forests in Indonesia

Materials Reviewed	Key Information
1. Forth National Report - The Convention on Biodiversity Conservation (Ministry of Environment, 2009)	Current situation of forests and forestry / Forest area in Indonesia is as follows:

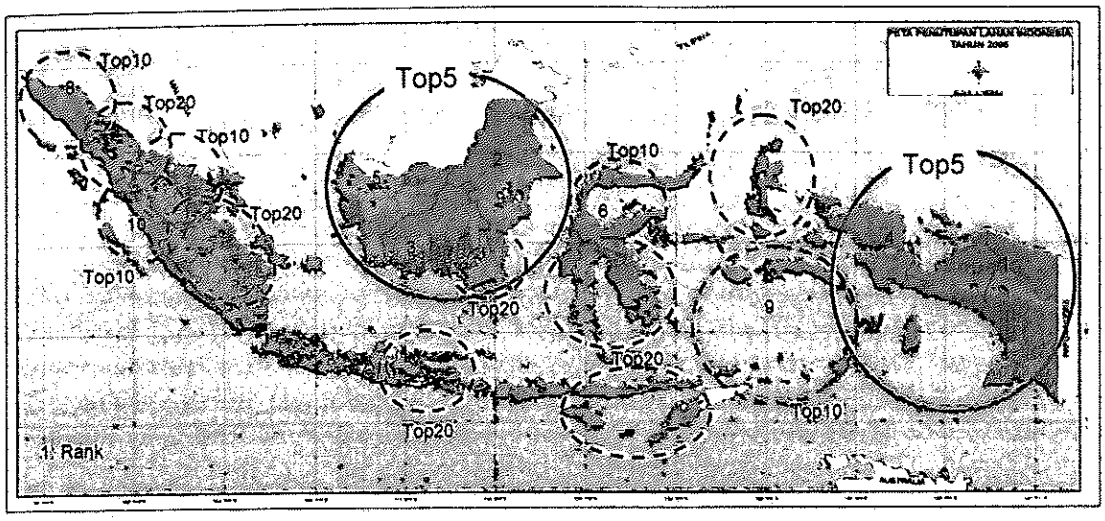
Forest type	Area (million ha)
Conservation Forest	20.50
Protection Forest	33.52
Limited Production Forest	23.06
Fixed Production Forest	35.19
Conversable Production Forest	8.08
(Subtotal-Production Forest)	(66.33)
Total	120.35

Source: Data recorded in the Forth National Report- The Convention on Biodiversity Conservation, modified by JICA Study team



Source: Data provided by MoF, modified by JICA Study team

Figure 4.3 Province wise forested area

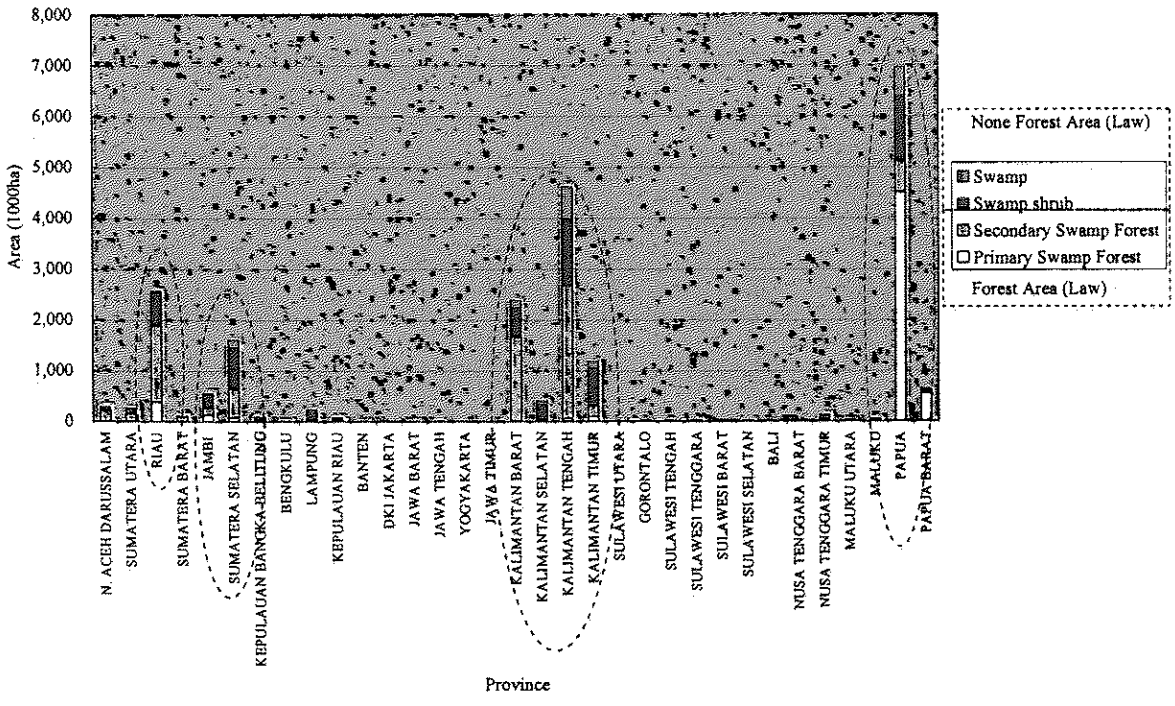


Source: Data provided by MoF, modified by JICA Study team

Figure 4.4 Major provinces which have more than one million ha of forest land

The province wise data in **Figure 4.3** and **Figure 4.4** show that the large part of the forests distribute in the Kalimantan, Iriyan Jaya, north Slawesi and some parts of Sumatra. According to the analysis of INCAS (Indonesia National Carbon Accounting System) developed by the support of Australian Aid, large scale deforestation and forest degradation have been taking place in the central Sumatra and Central Kalimantan. These areas are faced with the large scale forest clearing such as oil palm plantation development, commercial logging, etc.

Figure 4.5 shows province wise peat distribution. According to the "report of land use category in Indonesia", peat land distributes in the primary and secondary swamp forests in the forest land ("*Kawasan hutan*") and in the swamp shrub and swamp outside of the forest land (Non-"*Kawasan hutan*"). These four types of vegetations are found in the largest scale in Papua Barat province followed by three Kalimantan provinces (Tengah, Barat, Timur), Riau and Sematra Selatan.



Source: Report on the land use in Indonesia, modified by the JICA Study team

Note: Prepared based on the assumption below:
Primary Swamp Forest and Secondary Swamp Forest in the Forest Area classified by Forest Law, Swamp Shrub and Swamp in the None Forest Area classified by Forest Law includes the Peat lands.

Figure 4.5 Province wise estimated distribution of peat land

The detailed assessment of forest resource in Indonesia is given in **Appendix 10**.

4.2.2 Biodiversity conservation

Indonesia has a great number of forest areas with fantastic biodiversity. However, since the implementation of investment regulation at the end of 1960s, the forest in Indonesia has been drastically changed. Deforestation rate that include degradation, deforestation and fragmentation is estimated to reach 1.6 million hectare per year (MoF 2007). Lowland forest, which is the most diverse area for biodiversity, is the most threatened forest due to conversion of land use, moving farm, irreversible forest management, development of infrastructure, mining, fires and various illegal activities that threaten the whole forest.

Data produced by the Ministry of Forestry (MoF) at the end of 2008 showed that the size of forest in Indonesia has reached 120.35 million hectare. Various human activities are still often found in the conservation areas. This activities increase rate of damage to the conservation area, such as nature reserve, animal sanctuary, national park, nature tourist park and great forest park, besides the damages to production forest area.

The damage rates to the production forest also tend to increase. The plantations in production forest areas such as HTI (Estate Forest) are categorically small compared to the size of forest areas that had been given by the government to develop this estate forest.

The land clearance through the conversion of natural forest to oil palm plantation gives a contribution to the damage of forest area. In 2003, the size for oil palm plantation was 5.25 million hectares, until 2005 the size of this plantation reached 5.59 million hectares. It is predicted that the expansion of oil palm plantation will still increase to 13.8 million hectares in 2020. The conservation of natural forest into oil palm plantation is a serious threat to the conservation of biodiversity, because the conversion is often conducted in tropical lowland rainforest which is categorized as the type of ecosystem with the highest biodiversity.

Forest in relation to climate change can play a role as carbon sink, carbon storage, as well as carbon sources. Deforestation and degradation can increase the carbon source, while a-forestation, reforestation and other planting activities can increase the carbon sink and storage. The emission of the Green House gas, which happened in Land Use, Land Use Change and Forest (LULUCF) sectors in Indonesia come from deforestation (forest conversion for other uses such as agriculture, plantation, residential, mining, regional infrastructure) and degradation (the decrease of forest quality due to illegal logging, fire, over cutting, land clearance by slash and burn and forest clearance (NAPCC 2007).

At the species level, the impacts of human activities such as poaching, illegal trade of fauna, habitat destruction, over exploitation, illegal logging and forest clearance as well as the introduction of alien species, placed Indonesia as a country with long list of species that are threatened with extinction. The list includes 140 species of birds, 63 species of mammals (IUCN 2008), and 21 species of reptiles. About 382 species have been listed in the conserved species in Indonesia, and it is predicted that this number 13 will increase as a consequence of an increasing number of threats to the conservation of various species in Indonesia (SoER Indonesia 2007).The threat to species was also caused by poaching, trading and illegal distribution.

At the ecosystem level, conservation efforts are made through the assignment of conservation areas as a place to protect and to conserve biodiversity, i.e. nature reserve, wildlife sanctuary, national park, tourist nature-park, great forest park (Tahura) and hunting parks. These efforts were intended to

conserve the diversity of ecosystem types in Indonesia under a conservation network. These conservation areas reach 27.968 million hectares that are distributed under 532 conservation units.

4.2.3 Issues and problem

Threats to Indonesian Biodiversity

The loss of biodiversity is a natural process, but the extinction rate is often accelerated by human overexploitation. The main threats that cause the loss of biodiversity in Indonesia are mostly caused by rapid population growth, deforestation and forest fires, habitat fragmentation, over exploitation (including illegal poaching and illegal trade of fauna and flora), introduction of alien species, pollution and climate change

Rapid Population Growth

In 2005, the population of Indonesia is 218.9 million which placed Indonesia in the fourth most populous country in the world. It was said that in 2025, the population of Indonesia is projected to be increased to 273.2 million. The large number of population will increase use of biodiversity, and more forest and farm areas (including paddy field) will be converted into residential areas.

Deforestation

Deforestation is defined as a change in forest cover of a certain region from forest area into non-forest or into the area that is used for non-forest sectors (plantation, agriculture, residential/transmigration area) due to the forest mismanagement and forest fires. The latest data stated that deforestation rate in Indonesia in 2000-2005 is 1.08 million hectares.

Forest and Land Fires

The forest fires in Indonesia were caused by several linked factors related to human and nature, for example logging, land clearance, infrastructure development and nomad-farm practice, which gave a wide access to the forests.

Degradation and fragmentation of habitats

Lowland forest areas are which contain the highest biodiversity and at same time these areas are also places to obtain and meet the human needs. The conversion of forest into plantation etc. leads to the decreasing of natural habitats for plants and wild animals and causes the fragmentation of the habitat. Moreover, habitat fragmentation will push conflicts between human beings and wild life.

Consumption/Over Exploitation

Human activities and consumption will affect the condition of biodiversity especially on species that have important commercial values at the markets. Over harvesting and over exploitation are easily occurring, and without rehabilitation, it will reduce the level of biodiversity in a particular area in short time.

Invasive Alien Species

One of the real global threats to biodiversity is invasive species. The introduction, distribution and uses of alien species have caused ecological losses and considerable economical losses. The environment damage caused by invasive alien species is very difficult to recover and cost lots because this is related to organisms that perform adaptation, growth and reproduction. The invasive alien species can cause the losses of endemic species. There are about 339 plant invasive alien species found in Indonesia.

Climate Change

Another factor that can cause biodiversity loss is climate change. The real impact of the climate change on the species as a component of biodiversity is the change in its distribution range, the increase of species rarity; species composition change, and the alteration of reproduction period.

The Threats of National Parks

The statistic of PHKA describes the main cause of the threats of National Parks, they are, Illegal logging, Oil pram plantation, Land use conversion, Mining and Drilling, Forest Fire, Invasive species, Deforestation, Degradation, Parching and others. Among others, more than half of the problems are boundary issues.

4.3 Current projects concerning REDD+ readiness and implementation

4.3.1 Regulatory instruments for field-based activities

In the context of the legal framework in Indonesia, there are currently three major regulatory instruments that stipulate and guide REDD+ concerned activities in the field. The first is "Ministerial Decree No.68/Menhut-II/2008 on Implementation of demonstration activities for reducing emission from deforestation and forest degradation" that was issued on 17 December 2008. The decree defines demonstration activities as the ones to examine the development of methodologies, techniques and institutions that are conducive to emission reduction from deforestation and forest degradation and also describes the process and content of the application by concerned stakeholders.

The second is "Ministerial Decree No.30/Menhut-II/2009 on the REDD procedure" issued on 1 May 2009 that stipulates the outline of REDD implementation such as target areas, implementing actors, rules and regulations of REDD implementation, application and approval process, definition of REL and monitoring method, verification and certification and benefit sharing. The third is "Ministerial Decree No.36/Menhut-II/2009 on Procedure for the utilization of carbon sequestration in protection and production forests" issued on 22 May 2009, which provides a guideline for private sector organizations to generate carbon credits through emission reduction activities.

In addition to the above three decrees that provide a framework for field-based emission reduction activities, there is an instrument called "Ecosystem Restoration Concession (ERC)" which is stipulated in Ministerial Decree No.61/Menhut-II/2008 dated 31 October 2008 and specifically relevant to the REDD+ implementation. The ERC regime provides concession holders with management right of forest resources for conservation so that they can generate carbon credits by halting deforestation and forest degradation that have occurred or are to occur within concession areas.

4.3.2 General characteristics of current REDD+ projects

At the moment, there are at least thirty projects that are directly relevant to REDD+ readiness or implementation and currently being implemented or under planning (including the ones in which basic survey was conducted but planning has not proceeded yet) as shown in **Table 4.7**. General characteristics of these projects are discussed in the (1) – (6) below (from **Table 4.8** to **Table 4.13**).

Table 4.7 On-going and planned projects for REDD+ readiness and implementation

	Project Name	Province	Area and Forest-land Category	Soil & CO2 Reduction	International Proponents
1	Leuser Public Private REDD Project	Aceh	1,920,000 ha HK,HL,HP,APL	Non peat	Global EcoRescue
2	Reducing Carbon Emissions from Deforestation in the Ulu Masen Ecosystem	Aceh	750,000 ha CA,HP,APL	Non peat 0.9 M t / year	Fauna and Flora International (FFI); Carbon Conservation
3	Kalimantan Forests and Climate	Central Kalimantan	120,000 ha	Peatland	Australian Government

	Project Name	Province	Area and Forest-land Category	Soil & CO2 Reduction	International Proponents
	Partnership (KFCP)		HP		
4	Mawas Peatland Conservation Project	Central Kalimantan	100,000 ha HP,HPK	Peatland 4.2 M t / year	BOSF
5	Katingan Peatlands Conservation and Restoration Project	Central Kalimantan	217,755 ha HPK,HP	Peatland 1.8 M t / year	Starling Resources
6	Sebangau Restoration Project	Central Kalimantan	85,000 ha HK (TN Sebangau)	Peatland	WWF
7	The Lamandau River Wildlife Reserve forest conservation and community development project	Central Kalimantan	23,600 ha HP,HPK	Peatland	ICRAF; Rare Conservation; OFI
8	The Rimba Raya Biodiversity Reserve Project	Central Kalimantan	47,006 ha HPK	Peatland 3.2 M t / year	Infinite Earth
9	Korea-Indonesia Joint Project for Adaptation and Mitigation of Climate Change in Forestry	Central Lombok West N. Tenggara	10,000 ha HL	(Non peat)	KOICA
10	Indonesia UN-REDD National Joint Program	Central Sulawesi		(Non peat)	UN-REDD
11	Tropical Forest Conservation for Reducing Emissions from Deforestation and Enhancing Carbon Stocks in Meru Betiri NP	East Java	58,000 ha HK (TN)	Non peat	ITTO
12	Berau Forest Carbon Program (PKHB)	East Kalimantan (Berau district)	2,200,000 ha HL,HPT,HP,HK,APL	Non peat 2 M t / year	TNC
13	Transformation of spatial layout for emission reduction in Kutai Barat District	East Kalimantan (Kutai Barat district)	3,857,914 ha KBK,KBNK,HK,HL	Non peat	WWF
14	PT Restorasi Habitat Orangutan Indonesia	East Kalimantan	86,893 ha IUPHHK-RE	Non peat 0.34 M t / year	Borneo Orangutan Survival (BOS)
15	Forests and Climate Change Programme (FORCLIME)	East Kalimantan West Kalimantan			GIZ; KfW
16	TEBE Project	East N. Tenggara		Non peat	KYEEMA Foundation
17	Sumatra Forest Carbon Partnership	Jambi		Non peat	Australian government
18	Hutan Desa Community Carbon Pool	Jambi	20,000 ha HP	Non peat	FFI
19	Berbak Carbon Initiative Project	Jambi	240,000 ha HK,HL,HP	Peatland 0.7 M t / year	Zoology Society of London
20	Sustainable Management of Poigar Forest: REDD in North Sulawesi	North Sulawesi	35,000 ha IUPJL:HL,HPT,HP	Non peat 0.17 M t / year	ONF International
21	Batang Toru Forest Ecosystem	North Sumatra	150,000 ha	Non peat	CI
22	REDD+ in Jayapura District, Papua Province	Papua	540,000 ha APL,HL,HP,HPK,HPT	Non peat	WWF
23	Kampar Ring - A Sustainable Development Model Based on Responsible Peatland Management	Riau	56,000 ha HP - HPH/HTI	Peatland 1.68 M t / year	APRIL
24	REDD+ of Tesso Nilo Forest Complex	Riau	160,000 ha TN,HP	Non peat	WWF
25	Merang REDD Pilot Project (MRPP)	South Sumatera	24,000 Ha HP	Peatland 1.24 M t / year	GIZ
26	Danau Siawan Lake peat swamp forest	West Kalimantan	39,000 ha HPK	Peatland	FFI; Macquarie
27	Putri river peat swamp forest	West Kalimantan	10,300 ha HPK,HP	Peatland	FFI; Macquarie
28	Reducing Emission from Deforestation caused by the Palm Oil Sector in West Kalimantan	West Kalimantan	90,280 ha APL	Peatland	FFI
29	Community Carbon pool	West Kalimantan	55,000 ha HP,APL	Peatland	FFI
30	Mamuju Habitat	West Sulawesi	1,100,000 ha HL,HP	Non peat 24 M t / year	KeeptheHabitat

Source: JICA Study team

	Project Name	Province	Area and Forest-land Category	Soil & CO2 Reduction	International Proponents

Forestland category: HP – Production forest, HL – Protection forest, HK – Conservation forest, APL – Non-forestland

Other abbreviation: HPH – Logging concession, HTI – Plantation concession, TN – National park

(1) Location

Table 4.8 shows the distribution of the projects over islands and provinces. The table clearly indicates that most of projects are located in Kalimantan or Sumatra islands where deforestation rate is higher.

Table 4.8 Distribution of projects in provinces

Project Number	Province
6	Central Kalimantan (Kalimantan)
5	West Kalimantan (Kalimantan)
4	East Kalimantan (Kalimantan)
3	Jambi (Sumatra)
2	Aceh (Sumatra), Riau (Sumatra)
1	Central Lombok, Central Sulawesi, East Java, East N. Tenggara, North Sulawesi, North Sumatra (Sumatra), Papua, South Sumatera (Sumatra), West N. Tenggara, West Sulawesi

Source: JICA Study team

Note: Since some projects are implemented in more than one province, the total project number counts beyond thirty.

(2) Forestland category

Table 4.9 shows the scope of project's target area in terms of forestland category. Generally speaking, project management is not complicated if the target area is limited to one forestland category such as Production forest, Protection forest, Conservation forest or Non-forestland. In the context of REDD, however, project proponents are required to consider the issue of leakage so that covering multiple forestland categories is often inevitable even if management is rather complicated. For example, addressing forest degradation by illegal logging within national park area (conservation forest) may simply end up with the shift of the illegal activity to outside the national park area unless the scope of project's target area involves surrounding forests of the national park. This is demonstrated by the fact that nearly half of current projects take the scope of multiple forestland categories as indicated in **Table 4.9**.

Table 4.9 Scope of target areas in terms of forestland category

Scope	Project Number
Single scope (only one forestland category)	15
Multiple scope (multiple forestland category)	13

Source: JICA Study team

Note: Scope of some projects is not clear so that the total project number does not reach thirty.

(3) Scale of target areas

Table 4.10 shows the scale of projects in terms of target areas. Large-scale projects cover either one entire province/district or one large ecosystem while mid- and small-scale projects are looking at certain landscape. It should be noted that the minimum coverage is 10,000 ha and projects of this scale are found only where forests are fragmented.

Table 4.10 Scale of target areas

Target area	Project Number
More than 1,000,000 ha	4
250,000 – 1,000,000 ha	2

Target area	Project Number
100,000 – 250,000 ha	5
Not more than 100,000 ha	15

Source: JICA Study team

Note: Not all the projects have identified target areas so that the total project number does not reach thirty.

(4) International proponents

Table 4.11 shows the data on international proponents who initiate REDD+ projects. All the thirty projects are initiated by international proponents and they can be categorized into three types: private company, government or international organization and NGO. Most of private companies are investment companies.

Table 4.11 Type of international proponents

Type of Initiating Proponent	Project Number
Private company	8
Government or international organization	7
NGO	15

Source: JICA Study team

(5) Soil type

Since REDD+ is concerned with forest carbon that includes underground carbon stock, it seems rational that the emphasis of REDD+ project proponents is placed on peat swamp forest where underground carbon stock is enormous. However, as indicated in **Table 4.12**, concentration of projects does not take place and an average area per project is much larger for Non-peat projects that an area for Peat projects.

Table 4.12 Soil type at project area

Soil type	Project Number	Average area
Peat	13	82,919 ha
Non-peat (mineral soil)	12	906,484 ha

Source: JICA Study team

Note: Not all the projects have identified target areas so that the total project number does not reach thirty.

(6) CO_2 emissions

Among the thirty projects, it is only eleven that have actually calculated the expected emission reduction compared with the reference emission level within their respective project areas as shown in **Table 4.13**. Other projects are still at the early planning stage and have not calculated yet. Nonetheless, clear tendency is observed that average emission reduction per hectare is much higher for Peat projects than Non-peat ones.

Table 4.13 Estimated emission reduction

Soil type	Project Number	Average estimated emission reduction (ton per year per ha)
Peat	6	33.8
Non-peat (mineral soil)	5	6.5

Source: JICA Study team

Note: Not all the projects have calculated the emission reduction level so that the total project number does not reach thirty.

4.3.3 Three types of projects for REDD+ readiness and implementation

Aside from the analysis on current REDD+ projects as described above, the projects can be classified into three types based on the scope and focus of their activities, which are: (1) Implementation oriented projects, (2) Readiness oriented projects and (3) Conservation oriented projects.

Implementation oriented projects basically follow the project framework developed by VCS, CCB and other voluntary schemes that assess the validity of emission reduction. These projects are designed so as to avoid deforestation and forest degradation and verify their emission reduction for generating carbon credits that will be sold at international markets. Hence, their activities are focused on those which actually aim at halting planned and unplanned deforestation and forest degradation at their project areas. Readiness projects primarily deal with the development of an institutional framework within which REDD+ implementation projects are operated. They also address capacity building of public actors that are involved in the operationalization of the institutional framework. Conservation oriented projects basically operate in the similar manner as before but the focus on carbon stock in forests and CO2 emission reduction was added to their existing activities. Hence, their scope of activities is inevitably subject to transformation while maintaining their original organizational mission in guiding a program/project framework. In the following sections, typical cases for the above three types are described.

(1) A case of an implementation oriented project1

➢ Project area

Location	Seruyan District, Central Kalimantan Province
Project Zone	91,215 ha
Project Area	47,006 ha (the area of calculating CO2 emission)
Soil type	Peat
Forestland	Conversion forest (Hutan Produksi Konversi)
Settlements	Fourteen communities along the border of the project zone

➢ Reference Scenario

Local oil palm companies applied the request of land conversion to oil palm plantation within the project area so that unless actions are taken, peat swamp forest in the project area will be converted into the plantation. Once peat forest is converted into plantation, CO2 emission will continue with the large volume due to water discharge of the area and resulting exposure of peat to the air. The project proponent estimated that total amount of additional emission that occurs due to the conversion will be 96,376,455 t CO2 over the 30 years period. Hence, if the project succeeds to halt the conversion of the peat swamp forest and resulting additional emission, this volume will be counted as emission reduction and eligible to carbon credits.

➢ Legal instrument for field-based operations

The project applies to Ministry of Forestry for the issuance of Ecosystem Restoration concession (ERC) over the project area following the regulation stipulated in Ministerial Decree No.61/Menhut-II/2008.

➢ Activities for REDD+ Readiness (for the development of REDD+ institutional framework)

Not planned

➢ Activities for REDD+ Implementation (for addressing deforestation and forest degradation)

- Establishment of conservation area (91,215 ha) based on the ERC instrument

  Forest conversion to oil palm plantation is avoided if the project can secure the issuance of

[1] The information described in this section is derived from the following document; "The Rimba Raya Biodiversity Reserve REDD Project" which was downloaded from the following site on June 1, 2011;
"http://www.climate-standards.org/projects/files/rimba_raya/CCBA_PDD_Submission_for_Public_Comments_2010_06_05.pdf."

the ERC over the project area. Furthermore, the project proponent obtains the right to manage and conserve the forest so that they can officially deploy the following activities.

- Development of guard post

  Even if the ERC is issued, forests in Central Kalimantan are always under the threat of exploitation by illegal loggers and oil palm developers. In order to protect from these threats, the project will develop guard posts and watch any symptoms of illegal activities.

- Prevention of forest fire

  Forest fire is another threat against forest conservation. The project will set up a monitoring system through the development of fire watching towers, assignment of fire watchers and procurement of facilities and equipment.

➢ Activities for safeguard (for biodiversity conservation and community livelihood)

- Rehabilitation at degraded lands
- Assistance to Orangutan conservation at Tanjung Puting National Park
- Development of infrastructures at fourteen communities

(2) A case of a readiness oriented project[2]

➢ Project area

Location	Sarolangan & Merangin District, Jambi Province
Project Area	Entire districts
Soil type	Mineral
Forestland	Multiple

➢ Reference Scenario

There are two major direct causes of deforestation in these districts: (a) Large scale forest conversion to fast growing tree plantation or oil palm plantation that are conducted by private companies, and (b) small scale forest conversion to lubber and oil palm plantation (low land) and coffee and cinnamon garden (high land) by local communities.

➢ Legal instrument for field-based operations

The project is still at the early stage of its development and so far does not include a component of direct operations in the field.

➢ Activities for REDD+ Readiness (for the development of REDD+ institutional framework)

- Development of baseline information as part of the M&E
- Development of district and provincial Reference Emission Level (REL) scenarios
- Spatial planning, economic analysis, and TA to improve low carbon business strategies
- Remote sensing and GIS for establishing RELs and monitoring changes in carbon stocks
- Carbon accounting integration models as part of baseline studies monitoring changes
- Conflict mitigation and resolution as part of a risk mitigation strategy
- Ground knowledge to support land cover change analysis
- Development and testing of practical incentive payment mechanisms

➢ Activities for REDD+ Implementation (for addressing deforestation and forest degradation)

- Assistance for technical aspects of improving forest management practices (RIL) at HPH

[2] The information described in this section is derived from the following document; "Sumatra Forest Carbon Partnership: Options brief for the second IAFCP REDD+ demonstration activity" that was circulated by email on June 10, 2011.

- Activities for safeguard (for biodiversity conservation and community livelihood)
  - Forest rehabilitation, sustainable forest management, certification and best practice
  - Options and resources for improving forest-based livelihoods
  - Options and resources for incorporating REDD+ in community based forest management

(3) A case of a conservation oriented project[3]

- Project area

Location	Kutai Barat District, East Kalimantan Province
Project Area	Entire district (3,857,914 ha)
Soil type	Mostly mineral (only some for peat)
Forestland	Multiple

- Reference Scenario

The major direct cause of deforestation in the district is large scale forest conversion to oil palm plantation conducted by private companies. The major direct cause of forest degradation is over-exploitation through logging operations by private companies.

- Legal instrument for field-based operations

The project does not include a component of direct operations in the field but basically supports existing organization to transform their field-based operations such as the introduction of RIL to logging companies or the introduction of alternative sites for oil palm plantation companies.

- Activities for REDD+ Readiness (for the development of REDD+ institutional framework)
  - Provision of scientific data to district government for supporting spatial planning process
  - Support for the identification of REL and development of monitoring system
- Activities for REDD+ Implementation (for addressing deforestation and forest degradation)
  - Application of land swap through the provision of data to private companies on alternative sites for oil palm plantation
  - Introduction of reduced impact logging techniques to logging companies with HPH
- Activities for safeguard (for biodiversity conservation and community livelihood)
  - Introduction of community forest (Hutan Desa) system and its institutional capacity building for district government

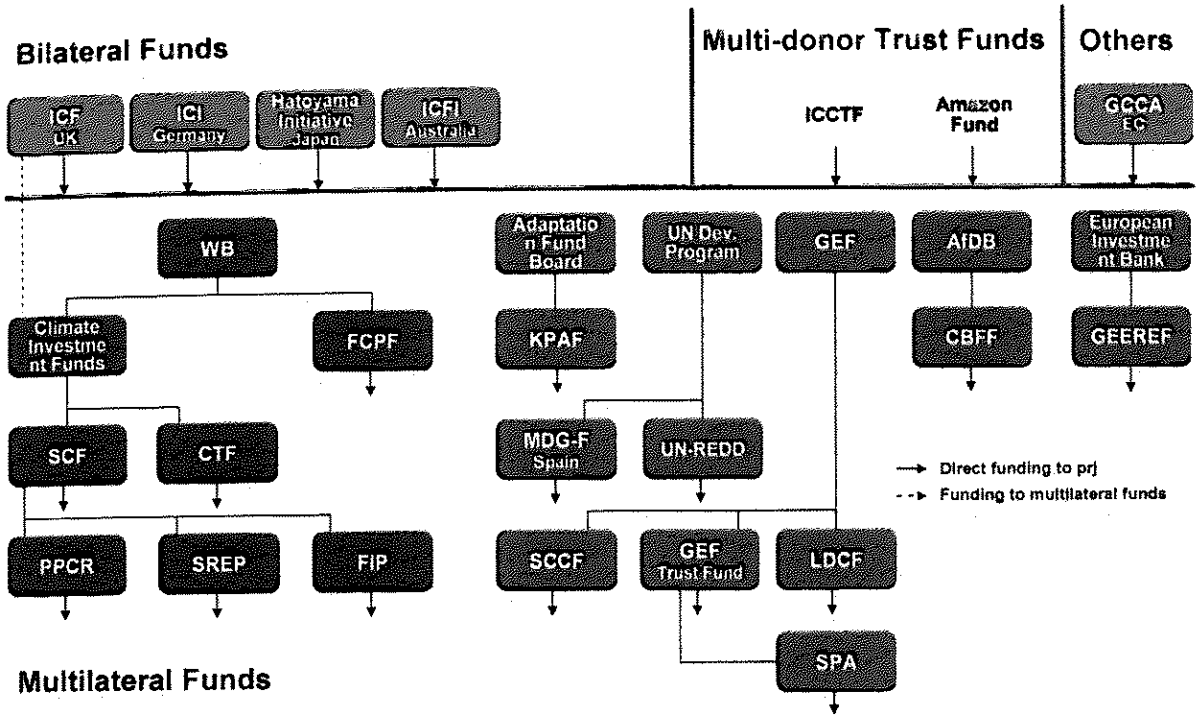
4.4 Current status of funding mechanism for the schemes of climate change

Activities of climate change are required to respond quickly, not only public input but also private dynamism is indispensable for countermeasure of climate change. It is therefore difficult to implement climate change activities effectively if there is no funding support. To enhance smooth funding from public and private sectors, the mature mechanism is necessary. After conclusion of Kyoto Protocol in 1997, there are several funding mechanisms proposed and established. In this sub-section, current status of funding mechanism to reinforce climate change sector was scrutinized as follows.

4.4.1 Climate change sector in general

Currently, there are various kinds of funding scheme established/operated in the world as illustrated in **Figure 4.6**. Through understanding the international climate financial initiatives, countermeasures taken to address the climate change by the developing countries can be recognized.

[3] The information described in this section is derived from the following document; "Forest Carbon Demonstration Sites: Facilitated by WWF Indonesia" as well as personal interview to a WWF officer on June 10, 2011.



Source: Climate Fund Update website

Note1: Abbreviation in the diagram can be referred to the **Table 4.14** below.

Note2: The Global Climate Change Alliance (GCCA) is an initiative of the European Union (EU) and to build a new alliance on climate change between the EU and developing countries.

Figure 4.6 Types of funding scheme for climate change

According to the above figure, the funds can be divided into four (4) categories those are bilateral fund, multilateral fund, multi-donor trust fund, and others. Currently most funds have been supporting an establishment of GHG emission reduction scheme in the developing countries including formulation of GHG emission reduction project such as CDM, REDD+ etc. while there are few funds to include carbon offset scheme. Detailed information of each fund is presented in **Table 4.14**.

Table 4.14 Lists of climate fund

Fund	Type	Administered by	Year
ADAPTATION			
Least Developed Countries Fund (LDCF)	Multi	GEF	2002
Strategic Priority on Adaptation (SPA)	Multi	GEF	2004
Pilot Program for Climate Resilience (PPCR)	Multi	WB	2008
Adaptation Fund (KPAF)	Multi	Adaptation Fund Board	2009
MITIGATION, GENERAL			
Clean Technology Fund (CTF)	Multi	WB	2008
Global Energy Efficiency and Renewable Energy Fund (GEEREF)	Multi	EC	2008
Scaling-Up Renewable Energy Program for Low Income Countries (SREP)	Multi	WB	2009
MITIGATION, REDD only			
Congo Basin Forest Fund (CBFF)	Multi	AfDB	2008
Forest Carbon Partnership Facility (FCPF)	Multi	WB	2008
UN-REDD Programme (UN-REDD)	Multi	UNDP	2008
Amazon Fund	Multi	Brazilian Development Bank	2009
Forest Investment Program (FIP)	Multi	WB	2009
International Forest Carbon Initiative (IFCI)	Bi	Govrn't of Australia	2007
ADAPTATION & MITIGATION, excluding REDD			

Fund	Type	Administered by	Year
Special Climate Change Fund (SCCF)	Multi	GEF	2002
GEF Trust Fund - Climate Change focal area 4 (GEF trust fund)	Multi	GEF	2006
MDG achievement Fund - environment and climate change thematic window (MDG-F)	Multi	UNDP	2007
GEF Trust Fund - Climate Change focal area 5 (GEF trust fund)	Multi	GEF	2010
ADAPTATION & MITIGATION, including REDD			
Global Climate Change Alliance (GCCA)	Multi	EC	2008
Strategic Climate Fund (SCF)	Multi	WB	2008
Indonesia Climate Change Trust Fund (ICCTF)	Multi	BAPPENAS	2010
International Climate Fund (ICF, formerly ETF-IW)	Bi	Govn't of UK	2008
Hatoyama Initiative - private sources	Bi	Govrn't of Japan	2008
Hatoyama Initiative - public sources	Bi	Govrn't of Japan	2008
International Climate Initiative (ICI)	Bi	Govrn't of Germany	2008

Source: Climate Fund Update website

4.4.2 Climate change sector in Indonesia

Indonesian NAMA clearly mentioned that 41% commitment can be achieved with international funding supports based on the 26% of commitment with unilateral (GOI) budget. Among non-Annex I countries, Indonesia takes the positive actions for climate change funding system. As required in the National Action Plan for Greenhouse Gas Emission Reduction (RAN-GRK), it is also necessary to establish funding mechanism in Indonesia in order to support sustainable GHG emission reduction. Accordingly it can be pointed that the mechanism on climate change is not only limited within operating the funding but also should include the aspect of fiscal policy of GOI.

Following table describes the current fund to utilize for climate change activities in Indonesia.

Table 4.15 Classification of climate fund source in Indonesia

#	Fund source	Coordinator	Funding type	Amount potential	Sector
GOVERNMENT BUDGET					
1	Pure IDR	GOI	State budget	In accordance with RPJMN 2010-2014	Mitigation & adaptation
2	Loan	GOI	State budget	Included in ministry/ institute resource envelope	Mitigation & adaptation
3	Debt to natural swap	GOI	State budget	EUR 20 mil. from the Govrn't of Germany	Forestry and energy conservation
4	Green economy (BKF)	GOI	State budget	N/A	Fiscal policy
5	Green fund (PIP-MoF)	Private sector	State budget	IDR 500 bil. to 1 mil.	Revolving fund
6	Grant	GOI and private sector	N/A	N/A	N/A
7	Bilateral /Multilateral	GOI and/or private sector	State budget	N/A	In accordance with the grant agreement
8	ICCTF	GOI and private sector	State budget	Germany: EUR 10 mil. Nether land : EUR 400 mil. and DFID : GBP 50 mil.	Innovation fund Transformation fund (revolving)
9	IGIF[4]	GOI and	State budget	GOI: USD 100 mil and	Forestry and energy

[4] The Indonesia Green Investment Fund (IGIF) is an investment fund and that will focus on infrastructure developments to help to reduce GHG emissions in Indonesia. IGIF aims to collect the money up to USD 1 billion as an initial capitalization. GOI is planning to invest USD 100 million into the fund. The remaining USD 900 million will be

#	Fund source	Coordinator	Funding type	Amount potential	Sector
		private sector		private etc. USD 900 mil.	
DOMESTIC PRIVATE SECTOR					
10	Banking	Private sector	Following market mechanism	N/A	Investment fund
11	Non-banking	Private sector	Follow market mechanism	N/A	Investment fund
12	CSR	Private sector	Private sector	N/A	Mitigation & adaptation
GLOBAL FUND					
13	GEF	N/A	N/A	USD 90 mil. through GCCF	N/A
14	Copenhagen Green Climate Fund	GOI and private sector (NGO)	UNFCCC	USD 30 mil. (2012) USD 100 mil. (2020)	Mitigation & adaptation

Source: JICA Study team

Note: N/A indicates Not available information.

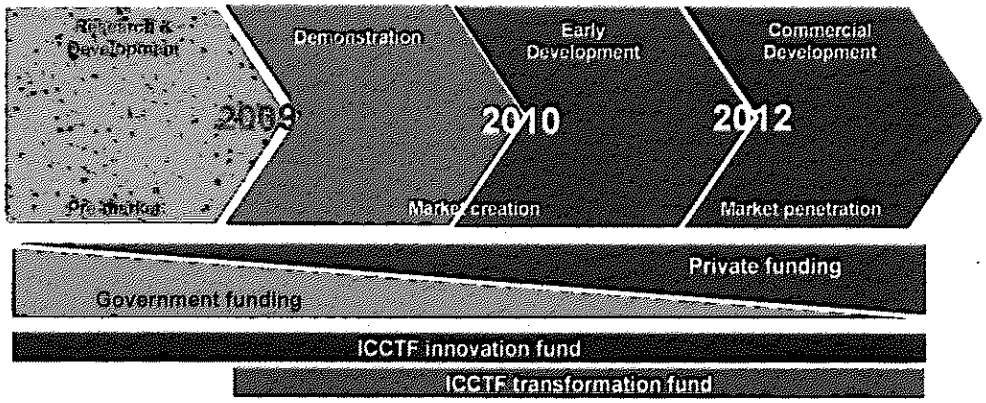
Except Indonesia Climate Change Trust Fund (ICCTF, #8 of above table), there is no tangible finance mechanism established in Indonesia. Currently, most popular fund in Indonesia is the ICCTF proposed by the GOI in September 2009. ICCTF is a national funding entity which aims to develop innovative ways to link international finance sources with national investment strategies. ICCTF has been operated by the Indonesia's National Development Planning Agency (BAPPENAS), and is currently serving as the interim trustee by the United Nations Development Programme (UNDP).

Objectives of ICCTF is 1) to achieve Indonesia's goals of a low carbon economy with greater resilience in the face of the impact of climate change dynamics, 2) to establish innovative ways to link international financial sources with national investment strategies, and 3) to become a showcase of alternative financing for climate change mitigation and adaptation programs managed by the GOI in a transparent and accountable manner.

ICCTF has focused the following three (3) priorities.

1) Energy and energy efficiency: ICCTF aims to contribute to the improvement of energy security in Indonesia and reduction of emissions from the energy sector.
2) Sustainable forestry and peat land management: Seeking to address the challenges related to the high levels of GHG emissions from the forest and peat land sectors, ICCTF aims to contribute to Indonesia's efforts to reduce deforestation and forest degradation while advancing efforts toward the sustainable management of peat lands and national forest resources.
3) Resilience: ICCTF aims to anticipate the negative impacts of climate change and deal with the risks and uncertainties of climate disruption to ensure Indonesia's progress along a path to sustainable development and balanced economic growth and having simultaneous efforts to reduce vulnerability and enhance societal resilience in the most vulnerable sectors.

provided by the institutional investors, foreign governments, and private investors.

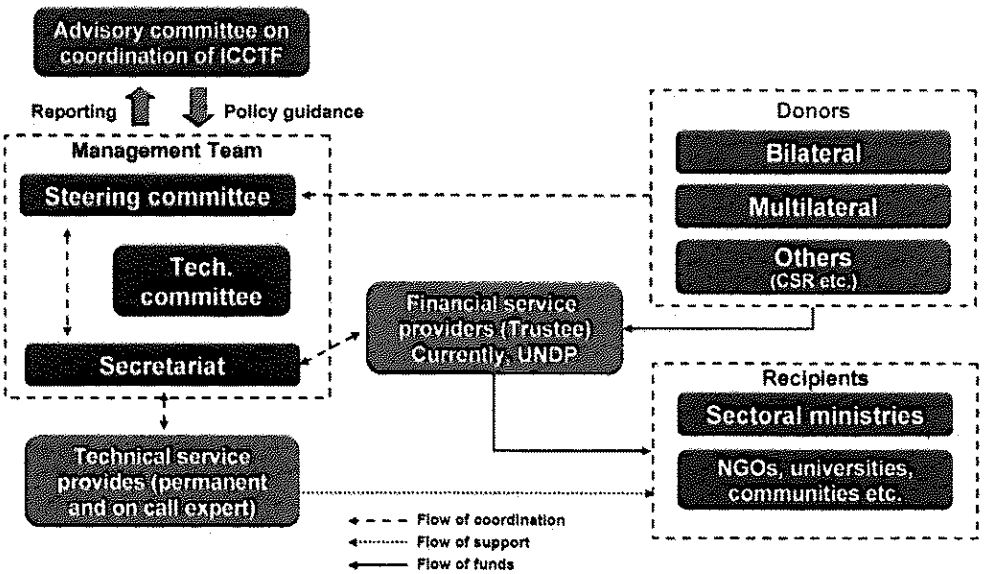


Source: Data provided by BAPPENAS, modified by the JICA Study team

Figure 4.7 ICCTF development image

As for funding in ICCTF, at the initial phase, ICCTF will be created as an "ICCTF innovative fund" which involves grant funding from development partners (donors) that will help overcome barriers for early program deployment. At the later stages, ICCTF may advance by establishing an "ICCTF transformation fund" which involves all available funding (public-private partnerships, loan and world capital market sources etc.). This transformation fund also aims to assist with market penetration. As such, at the initial phase, the ICCTF will be dominated by public funding and at the later stages will draw predominantly on private funds (transition government fund base into private funding base, see the above figure).

All investment decisions under ICCTF are made by a steering committee consisting of representatives from the BAPPENAS, the Ministry of Finance; the National Council for Climate Change (DNPI); and development partners. As stated above, ICCTF has provided grants to sectoral ministries to support climate change related activities.



Source: Blueprint for Indonesia Climate Change Trust Fund (ICCTF), BAPPENAS, 2009

Figure 4.8 Coordination mechanism of ICCTF

In the future, it is required that similar fund mechanisms of climate change (or similar ICCTF scheme) shall be established in Indonesia to facilitate not only public and private sectors but also those sectors of both national/regional levels to invest in the projects of climate change.

4.5 Carbon offset mechanism to facilitate REDD+ activities

4.5.1 Backgrounds

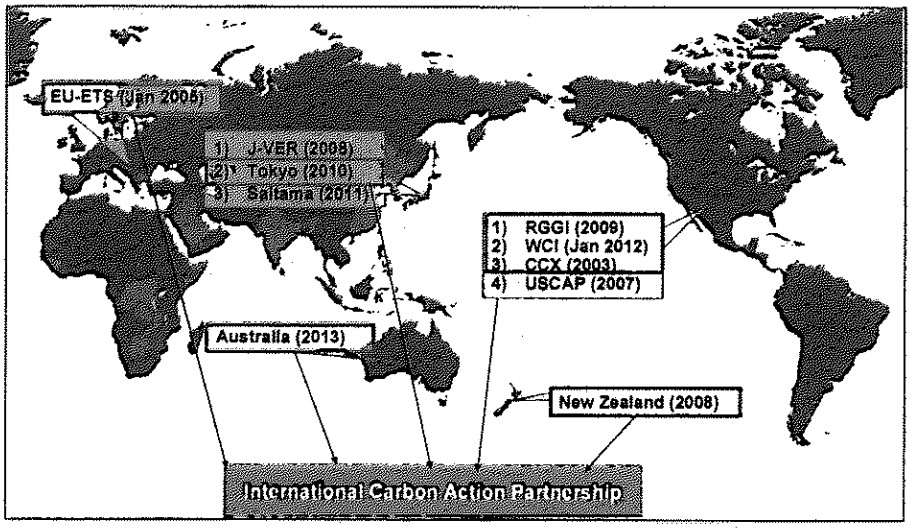
As illustrated in **Figure 3.4,** the scheme of REDD+ is considered to be operated by an implementing agency which are private companies/NGOs or public sectors such as central/local governments. The investments by those entities are supported by MRV systems (institutions) and funding instruments, and supposed to be motivated by the carbon market. Particularly the carbon offset mechanisms are thought to be a main driving force to promote the participation of the private sectors into the scheme because carbon credits which are generated by REDD+ activities and have a market value are thought to bring about certain amount of monetary profit to those investors as well as stakeholders of REDD+ project.

In order to consider the enabling conditions to promote the participation of the private sectors in the scheme of REDD+, a carbon offset mechanism is highlighted in the following sections by introducing its functions and practices currently operated in several countries. As an example of its facilities, Japan Verified Emission Reduction (J-VER) scheme is illustrated thereafter.

4.5.2 Current carbon offset mechanism

A carbon offset mechanism is a reduction in GHG emissions to compensate for or to offset an emission made other places. It is said that common understanding carbon offset is a newly established market mechanism not only as countermeasure of climate crisis but also as private sector voluntary's initiatives.

Currently, there are some carbon offset mechanisms operated and it is functioning with private initiatives. Some of them (highlighted in red box) are close linkage of International Carbon Action Partnership (ICAP). ICAP was launched with leaders of more than fifteen (15) governments in Lisbon in October 2007. ICAP is made up of countries and regions that have implemented or are actively pursuing the implementation of carbon markets through mandatory cap and trade systems. The government of Japan is a member of observer of ICAP, and the Tokyo metropolitan government joined an official member in May 2009.



Source: Materials prepared by Ministry of Environment, March 2011. Modified by the JICA Study team
Note: Year indicates the commencement year of the above mechanism.

Figure 4.9 Current carbon offset mechanism

Summaries of the above carbon mechanism are presented in **Table 4.16**.

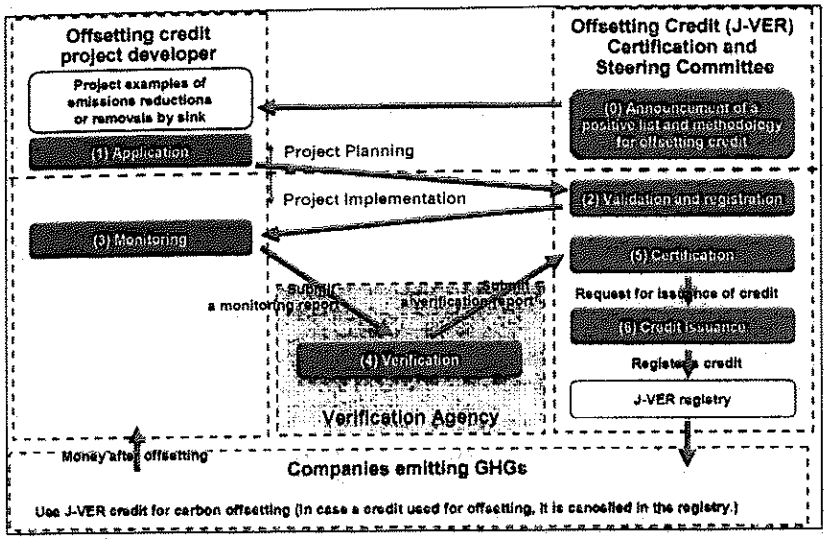
Table 4.16 Current carbon offset mechanism

#	Name	Outlines
1	European Union Emission Trading System (EU-ETS)	EU-ETS is a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial GHG emissions cost-effectively. EU-ETS is the first and biggest international scheme for the trading of GHG emission allowances, covering some 11,000 power stations and industrial plants in 30 countries.
2	Regional Greenhouse Gas Initiative (RGGI)	RGGI is the first mandatory cap-and-trade program for carbon offset and has commenced by capping emissions at current levels in 2009 to reduce the emissions 10% by 2018. RGGI was established in December 2005 by the governors of seven Northeastern and Mid-Atlantic states: Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont, in United State. RGGI established "CO_2 allowance tracking system", "CO_2 auction", "CO_2 offset" etc, to implement smooth initiative operation.
3	Western Climate Initiative (WCI)	WCI includes seven (7) western states and four (4) Canadian provinces and has established a regional target for reducing heat-trapping emissions of 15 % below 2005 levels by 2020. WCI focuses to develop a regional cap-and-trade program. WCI also requires participants to implement California's Clean Car Standard, and recommends other policies and best practices that states and provinces can adopt to achieve regional goals for cutting emissions.
4	Chicago Climate Exchange (CCX)	CCX was established in 2003 as a voluntary GHG emission reduction and offset trading platform. Market participants included major corporations, utilities and financial institutions with activities in all fifty (50) United States, eight (8) Canadian provinces and 16 countries. The total program baseline covered 700 million metric tons CO_2. Also, CCX has operated a cap and trade program with an offsets component. Then, CCX launched the Chicago Climate Exchange Offsets Registry Program to register verified emission reductions based on a comprehensive set of established protocols in 2011.
5	United States Carbon Action Partnership (USCAP)	USCAP is an unprecedented alliance of twenty two (22) major businesses and five (5) NGOs. USCAP has diverse group of business and environmental leaders that have come together to call for mandatory action to address climate change. USCAP was formed in January 2007 and issued "A Call for Action", which includes a series of principles and recommendations calling for the federal government to quickly enact strong national legislation to achieve significant

#	Name	Outlines
		reductions of greenhouse gas emissions.

Source: JICA Study team

Besides the above in the table, Australian, Canadian, New Zealand, Tokyo and Saitama mechanisms are planned/under operation. And J-VER scheme is illustrated in **Figure 6.5** and the following column as an example to enable the carbon offset mechanism.



J-VER was established to encourage GHG emission reduction projects or GHG sink projects through generating carbon credits by MOEJ in November 2008 and is managed by the Certification Center on Climate Change, Japan (4CJ) who aims to ensure transparency and reliability by playing secretariat's role for carbon offsetting through the "Public certification scheme", the "Offset providers' disclosure program" and the "J-VER scheme", in line with the guidelines introduced by Ministry of Environment, Japan (MOEJ).

Source: JICA Study team

Figure 4.10 Image of J-VER scheme

4.5.3 Current status of carbon offset mechanism in Indonesia

As of August 2011, there is no carbon offset mechanism established in Indonesia. The GOI has however been engaged in an effort to formulate the carbon offset mechanism to coming commencing time. Indonesia is one of the potential countries which expect to mitigate a large amount of GHG in post Kyoto Protocol, many donors/international organizations from developed countries are eager to support an establishment of MRV and carbon offset systems.

There are two focal points of climate change mitigation in Indonesia: first is Ministry of Foreign Affairs as signer of minutes of understanding on climate change activities etc. and another one is National Council on Climate Change, Indonesia (NCCC/DNPI) who is in charge of implementing body on climate change, especially discussion regarding cooperation on carbon market.

As for carbon offset mechanism in Indonesia, NCCC/DNPI is a mainly in charge of not only collecting information on the existing mechanism but also negotiating with donors/international organizations on introduction and adaptation of several market mechanisms. As a result, NCCC/DNPI recognizes that establishment of carbon offset market is required to be a long mutual cooperation among relating ministries/organizations. NCCC/DNPI also has contacted various foreign organizations in order to collect the knowledge/information of carbon offset mechanism. So far, the following donors have held the seminar/activities on carbon offset mechanism as shown in **Table 4.16**.

Table 4.17 Carbon offset seminar etc. in Indonesia

#	Title*	Time	Host	Donor
1	Warming Up Seminar: Climate Change Financing Need and Opportunities	Feb 19, 2009	Working Group on Fiscal Policy for Climate Change, Fiscal Policy Office, Ministry	ADB

#.	Title*	Time	Host	Donor
			of Finance of Indonesia	
2	Asian Forum on Carbon Update 2011	Mach 14 – 17, 2011	NCCCC/DNPI	UN-REDD, JICA/JST, others
3	Workshop on Implementation of Forest-Based Climate Change Mitigation Initiative: Strengthening Information Sharing and Networking among Stakeholders	May 26, 2011	---	ITTO
4	Workshop New Market Mechanism Possibilities for Climate Change Mitigation Beyond 2012, "Indonesia's Perspectives and Japan's Experiences"	July 20-21, 2011	National Committee on Climate Change (NCCC/DNPI)	iGES

Source: JICA Study team

It was recognized that Indonesian participants on iGES workshop (#3 above) have enthusiasm for learning Japanese carbon offset mechanism (J-VER and J-VETS), through the participation of the workshop.

As for future plan on carbon offset mechanism, NCCC/DNPI will decide their own system around the end of this year based on the existing mechanisms, through the interview survey. Through the interview survey, it seems that NCCC/DNPI is especially interested in New Zealand system (New Zealand Emission Trading Scheme: NZ-ETS[5]) as individual system, which has been operated well. According to NCCC, the GOI will have a meeting with New Zealand delegation in September or October 2011.

Since September 2010, REDD+ task force under UKP4 has taken in charge of the REDD+ implementation because Indonesian president is committed to realize 26% of GHG emission reduction with 7% achievement of economic growth. REDD+ task force whose tasks and duties were terminated at the end of June 2011 has achieved a level of good performance in the readiness phase. According to the member of UKP4, their tasks will still continue in implementation phase starting in 2014. Also the member expects that the Indonesian carbon offset system regarding the REDD+ will be established and operated around 2014.

To realize a carbon offset system in Indonesia, it is necessary to conduct not only CDM projects but also voluntary GHG mitigation projects which are expected to be planned/implemented. Currently discussion of next international mechanism such as post Kyoto Protocol is chaotic. It's not too much to say that any kinds of GHG mitigation can be one of the candidates of dominants position from 2013 in the mitigation efforts. As for REDD+, several Verified Carbon Standard (VCS) projects are already implemented as advanced mitigation activities in the world.

Table 4.18 Lists of registered REDD projects under VCS

#	Project name	Project proponent	Country	Estimated annual VCUs
562	The Kasigau corridor REDD project - phase I, Rukinga sanctuary	Wildlife Works Inc.	Kenya	251,432
605	Protection of a Tasmanian native forest project 1, REDD forests pilot	Multiple project proponents	Australia	4,956
612	The Kasigau corridor REDD project - phase II, the community ranches	Wildlife Works Inc.	Kenya	1,614,959
641	REDD forests grouped project: protection of Tasmanian native forest	Multiple project proponents	Australia	26,688

Source : VCS website (http://www.vcsprojectdatabase.org/) , as of September 1, 2011.

[5] http://www.climatechange.govt.nz/emissions-trading-scheme/

Note : One (1) Voluntary Carbon Units (VCUs) is equivalent to emission reduction of 1 metric ton of CO_2.

According to **Table 4.18**, there is no REDD projects so far in Indonesia while there are several VCS projects, all of which belong to the energy sector and were registered in Indonesia as shown in **Table 4.19**.

Table 4.19 Lists of VCS projects in Indonesia

#	Project name	Project proponent	Sector	Estimated annual VCUs	Status
144	Capacity upgrade of Gunung Salak geothermal power plant project	PT. Indonesia power	Energy (renewable /non-renewable)	112,522	Registered VCUs issued
238	Mobuya mini hydro power plant 3*1000 kW, north Sulawesi	PT. Cipta Daya Nusantara	Ditto	11,637	Ditto
409	MedcoEnergi associated gas recovery and utilization project	PT. Medco LPG Kaji (MLK)	Fugitive emission from fuels	86,022	Ditto
486	50 MW Sipansihaporas hydro power plant, north Sumatra	PT. PLN (Persero)	Energy (renewable /non-renewable)	159,596	Registered – public
487	210 MW Musi hydro power plant, Bengkulu	Ditto	Ditto	847,020	Ditto
488	82 MW Lau Renun hydro power plant, north Sumatra	Ditto	Ditto	229,048	Registered VCUs issued

Source : VCS website (http://www.vcsprojectdatabase.org/) as of September 1, 2011.
Note : One (1) Voluntary Carbon Units (VCUs) is equivalent to emission reduction of 1 metric ton of CO_2.

Chapter 5 Identification of cooperation needs

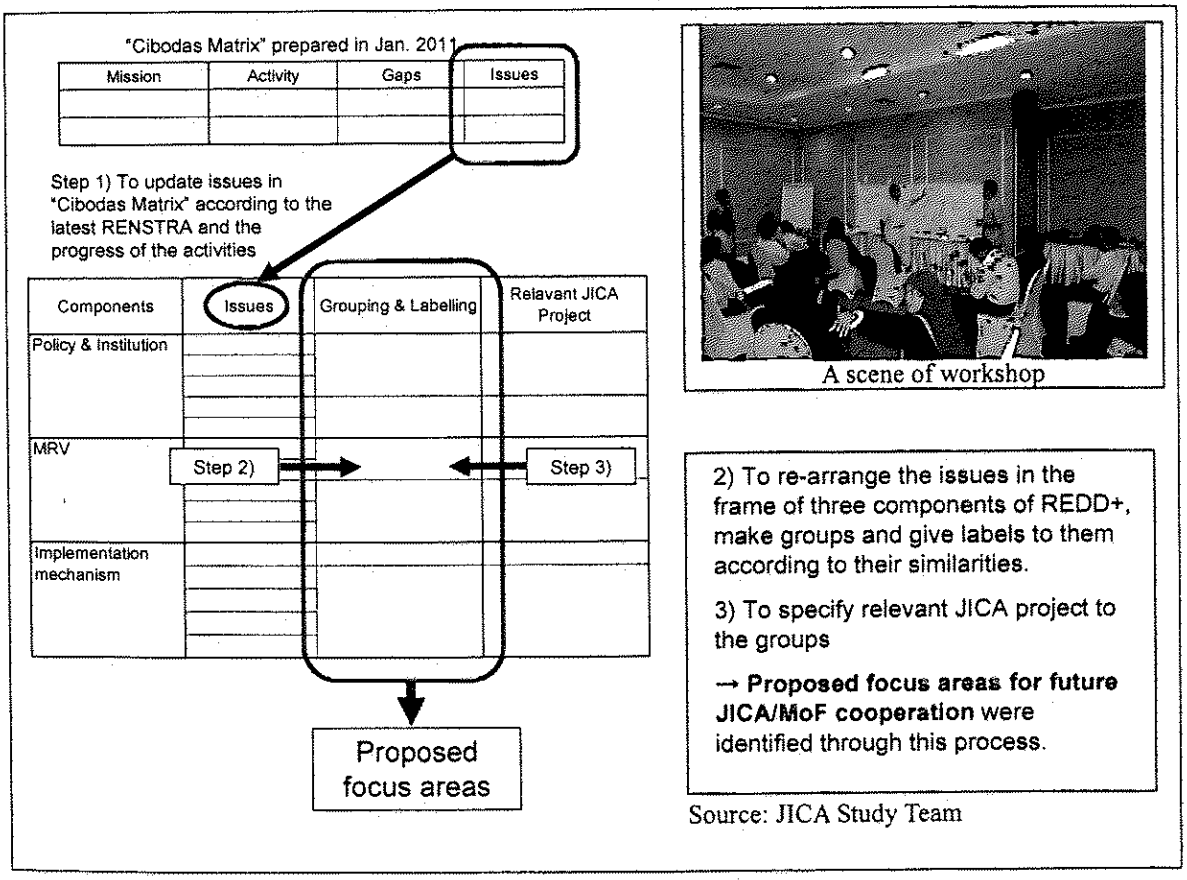
5.1 Cooperation needs of MoF

Based on the analysis of data/information collected, the Study team came up with the idea to carry out a workshop on 19 May 2011 inviting the working group members and the officers on MoF in charge of monitoring RENSTRA to identify the needs of cooperation in MoF in relation to REDD+. It is regarded as one of the important steps to realize the team's approach to the Study which is **"work together approach"** with the members. Steps and flow to be taken were as follows.

1) **Step 1: To update the CIBODAS matrix.** The CIBODAS matrix was developed to assess the progress, issues and challenges of the missions, targets and activities presented in RENSTRA 2010-2014. It was prepared at the retreat held in CIBODAS in January 2011 where the key staffs of MoF in charge of RENSTRA were invited by JICA Indonesia office. At the workshop on May 19, the issues and challenges recorded on the matrix were updated after the interval of almost half of the year.

2) **Step 2: To do the grouping of the issues in a frame of three main areas of REDD+.** Issues updated in step 1 were arranged in a group according to their commonalities and shared features. This was to find out the cross-DGs[1] issues and solutions to address them. The groups were further arranged in a broad frame of three main fields of REDD+ which were 1) policy and institution, 2) MRV and 3) implementation mechanisms.

3) **Step 3: To find out the relevancy of JICA ongoing project.** Technical correlations were identified between the technologies provided by the JICA past/ongoing projects and the issues which the DGs of MoF were facing with to implement RENSTRA.



Source: JICA Study Team

[1] DG(s) means Director General of the general department(s) which is (are) placed directly under the Minister of MoF.

Figure 5.1 Process to identify the needs of cooperation in MoF

Following the process mentioned above, the proposed focus areas were identified as indicated in **Table 5.1 (1) and (2).** They are framed in the main three fields of REDD+. In Policy and Institution 1) Strengthening of forest management unit (FMU) and 2) Strengthening of forest policy making are selected by the majority of the DGs. In MRV 1) Development of monitoring and evaluation system and tools of carbon stock are the main concern among the DGs relevant to technology and researches in MoF. In Implementation mechanism 1) Capacity building on monitoring and evaluation and implementing REDD+ and 2) Development of safeguards for social and natural environments and their implementation in REDD+ activity are the main areas selected by most of the DGs.

To deal with these focus areas either in the routines business of MoF or in the project supported by JICA, a target site needs to be identified in the country. Through reviewing the views and ideas presented by the participants at the workshop, a watershed is come up with as a target to design the REDD+ related activities to fulfill the cooperation needs appeared in the focus areas. The geographical scale of watershed is supposed to be more than thousands of hector at minimum scale, which could include the whole/part of the national park (conservation area/forests) and production/protection forests adjacent to the park.

Table 5.1. (1) Proposed focus areas of the DGs in MoF

Three components in REDD+ context	Policy and Institution					MRV		
Proposed focus areas for future cooperation	Optimize Land & Forest Rehabilitation	Monitoring Environmental Service	Strengthening Management Capacity in Developing FMU/RHP	Strengthening Forest Policy Making	Improve National Park Management	Carbon Monitoring and Evaluation Tools	Monitoring and Evaluation System for Carbon Stock	Research on Carbon Stock and its Management
DG of Forestry Planning			√	√		√	√	
DG of Forest Protection and Nature Conservation		√			√			
DG of Watershed Management Development and Social Forestry	√							
Forestry Research and Development Agency	√	√	√	√	√	√	√	√
DG of Forestry Business Development		√	√	√		√	√	
Forestry Extension and Human Resource Development Agency	√		√	√			√	
Center for International Cooperation								
Center for Forestry Standardization and Environment			√	√				
Bureau of Planning								

Source: JICA Study Team

(Continued)

Table 5.1. (2) Proposed focus areas of the DGs in MoF

Three components in REDD+ context	Implementation mechanisms			
Proposed focus areas for future cooperation	Capacity Building on Monitoring and Evaluation	Developing Safeguard Area including Social and Environment on REDD Implementation	Improving Capacity Building on REDD Implementation	Conducting Demonstration Activity/Piloting to Support REDD Implementation
DG of Forestry Planning	√		√	√
DG of Forest Protection and Nature Conservation	√	√		
DG of Watershed Management Development and Social Forestry	√	√	√	
Forestry Research and Development Agency	√	√	√	√
DG of Forestry Business Development	√	√	√	
Forestry Extension and Human Resource Development Agency	√	√	√	
Center for International Cooperation	√	√	√	
Center for Forestry Standardization and Environment				
Bureau of Planning				

Source: JICA Study Team

According to the organizational chart of MoF and the tasks and duties of the DGs, the watersheds are dealt with the DG of watershed management and development and social forestry (BPDAS) while national parks (conservation forest) and protection forest are subject to the management by the DG of forest protection and nature conservation (PHKA). Production forests are covered by the DG of forestry business development (BUK). DG of forestry planning (PLANOLOGI) is in charge of developing FMU while Forestry Research and Development Agency (FORDA) concerns all kind of activities and outputs of methodologies to implement REDD+ especially MRV. Forestry Extension and Human Resource Development (EXTENSION) is in charge of disseminating the ideas and information on REDD+ to the local communities and socialize them to the scheme. It also provides the expertise of safeguard policy and its implementation. Watershed as unit of natural resources management can include all these activities in its area. Therefore it is accepted by the DGs and the working group of climate change in MoF as a geographical frame of REDD+ field activity.

Figure 5.2 indicates the conceptual frame of REDD+ activity designed to focus on the watershed and surrounding forests. The frame integrates the focus areas identified in the matrix above into a series of activities in the way that; FMU is strengthened in the conservation of protection and production forest. Assessment and planning of REDD+ activities is associated with enhancing of forest policy making. Monitoring and evaluation systems with tools are specified and functionalized in the forest conservation activities of REDD+. Capacity of the stakeholders are developed and strengthened in the whole process of assessment, planning, implementation and monitoring and evaluation. Safeguards are ensured through livelihoods support for the local communities, conservation of biodiversity, etc.

In practice, the design of REDD+ field activities varies according to the nature, causes and drivers of deforestation and forest degradation, which will be described in detail in **Chapter 6.2**.

Table 5.2 Conceptual frame of REDD+ field based activity

Planning stage	Assessment and planning of REDD+ activities	
Areas identified for field activity	**Watershed**	
Type of forest	Conservation forest	Production forest/Protection forest
Activity & outputs in the context of RENSTRA and scheme of REDD+	National park management and biodiversity conservation	Forest rehabilitation and FMU operation Livelihood support of local community (safeguards including rural area)
	1) National park management system is strengthened. 2) Biodiversity conservation is promoted	1) Forest rehabilitation is promoted. 2) FMU operation is strengthened. 3) Livelihoods of local community are improved.
	Capacity building of the local government staff and other stakeholders in 1) planning and assessment, 2) monitoring, evaluation and reporting, 3) benefit sharing	
Major values to be achieved in the scheme of REDD+	Biodiversity conservation (Additional values as regarded "plus +")	Emission reduction of CO_2 and carbon credit/Environmental services as additional values

Source: JICA Study team

5.2 Cooperation needs of REDD Agency

Other than cooperation to MoF, the Study team investigated the cooperation needs in the government institutions relevant to REDD+, such as UKP4 and DNPI, etc. Although it has not been duly established, this report assumes REDD Agency to be a key institutes of the Government to promote REDD+ readiness in the period to come. Practically UKP4 remains to be a leading agency in REDD+ related activities in the Government.

Table 5.3 Cooperation needs of REDD Agency

Key Issues in cooperation	Approach
1. MRV: JICA/JST-HOKUDAI project	1-1. JICA/JST academic research project to develop "Total Carbon Flux Model in Indonesia" is currently implemented in Central Kalimantan province. Technologies being used in the research are to measure the flux of CO_2 in the peat land and forest area which can estimate it more exactly than the existing Landsat data base of INCAS. Indonesian side highly appreciates the approach and expected outputs of the research to be applied to the advanced MRV technologies in the future. The project will apply the fund of ITTO to implement the field activities including the capacity development of the stakeholders such as provincial university staffs. 1-2. It needs to be considered the ongoing JICA/JST project shall be upgraded by adding more supports in developing MRV systems. It shall be focused on feed back the research outputs to national levels such as REDD Agency where the national level MRV are being developed.
2. MRV: ALOS/PALSAR- JAXA/LAPAN	2-1. A JICA technical cooperation project are implemented to support MoF to develop the technologies to analyze the satellite images of ALOS/PALSAR. 2-2. JAXA (Japan Aerospace Exploration Agency) intends to do the research to examine and develop MRV technologies using satellite images of ALOS/PALSAR in Indonesia. LAPAN (National Institute of Aeronautics and Space of Indonesia) is thought to be a potential agency in GOI to collaborate with JAXA. 2-3. They concern to do the satellite image analysis using the ground level data. The cooperation Project to support REDD+ field activities could provide those data for the analysis to LAPAN hence the it needs to consider how to collaborate with those institutions in their activities.
3.Carbon trading mechanisms	3-1. Government institutions such as DNPI, UKP4 and MoF as well have concern with a Japanese originated market mechanism (J-VER). Although the mechanism is not limited in its application to REDD+ rather to be designed to cover other sectors relevant to the adaptation/mitigation to climate changes. 3-2. Currently IGES is conducting a series of workshop to introduce J-VER

Key Issues in cooperation	Approach
	modified from J-VER in the JICA REDD+ program or not. 3-2. Currently IGES is conducting a series of workshop to introduce J-VER and the experiences to operate it in Japan. GOI intends to present their ground policy within this year for carbon trading market in the country and is supposed to accelerate the process to introduce the market mechanism thereafter. 3-3. Hence continuous communications and updating the latest trends in GOI on this issue is essential to synchronize it with the cooperation to MRV and REDD+ field activities.
4. REDD+ coordinator for "All Japan Formation"	4-1. It needs to be considered to deploy a REDD+ coordinator in REDD Agency to promote "All Japan Formation" to REDD+ cooperation by ODA and investment by the private sectors. As one of the mandates of coordinator, to formulate the future project of REDD+ is a crucial role when the expert is based in REDD Agency. 4-2. The coordinator is expected to follow up the latest trends of REDD+ and movements of donors/int'l organizations supporting the said scheme and provide valuable information on the investment of REDD+ to the private sectors in Japan who concern to be involved in the scheme. The roles of coordinator are supposed to be similar to those of JETRO in Indonesia though it focuses on the investment to REDD+.

Source: JICA Study team

5.3 Experiences of JICA cooperation

Since early 1970's JICA has cooperated to the forestry sector in Indonesia through providing grant aids, technical assistance, development studies and loans. Major part of the cooperation is technical assistances in forest and national park management. Currently six projects of technical assistance are implemented. The Study team reviewed those projects focusing on their purposes, outputs and implications of project experiences in relation to support REDD+ readiness in the country. The outlines of the projects presented in PDM are as follows. For further assessment, they are categorized into three main agenda of REDD+ (1) policy, 2) MRV, 3) implementation mechanism.

(1) Policy: One project is currently going on in MoF. It supports to facilitate the implementation of the National Forestry Strategic Plan. The project is also support the policy dialogues between MoF and the donors which collaborate in promoting the Strategic Plan. The Study team recommends that the project shall continuously support the preparation of REDD+ cooperation by JICA after the completion of the Study in September 2011 provided that it is enhanced by further inputs of the expertise relevant to REDD+ readiness.

Project title	(1-1) Project for facilitating the implementation of National Forestry Strategic Plan (FFORTRA Project)
Period of implementation	December 2009 – November 2012 (3 years)
Project Purpose	The capacity of Ministry of Forestry for implementing the national forestry programs under National Forestry Strategic Plan is strengthened.
Output	1. The national forestry programs are implemented through developing an international cooperation strategy. 2. International cooperation projects under Ministry of Forestry are well coordinated.

(2) MRV: Two projects area currently implemented. Both satellite project and JICA/JST project take unique approaches to assess the forest distribution and carbon fluxes in the natural forest. The data accumulated and their scientific findings and methodologies could be utilized in developing the MRV systems at national level especially supplement the existing nation wide system of INCAS by using "cloud free" satellite images of ALOS/PALSAR. A carbon flux model which is currently developed by the JICA/JST project could contribute to estimate the coefficients of carbon emissions from

various types of land uses and forest vegetation. It could also support the INCAS by providing data of carbon emission estimated by the model.

Project title	(2-1) Support on Forest Resource Management through Leveraging Satellite Image Information (Satellite Project)
Period of implementation	September 2008 – September 2011 (3 years)
Project Purpose	BAPLAN's capacity to conduct more reliable forest resources monitoring and assessment is upgraded through transfer of technology and training.
Output	1. Accuracy of forest resources monitoring and assessment data utilizing satellite image information is improved. 2. Capacity of BAPLAN and its UPTs is upgraded.

Project title	(2-2) Wild Fire and Carbon Management in Peat-Forest in Indonesia (JICA/JST project)
Period of implementation	February 2010 – March 2014
Project Purpose	Peat Forest Management Model in Indonesia is established.
Output	1. Fire detection and fire prediction system are established. 2. Carbon assessment system is established. 3. Carbon management system is established. 4. Integrated peat management system is developed.

(3) Implementation mechanism: Three projects are currently implemented. They focus on the capacity building of human resources. The experiences of those projects could be utilized when planning the community based forest conservation in REDD+ field activities. Collaborative management could be utilized and contributed to the sustainable forest management through community participations. Community based fire control is thought to be an effective approach to restrain wild fires caused by small scale illegal logging and shifting cultivation.

There is a challenge in terms of the design on scale of the activity when applying the experiences of JICA past/ongoing projects into REDD+ project. Those experiences were accumulated though micro-scale activities focused on less than 100 ha pilot site while the field activities of REDD+ have to be implemented in wider areas extending in the whole forest areas in target community or even in the target watersheds. Hence it is required to develop institutional and organizational setups to apply the accumulated experiences to the wider areas of REDD+ project.

Project title	(3-1) Strategy for Strengthening Biodiversity Conservation through Appropriate National Park Management and Human Resources Development (National park human resource project)
Period of implementation	October 2009 – May 2012 (2 years and 8 months)
Project Purpose	Center for Forestry Education and Training (CFET) is equipped with sufficient capacity to implement training on collaborative management of national parks.
Output	1. Training course on collaborative management of national parks is planned. 2. Operational structure to implement the training course is prepared in CFET, in partnership with other supporting parties. 3. Capacity for planning and management of the training course is acquired through provision of training to the park officers and other stakeholders.

Project title	(3-2) Project on Capacity Building for Restoration of Ecosystems in Conservation Areas (Restoration project)
Period of implementation	March 2010 – March 2015 (5 years)
Project Purpose	Capacity of concerned stakeholders is strengthened for restoration of ecosystems in conservation areas.
Output	1. Institutions are strengthened for restoration of ecosystems in conservation areas.

	2. A plan for restoration of ecosystems at model sites is developed. 3. A plan for restoration of ecosystems at model sites is implemented.

Project title	**(3-3) Program of Community Development of Fires Control in Peat Land Area (Community fire control project)**
Period of implementation	July 2010 – July 2015 (5 years)
Project Purpose	Capacity of organization and people concerned to prevent fire occurred at peat land of the project area is developed.
Output	1. Capacity of village people to prevent fire occurred at peat land is developed. 2. Capacity of MPA (Masyarakat Peduli Api / Fire Care Community Group) / village people group to control fire, which focuses on prevention, is developed. 3. Capacity of MA (Manggala Agni / Forest Fire Control Brigade) to facilitate village people towards fire prevention is developed. 4. Cooperation among administrative stakeholder organizations is strengthened. 5. Organizational development plan of MA/DAOPS (Daerah Operasi / Office of Forest Fire Control) is formulated.

Chapter 6 JICA cooperation through the Project on REDD+

6.1 Backgrounds to formulate future Project on REDD+

As described in **Chapter 5.1**, needs of cooperation with Ministry of Forestry to conduct the REDD+ demonstration activities were confirmed at the workshop on 19 May. Their needs can be focused on capacity building in the implementation of REDD+ covering policy making, development of FMU (forest management unit), monitoring and evaluation and MRV tools and methodologies. Development and implementation of safeguard policy which ensures the forest conservation to be sustainable in REDD+ project is also their focus of needs. These needs should be properly dealt with in JICA cooperation on REDD+.

Meanwhile JICA has been conducted several technical cooperation projects in the forestry sector in Indonesia. Their areas of cooperation extends in several thematic fields as reviewed in **Chapter 5.3** such as facilitation of forestry strategy, forest management, biodiversity conservation and capacity building of stakeholders in those fields. The knowledge and experiences of those projects can be applied in formulating and implementing the REDD+ related project being based on the needs of cooperation presented by MoF.

Considering the above, the Study team formulated the future cooperation Project on REDD+ to target MoF as a counterpart agency. Formulation of the Project followed the process such as 1) selection of potential target area, 2) field visit to the potential target area, and 3) identification of REDD+ field activities and preparation of provisional PDM (Project Design Matrix). Sub-chapters hereafter describe the Project formulation following the said process.

6.2 Selection of the potential target area

6.2.1 Process to select the potential target area

(1) Different focus of the targets

To start with the selection process of potential target area, several perspectives on the targets need to be clarified. According to the purposes of management and their geographical scale two focuses are identified as below.

a. National park (*Taman Nasional: TN*, conservation forest, *Hutan Konservasi:HK*): This is the target primarily focused to assume a co-benefit REDD+ field activity. It aims not only to secure the carbon credit from reducing emissions but also to look at several "premium value" such as enrichment of biodiversity through forest ecosystem conservation and carbon stock enhancement through sustainable forest management (low impact logging, assisted natural regeneration, etc.).

b. Production and protection forests (*Hutan Produksi: HP, Hutan Lindung:HL*) surrounding the national parks: A wider domain including national park and its surrounding area which can be demarcated as a watershed shall be focused as a potential target area for REDD+ field activity. Being more focused, a micro environment formed by the ecosystem of community forests and surrounding traditional land uses shall be the focus of REDD+ activity, which are applied with landscape management or *"Satoyama Initiatives"*.[1]

Apart from these land management units, local administrations can be also a target of REDD+ related activities as justified below.

[1] "Satoyama Initiative" is a Japanese originated approach to maintain the human-affected natural resources (secondary vegetations) and landscape as a whole in the rural area by harmonizing the traditional local knowledge and experiences and the modern science and technologies. It is initiated by the Government of Japan and presented to the participating countries at Biodiversity COP10 held in Nagoya/Japan in October 2010.

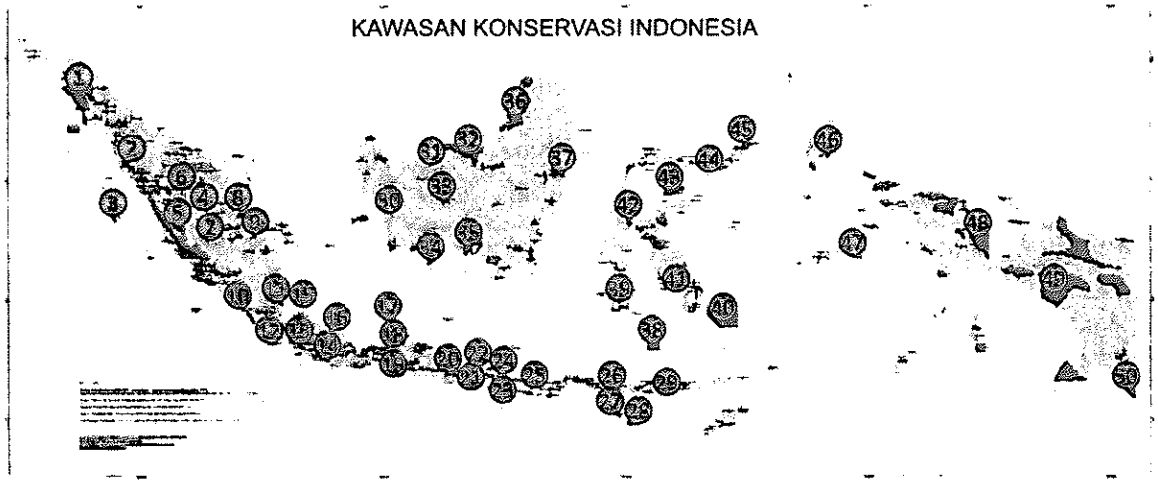
c. Local government: REDD+ requires national/sub-national framework and "nested approach" to function MRV and its carbon accounting systems. To implement REDD+ field activities in the province, it is required to build the capacity of the local government to establish and manage them consistent with the national level approaches. Together with the field level activities, local governments of provinces and districts shall be the focus as well in cooperating REDD+ readiness in national and sub-national level.

Considering the above, the cooperation project on REDD+ shall be formulated focusing on the area which is consisted of three parts such as 1) national park (conservation forests) as its center, 2) forest lands (production/protection forests) surrounding the national park, and 3) community domain. Ground-based pilot activities shall be planned in those three areas.

Provincial and district local governments shall be a target to be supported in developing the implementation mechanisms of REDD+ and the capacity building of their staff in managing the REDD+ projects at the local level being nested by the national level framework.

(2) Application of criteria to focus on the candidate national parks

To start with the process of selection, the Study team focused fifty (50) national parks as candidate for the target areas as **Figure 6.1**.



Source: JICA Study team

Figure 6.1 Fifty national parks in Indonesia (names of the parks are omitted.)

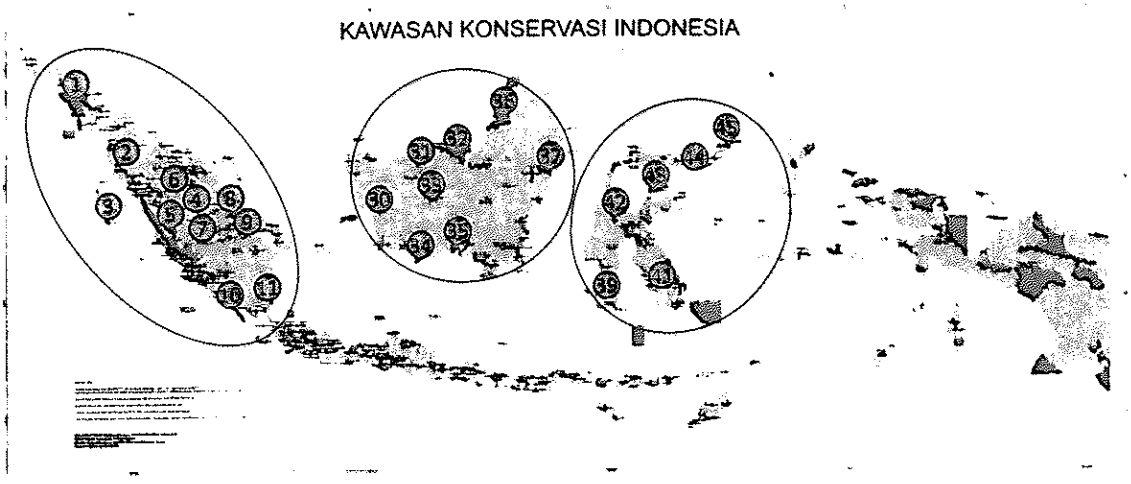
As a first step of selection, following criteria were applied to focus on the candidate national parks

Criteria 1: "Nine forested provinces" and Sulawesi islands as a focal of REDD+ in Indonesia: National parks located in the nine (9) forested provinces are focused. As appeared in the draft REDD+ National Strategy these provinces show high REL (Reference Emission Level) such as Papua, West Papua, East Kalimantan, Central Kalimantan, West Kalimantan, Aceh, Riau, Jambi, South Sumatra. Together with those provinces, Sulawesi island is also focused by the MoF and REDD Task Force (currently it is UKP4) as a new target during the readiness phase. Thus the national parks located in the said nine provinces and Sulawei islands are maintained in the candidate while other parks in the rest of the provinces are excluded from the selection.

Criteria 2: Regional security and no experiences of JICA cooperation: The national parks in western Papua and Papua provinces are excluded from the candidates because security conditions in the region are still risky therefore JICA does not have their experiences so far to conduct cooperation schemes.

Criteria 3: National park in marine ecosystem: Because the target area of REDD+ are demarcated in the terrestrial areas, the national parks located in marine ecosystems are excluded from the candidate parks.

Accordingly following national parks located in Sumatera, Kalimantan and Sulawesi are selected as in **Figure 6.2**.



Source: JICA Study team

Figure 6.2 National parks identified after the first selection

As a second step of selection, following criteria were applied.

Criteria 5: Ongoing/planned REDD+ activity: National parks where REDD+ activities are currently going on or planned under the support of donors, NGOs and international organizations are to be excluded from the candidates to avoid overlapping of the activities. Those are:

1) Sumatra: No. 1 Genung Leuser (Grobal Eco Rescue), No. 6 Tesso Nillo (WWF), No.8 Berbak (Zoology Society of London),

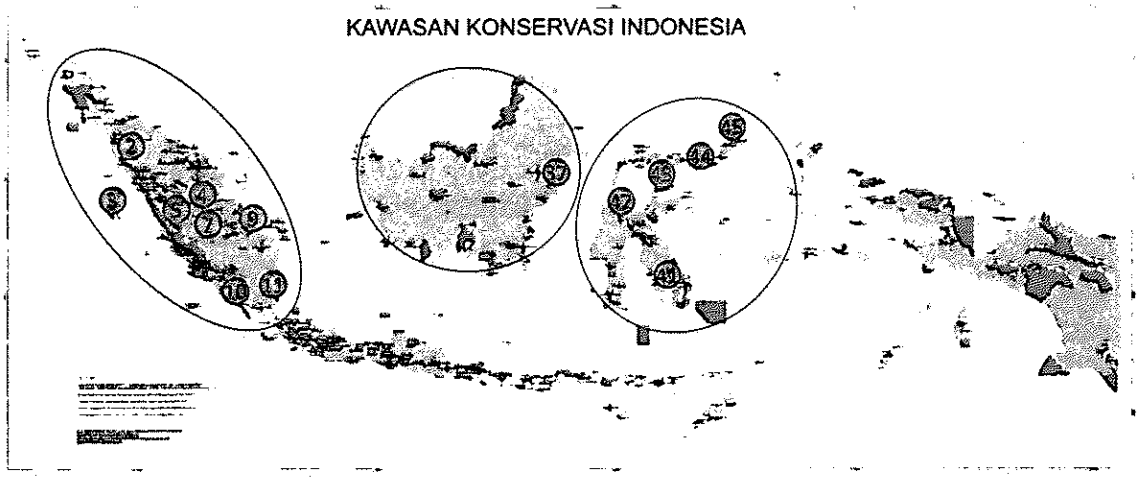
2) Kalimantan: No. 30 Genung Palung (FFI), No. 31 Sentarum (GIZ), No.34 Tanjun Puting (Infinite Earth), No.35 Sebbgau (WWF), 36 Kayan Mentarang (ADB-planned)

Criteria 6: Accessibility and conditions of forests in the park: National parks located in the heart of the islands where their access is extremely difficult and the parks whose forest vegetation is poor because of the national conditions are to be excluded from the candidates.

1) National parks with hard accessibility: No. 32 Betung Kerihun and No. 33 Baka Bukit Raya located in the heart of Kalimantan

2) National park with poor forest: No. 39 Bantumurung- Bulusaraung in South Sulawesi. The park is widely covered by karst strata which suppress the growth of tall trees forming forest canopy.

Accordingly most of the parks in Kalimantan were excluded because of ongoing REDD+ demonstration activities and hard accessibility of the parks. As a result most of the national parks in Kalimantan were excluded and several parks located in Suamtera and Sulawesi islands remain as shown in **Figure 6.3**.



Source: JICA Study team

Figure 6.3 National parks identified after the second selection

(3) Regional wise selection in Sumatera and Sulawesi

Because regional natural conditions are largely different in every region in the country, the potential target areas need to be selected independently in each region. Accordingly regional wise selection was employed to extract one park from Sumatera and Sulawesi island as indicated in **Table 6.1 (1) – Table 6.1 (2)**. Another approach is taken for the Kalimantan region as discussed in the next section.

The criteria employed in the selection of the national park in Sumatera and Sulawesi island are provincial REL (Reference Emission Level), biodiversity and JICA experiences of past and ongoing projects. The selection is done by employing add-point system to identify slight differences between the candidate national parks.

Accordingly two national parks such as Bukit Tiga Puluh and Bukit Dua Belas got the highest points (4) among those in Sumatera as shown in **Table 6.1 (1)**. However Bukit Dua Belas national park was assessed more important than Bukit Tiga Puluh because it is a target of JICA's ongoing project. Thus it was selected as a potential target area in Sumatera.

Table 6.1 (1) Selection of candidate national park in Sumatera by add-point system

Island	No.	NP name	Province	Prov. REL	Biodiversity	JICA Experiences	Total Point	Remark
				TOP5: ++ 2 TOP10: + 1	++: 2 +: 1	Current Prjct: ++ 2, Past Prjct: + 1		
Sumatera	2	Batang Gadis	N. Sumatera	+	++		3	
	3	Siberut	W. Sematera				0	
	4	Bukit Tiga Puluh	Riau, Jambi	++	+	+	4	
	5	Kerinci Seblat	W.S.B.J	+	++		3	
	7	Bukit Dua Belas	Jambi	+	+	++	4	Community of Orang Rimba
	9	Sembilang	S.Sematera				0	
	10	Bukit Barisan Selatan	Bengkulu		++		2	
	11	Way Kambas	Lampung		+		1	

Biodiversity: ++: Flagship species (Elephant, Tiger, etc.) and diurnal primates +: Flagship species (Elephant, Tiger, etc.), Source: PHKA, May 2011

Source: JICA Study team

As for Sulawesi, only Bogan Nani Wartabone national park got point (1) being applied with the same methodology as the parks in Sumatera as in **Table 6.2 (2)**. Hence Bogani Nani national park was selected as the potential target area in Sulawesi.

Table 6.1 (2) Selection of candidate national park in Sulawesi by add-point system

Island	No.	NP name	Province	Prov. REL	Biodiversity	JICA Experiences	Total Point	Remark
				TOP5: ++ 2 TOP10: + 1	++: 2 +: 1	Current Prjct: ++ 2, Past Prjct: + 1		
Sulawesi	41	Rawa Aopa Watumohai	Tenggara				0	
	42	Lore Lindu	Central				0	
	43	Kepulauan Togean	Central				0	
	44	Bogani Nani Wartabone	Gorontalo			+	1	Indigeneous small mammals
	45	Bunaken	North				0	

Biodiversity: ++: Flagship species (Elephant, Tiger, etc.) and diurnal primates +: Flagship species (Elephant, Tiger, etc.), Source: PHKA, May 2011

Source: JICA Study team

(3) Approach to Kalimantan

As shown in **Table 6.1 (3)**, only Kutai national park in east Kalimantan was identified as potential target area. However the Study team explored the current situation of the Kalimantan region including West, Central and East Kalimantan province and reached conclusion as below of **Table 6.1 (3)**.

Table 6.1 (3) Selection of candidate national park in Kalimantan by add-point system

Island	No.	NP name	Province	Prov. REL	Biodiversity	JICA Experiences	Total Point	Remark
Kalimantan				TOP5: ++ 2 TOP10: + 1	++: 2 +: 1	Current Prjct: ++ 2, Past Prjct: + 1		
	37	Kutai	East	++			2	

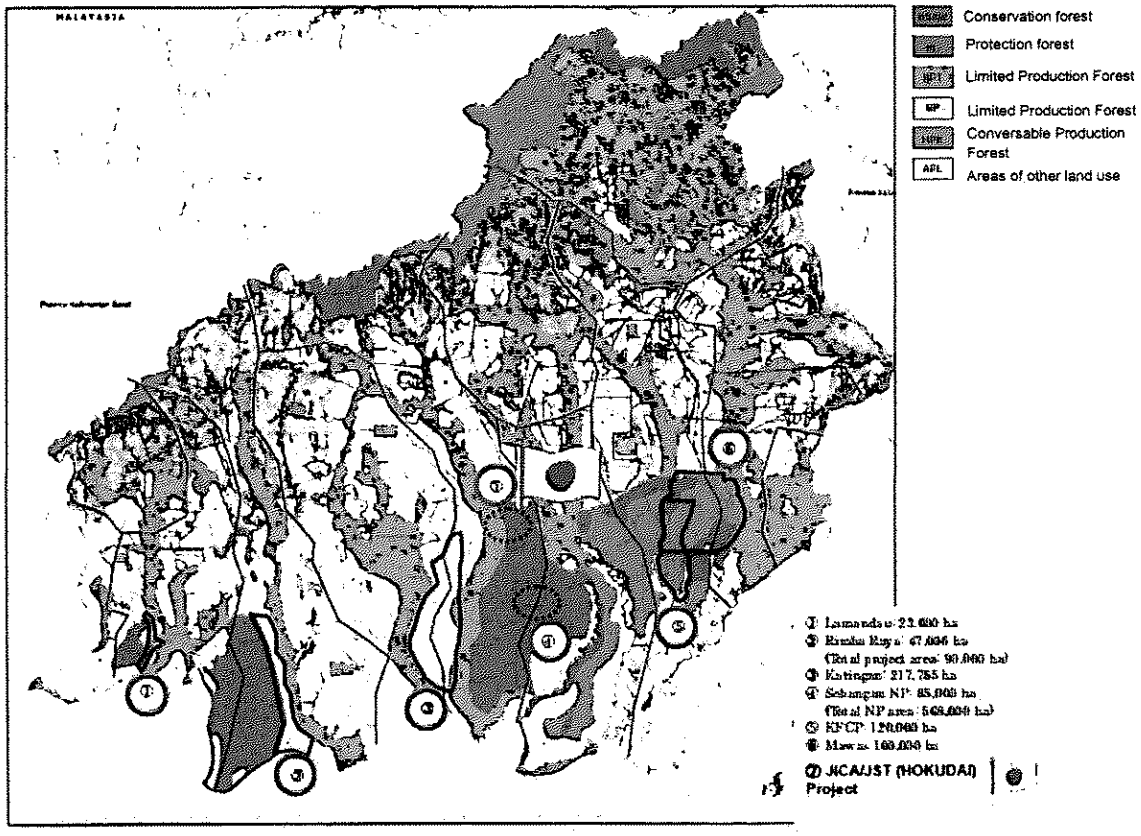
Biodiversity: ++: Flagship species (Elephant, Tiger, etc.) and diurnal primates +: Flagship species (Elephant, Tiger, etc.), Source: PHKA, May 2011

Source: JICA Study team

1) Several REDD+ projects including JICA/JST (HOKUDAI) project are being implemented in the Kalimantan area. Meanwhile the natural forest in peat lands in this area is vast enough as indicated in **Figure 6.4** to do further allocation of new forest areas to the REDD+ implementing agencies of private and public sectors to commence new projects.

2) Simultaneously it is an urgent issue to establish institutional and organizational setups in the province and district level to manage those projects in terms of provincial MRV and carbon accounting. In this sense Central Kalimantan province is thought to be a prioritized province to be supported in REDD+ readiness phase especially to support KOMDA (a committee for REDD+ and forest and peat land) to fulfill its tasks and duties, which is in line with the fact that the province is designated as the first pilot province to promote REDD+ readiness in the country.

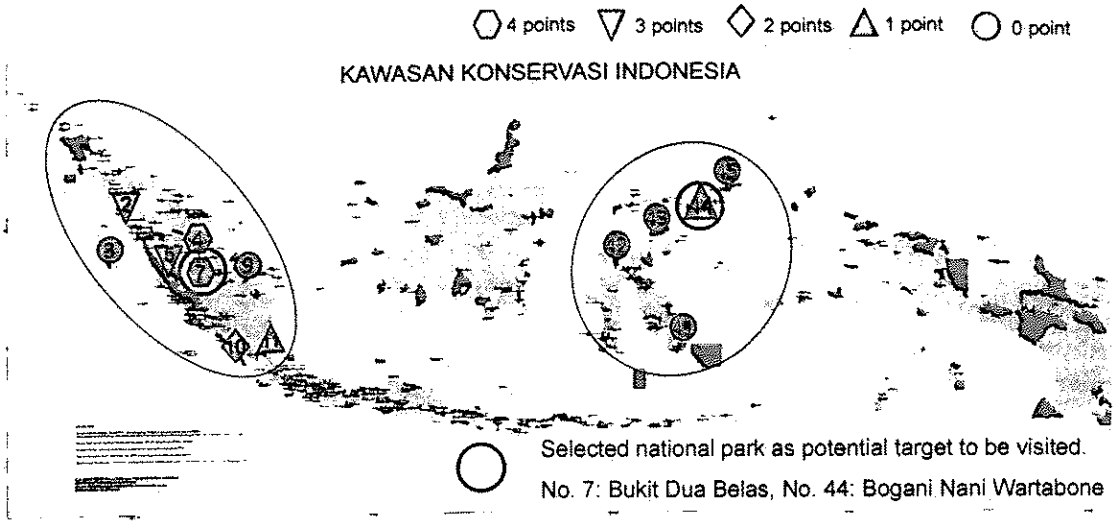
3) Considering the above, the Study team concluded to investigate the needs and possibility of cooperation to support the provincial and district governments of Central Kalimantan in developing institutional and organizational arrangements to implement REDD+ project. The team decided that ideas for cooperation in Central Kalimantan focuses on the local governments and do not include the field based activities.



Notes: Sources of information of the REDD+ DA are indicated with their URL. Information on (4) and (7) were provided by MoF and JICA/JST project office.
(1) Lamandau: http://www.worldagroforestrycentre.org/sea/Publications/files/report/RP0268-11.PDF
(2) Rimba Laya:
http://www.climate-standards.org/projects/files/rimba_raya/CCBA_PDD_Submission_for_Public_Comments_2010_06_05.pdf
(3) Katingan:
http://www.gcftaskforce.org/documents/May_Aceh/Side_Event_Presentations/Kusumaatmadja,%20Katingan%20Peatlands%20Conservation%20and%20Restoration%20Project.pdf
(5) KFCP: http://redd-database.iges.or.jp/redd/download/project?id=9
(6) Mawas: http://redd-database.iges.or.jp/redd/download/project?id=13
Source: JICA Study team,

Figure 6.4 Distribution of forests and REDD+ demonstration activity in Central Kalimantan province

According to the above mentioned process, two national parks are selected such as Bukit Dua Belas in Sumatera and Bogani Nani Warta Bone in Sulawesi as shown in **Figure 6.5**



Source: JICA Study team

Figure 6.5 National parks finally selected

6.2.2 Information to be collected in the field visit

After selecting the potential target area, the Study team elaborated list of data/information to be collected and topics of consideration to came up with the provisional frame of the future project of REDD+ in the target areas. Because data and information required are supposed to be kept in local government offices, the Study team decided to visit key departments and offices of the provincial and district offices as listed in **Table 6.2**.

Table 6.2 Data/information to be collected in the target province

Data/information to be collected and analyzed		Organizations to be visited
<Topic of local governments>		
Policy	• Strategy and policy on REDD+, forest management and conservation	Provincial governor, Director of BAPPEDA (Provincial Development Planning Board) Director of Forestry Department
Local government offices	• Organizational chart • Division of tasks and duties relating REDD+ / forest resource management among departments and sections in the provincial and district government offices • Task and duties of the local government offices in relation to REDD+, scale of budget, number of staff, their expertise and its level • Potentials and competencies of these government offices providing the REDD+ project is implemented under the support of JICA. • Ongoing activities on REDD+ • Outline of the ongoing forestry project • Spatial plan and the process of formulation	BAPPEDA (District Development Planning Board) Forestry Department
Other actors	• REDD+/forest management program/project implemented by the donors, NGOs, University, etc. (types of activity, implementing organization, staff and their level of expertise)	Offices and personnel of the actors

Source: JICA Study team

(Continued.)

Data/information to be collected and analyzed		Organizations to be visited
<Topics of field visit>		
Land use	• Confirmation on the land classification and its control on the special plan • Existing practices on land and resource uses (to secure land use map if it is available) • Direct and indirect causes of deforestation and forest degradation in the target area • Historical trend and changes of forest area and land uses (to be confirmed through interview and secondary data secured at the local government offices) • Conflicts in existing land and other resource uses • Good Practice of land/resource uses	District administration National park Forest Management Unit (FMU) Donor and Aid agency NGOs University, institutes and museum
Community	• Forest utilization and management by the local community	
Biodiversity	• Flagship species, endemic species, endangered species and critical ecosystems in the target national park	
<Topics of analysis and consideration>		
Project target area	• Presentation of several options on the project target areas focusing national park and surrounding ecosystems.	
Reference scenario	• Identification of the actors who affect the trends of natural resources management in the target area • Determination of the reference scenarios for each type of land use in the target area	
Activities	• Consideration of countermeasures to remove direct/indirect causes of deforestation and forest degradation • Identification of activities to implement the countermeasures	
Organizational setup to implement activity	• Presentation of several options to implement the activities in accordance with the considerations on the issues above.	

Source: JICA Study team

6.2.3 Schedule of the field visit

The field visits were conducted to the potential areas following the schedule as shown in **Table 6.3**.

Table 6.3 Schedule of field visit to the potential target provinces

Date/Month	Work contents
From 11 July To 16 July	Central Kalimantan Province: 1) Three experts of the Study team (Mr. Suzuki, Mr. Kubo and Mr. Imai) and JICS expert of FFORTRA project visited key offices and spots in Central Kalimantan province. It was attended by the staff of MoF. 2) Data and information were collected at provincial government office, and local agency of MoF 3) Data and information were collected at the project offices of REDD+ 4) Aerial survey was done by chartering a small seaplane.
From 18 July To 24 July	Bukit Dua Belas national park in Jambi Province: 1) One expert of the Study team (Mr. Suzuki) and a staff of MoF visited Jambi province. 2) Data and information were collected at provincial government office, local agency of MoF. Bogani Nani Wartabone national park in Gorontalo Province: 1) One expert of the Study team (Mr. Imai), two JICA experts of FFORTRA project and one staff of JICA Indonesia office visited Gorontalo province.

Date/Month	Work contents
	2) Data and information were collected at provincial government offices and branches of MoF. 3) The national park and the watersheds of Limboto lake were visited. Central Kalimantan province: 1) One expert of the Study team (Mr. Kubo) visited the government offices and project stations in Kapuas and Katingan districts in the province and reviews the progress of REDD+ readiness and field activities.

Source: JICA Study team

6.3 Findings in the field visit

This sub-chapter describes the findings of the field visit. Availability of data and information varied and were limited in general according to the provinces because their progresses of REDD+ readiness and its management. Hence the findings summarized for each target area in the following sections are not exactly same as listed in **Table 6.2**.

6.3.1 Bukit Dua Belas national park in Jambi province

(1) Summary of the findings in the field visit

Before starting the field visit to the province, the Study team reviewed data/information available at MoF in Jakarta and had assumptions on the nature of deforestation/forest degradation currently going on and its direct/indirect causes with their drivers in the target areas. **Table 6.4** indicates those assumptions and the actual situation found in the field visit.

Table 6.4 Summary of findings in Bukit Dua Belas NP in Jambi province

Topic	Assumptions/information & observation in the field
1. Overall	**Assumptions/information before the field visit:** 1. Emission reduction is expected in larger scale compared to that in Bogani Nani Wartabone NP in Gorontalo province. 2. Premium value could be added to REDD+ activities through conserving flagship species. Safeguard policy for maintaining the community of Orang Rimba is an essential issue of REDD+ in Bukit Dua Belas NP.
	Observation in the field visit: 1. According to the national park office, flagship species such as elephant and tiger do not inhabit the park anymore. 2. Forest vegetation in the park is not so rich because it was originally converted from the production forest to conservation forest in order to protect the community of Orang Rimba. 3. There are threats of encroachment from outside of the park such as development of oil palm and rubber plantation, forest clearing for cultivation, etc. 4. Community of Orang Rimba is expanding in some areas of NP because of population increase, which gives another threat of degradation of natural forests. 5. There are some communities in the park who call themselves as "Orang Rimba". They are thought to move from outside and settle in the park, which could accelerate forest degradation. 6. No spatial plan has been formulated in Jambi province.
2. Nature of deforestation and forest degradation	**Assumptions/information before the field visit:** 1. The area of national park is 60,500 ha. Total area of three districts which partly overlaps with NP is 1,680,000 ha. 2. Major area of deforestation is supposed to be "Planned deforestation" caused by the developers of oil palm. 3. Minor area of deforestation is supposed to be "Unplanned deforestation" caused by the local communities outside of the NP.

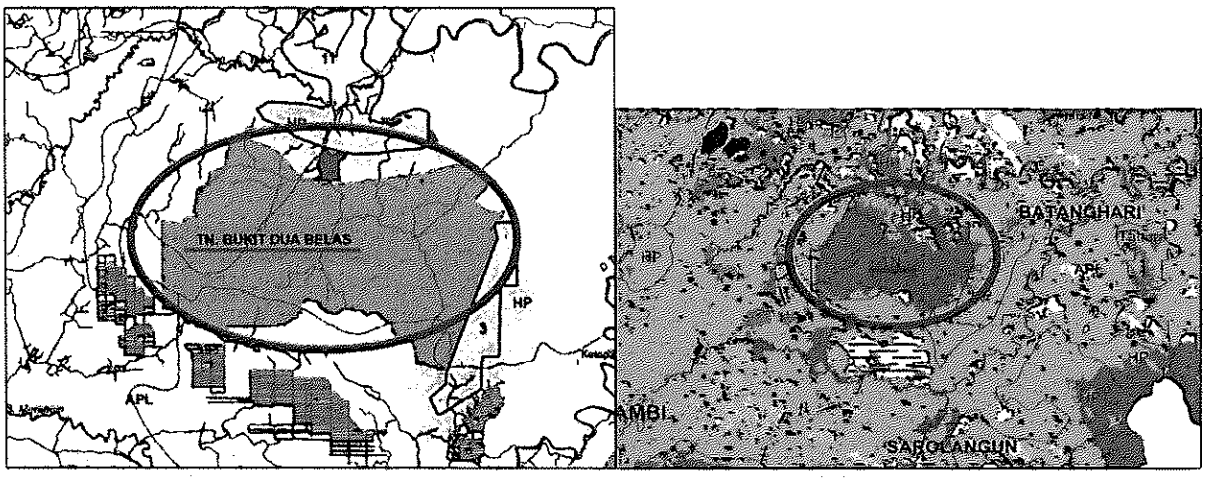
Topic	Assumptions/information & observation in the field
	Observations in the field visit: 1. Forest cover in the province is 4,811,000 ha. Rate of deforestation is 55,400 ha (1.14 %/year). 2. Major area of deforestation is "Planned deforestation" caused by oil palm and rubber plantation. 3. Minor area of deforestation is "Unplanned deforestation" caused by the settlement and farming by the community.
3. Driver of deforestation and forest degradation	**Assumptions/information before the field visit:** 1. Developer of oil palm and rubber.plantation. 2. Local community living in the national park.
	Observations in the field visit: 1. Developer of oil palm and rubber plantation. 2. Local community living in and outside of the national park.

Source: JICA Study team Note: "NP" means national park.

Details on the specific issues are described in the following sections. The whole contents of the field reports prepared by the expert are given in **Appendix 11**.

(2) Land use and present forest distribution

The surrounding area of the Bukit Duabelas National Park is in the Batanhari river catchments, where muddy with volcanic reddish soils are dominant. Many oil palm plantations and rubber tree plantings are also developed in this area. Some forests remain sporadically but most of them had been explored by selective cutting in the last several decades, which turned the forest vegetation to some degree into degraded vegetation. As **Figure 6.6** shows, production forests extend in north and east of the park, which in some parts are prone to forest degradation and even deforestation because of plantation development. Cases are sometimes exposed such as forest clearing and encroachment by the local people. It is said that there are some good sized trees still remain in the north of the National Park and surrounding production forests.



Source: Forest and Land use map, BUK of MoF, 2011

Note: Inside of area marked with red circle is the national park. On the map (right) green color indicates forest vegetation while yellow color is other types of vegetations (non-forest).

Figure 6.6 Land use (left) and vegetation (right) of Bukit Dua Belas national park

(3) Biodiversity

Monkeys, deer, wild pig and sun bear are recorded in the existing documents but unlike the information collected prior to the field visit, no flagship species do not inhabit any more such as tiger, elephant and Orang Utan in the park according to the management office. Only foot prints of tiger were found inside the park in 2009 and a herd of elephants was reported to cause conflicts with the communities near Harapan rainforest restoration project site which is located adjacent to the park. As the park office comments, there are no significant wild animals at this moment however the park still has high potential conservation values for the habitat of large size wildlife. It was pointed by the park personnel that excessive picking and collecting of the forest food products by Orang Rimba might cause to lower the existing biodiversity.

(4) Community in the rural area

Conservation of living environments of Orang Rimba is one of the objectives of the management of Bukit Duabelas National Park. Although they have traditional habits, their lifestyles have started to change through interaction with the communities of outside of the park. Some of them have begun to plant rubber trees to earn cash income.

They are legally recognized as "people living in the forest" however no census data of Orang Rimba are available. According to the NGO who conducted their projects in the recent years, their total population residing in the park is estimated to be from 5,000 to 7,000. Among them 200~600 live in the park area which belongs to Sarolangun district. Several NGOs worked for livelihood improvement and capacity building of Orang Rimba living there then some of their groups moved out of the forest to settle and change their religion to be Islamic. Nowadays they have free choice to remain in the forest or move out of it.

(5) Possible reference scenario

As mentioned, the park extends in three districts. Among them the encroachment and plantation development are mainly taking place in Bahanghari and Tebo districts. In this situation the deforestation tendency caused by the encroachment by the rural community could be a reference scenario of the province but with very low expectation of the effects of emission reduction while the recent tendency of deforestation and forest degradation caused by the plantation development and the existing future plan of new development can give clearer scenario to expect higher level of emission reduction.

(6) Key issue in forest conservation in relation to REDD+ field activity

The communities of Orang Rimba reside legally in the national park and their lifestyle has started to change to be involved more in cash economy, which in some cases causes an increase of population and expansion of their settlements in the forests. Hence it comes as a key issue how to harmonize the forest conservation and the maintaining of their livelihoods. It is reported that a NGO successfully supported the local government to conclude the land use agreements with their community using micro-zoning approach. To address the issue an anthropological approached are required to make sure the planning and implementation of safeguard policy when implementing REDD+ activity.

6.3.2 Bogani Nani Wartabone national park in Gorontalo province

(1) Summary of the findings in the field visit

The data/information reviewed prior to the field visit and the findings in the field are summarized in **Table 6.5**.

Table 6.5 Summary of findings in Bogani Nani Wartabone NP in Gorontalo province

Topic	Assumption/information & observation in the field
1. Overall	**Assumptions/information before the field visit:** 1. Expected reduction of emission through conserving the natural forests in/around national

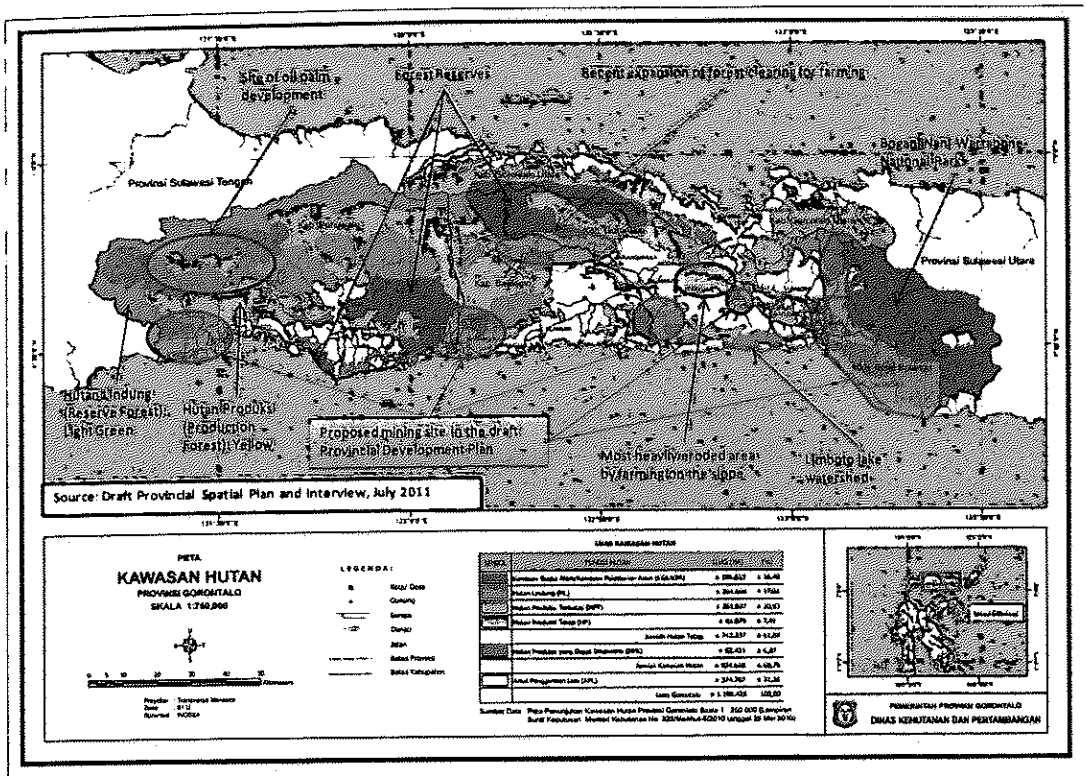
Topic	Assumption/information & observation in the field
	park in smaller compared to that in Jambi province 2. However, various premium values could be added through protecting indigenous mammals, rehabilitating degraded watersheds, implementing safeguard policy for the local community who are supposed to be a main driver of forest degradation. It could be a suitable site for the approach of watershed/landscape management or "Satoyama Initiative". 3. Experiences of JICA cooperation in watershed management around Limboto lake adjacent to the national park could be utilized to design and implement the field activities.
	Observation in the field visit: 1. Draft provincial spatial plan shows large areas of the province are already allocated for mining (gold and copper) and palm oil plantation (see **Figure 6.7**) 2. Palm oil plantation and shifting cultivation are the major existing threats of deforestation/forest degradation. But they are expanding in the central part of the province and not in the area close to Limboto lake and Bogani Nani Wartabone National Park. 3. Mine development in eastern, central and western part of the province is still under the planning stage but could be the most crucial threats in the future.
2. Nature of deforestation and forest degradation	**Assumptions/information before the field visit:** 1. Total area of the province is 1,200,000 ha. 2. Major area of deforestation is "Unplanned deforestation" caused by shifting cultivation.
	Observations in the field visit: 1. Forest area in the province is 746,000 ha (62 % of total area). Average rate of deforestation is 0.82 % per year. 2. Major area of deforestation is "Planned deforestation" caused by the developments of oil palm (existing) and is supposed to be mining (in the future) 3. Minor area of deforestation is "Unplanned deforestation" taking place outside of the forest lands (*Kawasan Hutan)* caused by the local community.
3. Driver of deforestation and forest degradation	**Assumptions/information before the field visit:** 1. Local communities living around the NP.
	Observations in the field visit: 1. Oil palm developer. 2. Local community who practices shifting cultivation 3. Mining (gold and copper) industry

Source: JICA Study team

Details on the specific issues are described in the following sections. The whole contents of the field reports prepared by the expert are given in **Appendix 11**.

(2) Land use and present forest distribution

The forest area in Gorontalo is estimated to be 746,000 ha accounting 62% of the total area of the province. The distributions is shown in **Figure 6.7**. The major part of legal forest land (*Kawasan Hutan*) are located in the western areas of the province, while other types of land uses such as the urban and cultivation areas extend in central and south-east part of the province. According to the data provided by BPKH (Provincial branch of Department of Planology in MoF), the deforestation ratio in the period from 2000 to 2003 and from 2006 to 2009 are reported 0.96 % and 0.80 %, respectively while the ratio between 2006 and 2009 is reported 5.76 %. This sudden and periodical increase is assumed to be caused by a large scale development such as forest clearing for plantation however it was not identified during the field visit.



Source: Draft Provincial Spatial Plan and Interview to the provincial personnel, July 2011

Figure 6.7 Land uses specified in the draft provincial spatial plan of Gorontalo province

(2) Biodiversity

Sulawesi island is one of the major reserves for endemic species in the country. According to the data given by the province, among 127 animal species inhabiting Sulawesi island 79 species are endemic. *Babirusa* as one of wild bore and *Anoa* as small sized water buffalo are popular among them. More specified endemic species in Bogani Nani Wartabone National Park are found such as *Cuscus*, *Tarsier* as small mammals, *Blackish Megapode*, and *Kingfisher*. Although neither larger mammals nor symbolic species are found in the park, 33 endemic species are reported to inhabit the park (the number does not include endemic birds). This still gives high value of conservation to Bogani Nani national park as one of the main reserves of endemic species and biodiversity in the country.

(3) Community in the rural area

The rural communities in Gorontalo province maintain their livelihoods through farming and fisheries. Farming practices extends to the slopes of hilly and mountain areas, which in some areas have caused erosions in the upstream and sedimentations in downstream of watersheds. Forest clearing for farming in the mountain areas is still expanding in the central part of the province, which threats the natural forest in the conservation areas. **Figure 6.8** shows Limboto lake located in the eastern part of the province and surrounding watersheds. It should be noted that the surfaces of the lake is "spotted" by small islands formed in the past by erosion in mid and upstream and their sedimentation in the lake area.

Source: JICA Study team

Figure 6.8 Limboto lake in Gorontalo province

(4) Possible reference scenario

The deforestation ratio from 2000 to 2009 is in average around 0.82 % per year. Its main causes are traditional sifting cultivation and small scale illegal logging. This could be a reference scenario of the provinces but with very low expectation of effects of emission reduction. During 2003 and 2006, the deforestation took place in large scale in short period counting 6 % of annual rate of deforestation. It is thought to be caused by a big scale development scheme in the rural and forest area during that period.

Mining (gold and copper) and oil palm development plans are included in the provincial spatial plan, which is supposed to cause a large scale deforestation and forest degradation as well. This can be a possible reference scenario of the province based on the future tendency of deforestation and forest degradation with higher expectations of lager scale of emission reduction.

(5) Key issues of forest conservation in relation to REDD+ field activity

The major part of current deforestation is taking place outside of the forest land where the forestry department does not have their jurisdictions to control it. Because it also threats the adjacent national parks and conservation areas, it needs to be addressed by employing an approach, for example a micro land use planning with delineating buffer zone and introducing intensive and sustainable slope cultivation methods to maintain the livelihoods of the communities.

The provincial spatial plan indicates large scale of mining development in five or more locations in the province. The major parts are contiguous to the conservation area. Therefore some methods need to be explored and introduced in the REDD+ field activity to reduce the adverse impacts of mining to the natural forests such as low impact mining (it was already practiced in Indonesia by Japanese major mine company) and prompt restoration activity by planting land covers and trees on the bare ground in the mining site.

6.3.3 Central Kalimantan province

(1) Summary of the findings in the field visit

The findings in the field visit to Central Kalimantan province are summarized in **Table 6.6**. Because the Study team decided to focus on investigating the needs and possibility to support in developing the implementation mechanisms of REDD+ at the local government level, the table only indicates the overall findings relevant to it.

Table 6.6 Summary of findings in Central Kalimantan province

Topic	Observation in the field
1. Overall	1. Establishment of KOMDA: The Government of Central Kalimantan Province issued a decree No. 188.44/152/2010 on "Regional Commissions for Reducing Emission from Deforestation and Forest Degradation (REDD) and Peat land of Central Kalimantan Province" (KOMDA) dated on April 11, 2011.Accordingly the Commission (KOMDA) was established in the provincial government to fulfill its tasks and duties provided in the decree. 2. Provincial REDD+ Strategy: A working group was established in KOMDA to formulate the provincial REDD+ Strategy in July 2011 and stared their activity. It is supposed to take two to three months to draft the Strategy. 3. Provincial REDD+ implementation mechanism: REDD+ implementation mechanism (institutional and organizational arrangements) is assumed to be developed in a short period soon after the completion of the provincial Strategy, Hence regular correspondence and updating information needs to be continued by contacting KOMDA and other concerned provincial government offices so that the cooperation through Japanese ODA will be effectively designed and timely implemented. 4. KOMDA and the REDD+ project: Several REDD+ demonstration project are being implemented under the support of donors, NGOs, etc. However KOMDA does not grasp all projects exactly or timely, which suggests that communication and coordination between the provincial government and supporting agencies (donors, NGOs) is not necessarily enough to manage all the REDD+ project in a smooth and effective manner.

Source: JICA Study team

Details are provided in the following sections and in the expert's field report in **Appendix 11**.

(2) Commission for reducing emission from deforestation and forest degradation (REDD) and peat land of Central Kalimantan province (KOMDA)

KOMDA was established in April 2010 as a first provincial organization in the country to promote REDD+ readiness. It has four purposes as follows.

1) To provide relevant information on REDD+ framework and activities to provincial and district governors

2) To develop criteria and indicators on REDD+ activities

3) To facilitate development of MRV methodology

4) To conduct educational and training activities on REDD+

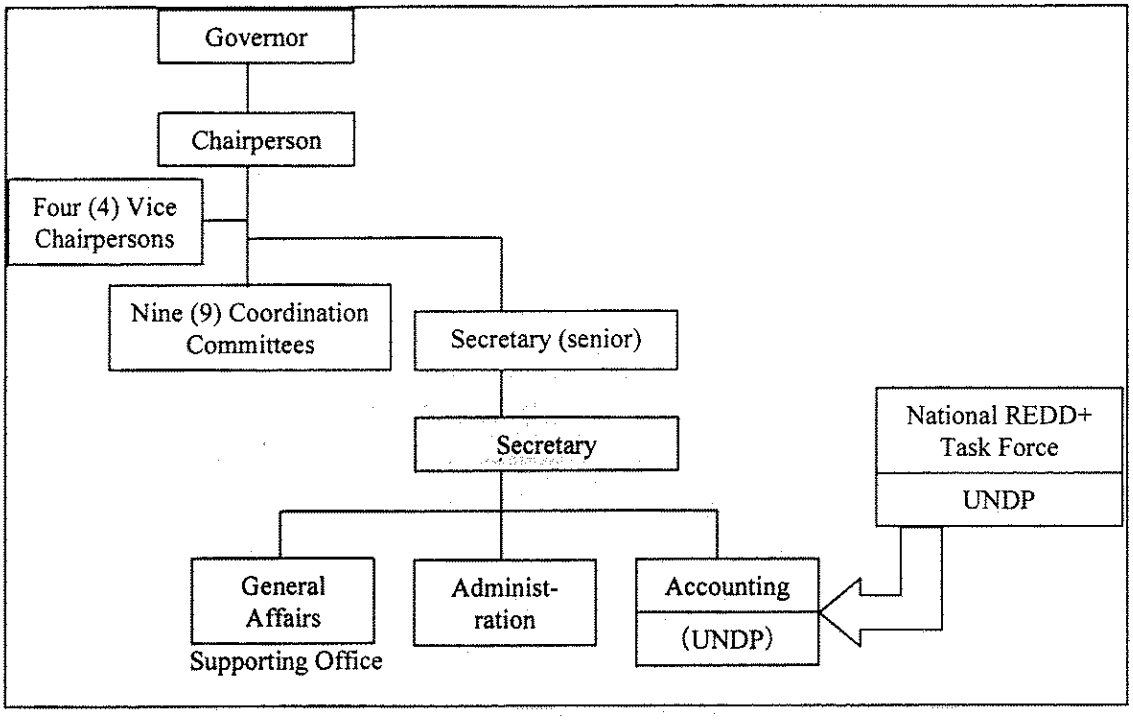
To achieve the purposes above, KOMDA has following functions.

1) To coordinate with various actors including local, national, international level and private sector

2) To coordinate when conflict emerging among actors

In accordance with the expected functions, KOMDA has an organizational structure as illustrated in **Figure 6.9**. Chairperson of KOMDA is taken by Secretary General of Provincial Government who is directly supported by four vice chairpersons. As working units of KOMDA there are nine (9) coordination committees that include (1) organization, (2) MRV, (3) education and training, (4) information, (5) validation and registration, (6) legality, (7) capacity development, (8) benefit sharing,

and (9) database. In the secretariat, there are two staffs dispatched from UNDP who are assigned as staff for supporting office accounting.



Source: JICA Study team

Figure 6.9 Organizational structure of KOMDA

(3) Issues of REDD+ organizational arrangement in provincial and district government

Under the provincial government, not only Department of Forestry but two another department and bureau such as Department of Environment and Development Planning Bureau are in charge of REDD+ activities.

In Kapuas District, there is a working group for KFCP support. The presence of the working group has enabled to develop human resources capacity in the district government on REDD+ issues. Since the KFCP is to be terminated in 2013, they are planning to launch a REDD+ pilot village initiative in the district.

In Katingan District, they identify themselves as Conservation District and come up with a policy of controlling land conversion to oil palm plantation. Currently, governor's decree on working group on REDD+ is being prepared. They are interested in the development of compensation mechanism through REDD+ scheme.

6.3.4 Proposed REDD+ activity in the potential target area

Based on the observations and findings in the field, REDD+ field activities and support to local governments are proposed as **Table 6.7**. Key approaches required in the REDD+ activity are 1) to presents technical alternatives for development activities such as oil palm and rubber plantation and mine industry and 2) planning and implementation of safeguard policies, especially for the community of Orang Rimba and other vulnerable people.

Table 6.7 Proposed activity in the potential target areas

Area	Proposed REDD+ activity
Bukit Dua Belas NP in Jambi province in Sumatera Key issues: 1. Alternatives for oil palm & rubber plantation development, 2. Harmonization of forest conservation with livelihoods of Orang Rimba	1. Formulation of REDD+ Provincial Strategy and establishment of implementation mechanism 2. Determination of provincial baseline and REL 3. Monitoring of the forest resources using satellite images 4. Proposal and promotion of alternatives to minimize the adverse impacts of oil palm and rubber plantations (e.g. compensation for reducing scale of plantation, land swap, etc.) 5. Proposal and promotion of alternatives to harmonize the forest/biodiversity conservation and the livelihoods of Orang Rimba residing the national park 6. Establishment of fund to be used as compensations and motivations for the stakeholders to be involved in the field activities
Bogani Nani Warta Bone NP in Gorontalo province in Sulawesi Key issues: Alternatives for oil palm plantation & mine development	1. Formulation of REDD+ Provincial Strategy and establishment of implementation mechanism 2. Determination of provincial baseline and REL 3. Monitoring of the forest resources using satellite images 4. Proposal and promotion of alternatives to minimize the adverse impacts of oil palm plantations (e.g. compensation, etc.) 5. Proposal and promotion of alternatives to minimize the adverse impacts of mining around the national parks (adopting "low impact" technologies and immediate rehabilitation of mining sites) 6. Rehabilitation of degraded forestlands by planting trees and introducing agroforestry 7. Extension of upland farming with soil conservation methodologies on the slope 8. Establishment of fund to be used as compensations and motivations for the stakeholders to be involved in the field activities
Central Kalimantan province in Kalimantan Key issue: Development of implementation mechanisms on REDD+ and capacity building of concerned actors	1. Establishment of REDD+ implementation mechanisms in the provincial government in line with the REDD+ Provincial Strategy 2. Capacity development of district government to manage overall REDD+ activities 3. Mainstreaming of the achievements of JICA/JST(HOKUDAI) project in MRV methodology in the provincial level 4. Sharing of updated information on the progress of REDD+ readiness with the potential implementing organizations

Source: JICA study team

6.4 Design of REDD+ demonstration project

This chapter describes the key elements which need to be included in the design of REDD+ demonstration activity (DA). As discussed in **Chapter 3.3.3**, REDD+ requires the changes of modality of forest management, which gives implications of innovating the design of forest conservation/management project. Any DA which intends to be registered by GOI (It is supposed to be REDD+ Agency in near future) should follow the guidance provided by GOI and include key elements and their contents compatible with the appropriate approaches to mitigate the deforestation and forest degradation in the target areas. Descriptions hereafter will be applied at the stage when the Study team will materialize the PDM of the Project based on the findings obtained in the field visit to the priority national parks.

6.4.1 Guidance of the Government of Indonesia

According to "Ministerial Decree No.68/Menhut-II/2008 on Implementation of demonstration activities for reducing emission from deforestation and forest degradation" that was issued on 17 December 2008, a REDD demonstration project is defined as "a project that is aimed to develop and test methodologies, technologies and institutions for sustainable forest management that lead to the reduction of CO_2 emissions through the control of deforestation and forest degradation." This definition indicates that the main purpose of a demonstration project is to come up with

methodologies, technologies and institutions that are conducive for preventing deforestation and forest degradation.

6.4.2 Key elements for a demonstration project

While the above statement represents the formal position of the government, the analysis of current projects relevant to REDD+ readiness and implementation that was made in 4.3 above suggests that this is not sufficient as a scope of a REDD+ demonstration project. Aside from approaches focusing on the development and testing of methodologies, technologies and institutions for avoiding deforestation and forest degradation, demonstration projects should also support the development of REDD+ framework at the national and sub-national (i.e. province and district) levels, which is the major task during the readiness phase.

In the context of Indonesia, the implementation of REDD+ will be arranged at the sub-national level, as indicated in the national REDD+ strategy. It is still unclear what the sub-national level exactly indicates: whether the provincial level functions as a core unit or the district level does. Initially, it was discussed that the provincial level is the basic unit so that reference emission level is first calculated at this level. However, the scope of work of current projects indicates that none of them actually work at the provincial level but they tend to perceive the district level is more appropriate to function as a basic unit. By considering these multiple perspectives on REDD+ demonstration projects, the following scope can be considered as key elements in drafting the design of a REDD+ demonstration project.

(1) Assessment and planning

At the national level:
- The latest national REDD+ strategy and regulatory framework
- Status of institutional development for REDD+ (e.g.: REDD+ Agency, MRV Institute, INCAS, Trust funds of ICCTF/IGIF, Carbon market and Benefit sharing mechanism)

At the sub-national level
- Status of institutional development for REDD+ (e.g.: Sub-national REDD+ institutions at the provincial and district levels)
- Status of spatial plan, land use, tenure and forestland classification at the district level

At the site level
- Carbon stock, emission factors, diversity of species and ecosystems and location of local communities and their resource use practices
- Historical transformation of forest areas and its causes
- Direct causes and underlying causes of deforestation and forest degradation
- Reference scenario
- Emission reduction target and potential leakage
- Action plan for emission reduction, biodiversity conservation and community welfare
- Monitoring system for the above action plan

(2) Mitigation activities

At the site level
- Mitigation activities (pilot cases) against direct and underlying causes of deforestation and forest degradation
- Monitoring system
- Status of carbon stock, biodiversity and community welfare based on the data obtained through the monitoring system

(3) Enabling condition

At the provincial level

- Monitoring system, spatial planning process, carbon accounting and registration system and payment/benefit sharing mechanism

6.4.3 Experiences of mitigation approaches

As discussed above, the core element of a demonstration project is the development and testing of methodologies, technologies and institutions for avoiding deforestation and forest degradation. Among others, there are several on-going REDD+ projects that have already been demonstrating potentially effective approaches (that involve methodologies, technologies and institutions) against deforestation and forest degradation, as indicated in **Table 6.8**.

Table 6.8 Mitigation approaches against causes of deforestation and forest degradation

Causes of deforestation and forest degradation	Mitigation approaches & activities
Planned deforestation by private companies for the development of oil palm plantation	Land swap • Project proponents provide district government with scientific/technical data that help them identify degraded lands which are relatively suitable for oil palm development. • It is expected that the district government modifies development policy of oil palm plantation, with scientific/technical inputs as above, so as to accommodate environmental considerations in identifying priority areas (and prohibiting areas) for oil palm plantation. This will lead to cancellation of existing oil palm development which is planned at high conservation value areas. • Project proponents convene a series of workshop in order to facilitate concerned actors to understand the concept of REDD+ (with payment scheme to companies) and the importance of "land swap" that is not necessarily disadvantage to oil palm companies. Such facilitation is indispensable toward the success of effective land swap.
Unplanned deforestation due to forest fire	Prevention of large-scale forest fire • Annual budget of forest fire prevention activities is procured through the sale of CO2 credit that arises from avoiding deforestation. • Within the scope of budget, fire prevention arrangement is organized such as the construction of fire watching tower, set-up of fire extinction team, procurement of modern equipment and facilities and provision of training to the team.
Unplanned deforestation due to small-scale land conversion to farmlands by local people	Village forest (*Hutan Desa; HD*) or Community Forestry (*Hutan Kemasyarakatan; HKm*) • The government regulations of Village Forest (*HD*) or Community Forestry (*HKm*) are adopted. • Project proponents assist concerned government offices to build a facilitation team to promote *HD* or *HKm* programs. • It is expected that transferring management right on local forest to local communities can create a sense of ownership on the forest among concerned communities and enable them find value in the forest so that the forest is conserved and managed on the sustainable basis.
Planned degradation due to commercial logging operation	Reduced Impact Logging (RIL) techniques • There are pilot experiences of reduced impact logging in Indonesia. These are applied to operations of logging companies. • Credits that arise from the emission reduction through the introduction of RIL will cover the cost of RIL operations.

Source: JICA Study team

Table 6.8 Mitigation approaches against causes of deforestation and forest degradation

(Continued)

Causes of deforestation and forest degradation	Mitigation approaches & activities
Unplanned degradation due to illegal logging	Forest Guards • Annual budget of forest guard activities is produced through the sale of CO_2 credit that arises from avoiding forest degradation. • Within the scope of budget, forest guard activities are organized such as the construction of watching tower, set-up of forest guard team, procurement of modern equipment and facilities and provision of training to the team.
	Forest Management Unit (FMU) • Setting up FMU is a common approach against every cause of deforestation and forest degradation. Mitigation approaches and activities mentioned above can all be addressed by FMU, if they are set up. • There is a management office for national park which functions as FMU.

Source: JICA Study team

6.5 Provisional PDM of the proposed future Project

6.5.1 Provisional PDM of the future Project

To materialize the cooperation framework, the Study team developed PDM of the technical cooperation to implement REDD+ field activity based on the findings in the field visit. **Table 6.9** gives the details of PDM describing the project purposes, outputs and activities. For the moment because the REDD+ project site has not been decided, the PDM is designed not to specify the province or areas. The Project purpose proposed in PDM is to operationalize the implementation mechanisms for REDD+ in the target province, provided that the national level REDD+ framework of REL, carbon accounting, etc. will nest the local level REDD+ related institutions and mechanisms in it. Outputs and relating activities presented in PDM are briefly described as follows.

Output 1 is designed to be achieved by the activities relating to the socialization and preparations to start with REDD+ activity in the province and district level. Several surveys are conducted to identify the nature and degree of deforestation and forest degradation, determine REL, and elaborate methodologies to reduce carbon emission and make sure safeguard policy for the local community. Based on the outputs of the survey provincial REDD+ development plan is to be drafted.

Output 2 is to develop the implementation mechanisms through formulating REDD+ provincial strategy and developing MRV systems consistent with the national system. Capacity building of concerned actors is conducted in this stage.

Output 3 focuses ground level activities which were listed as example in **Table 6.7**. They are conducted by applying the methodologies elaborated in the stage of Output 1 and after their implementation their impacts to forest conservation and local community are assessed. Through this process the methodologies to reduce carbon emissions and ensure biodiversity and livelihood of community is to be established.

Output 4 is to bridge the Project experiences and methodologies to the national systems to implement REDD+. To do this the implementation process of the Project and its achievements are analyzed and shared with the concerned organizations of national and sub-national level. The Project is also expected to support case studies to develop national level carbon accounting systems through providing concerning data specific to the target area.

Those four outputs are supposed to contribute to develop the provincial plan to apply the methodologies developed in the Project in wider area of the province, which is supposed to be followed by operating provincial MRV methodologies. Through this process, the REDD+ implementation mechanism is supposed to be operationalized in the target province.

Table 6.9 Provisional PDM of the future Project

Goal/Purpose	Indicator
Super Goal: Deforestation and forest degradation is reduced by appropriate methods and technologies	1 Emissions from forests will be lower than REL 2 The existing biodiversity, water quality and livelihoods of the local communities are enhanced in the target areas where activities to reduce emissions of CO_2 were implemented
Overall Goal: Project achievements are applied to national-level REDD+ mechanism.	1 New carbon monitoring methods that were developed with project assistance are incorporated into national-level MRV system. 2 Suggestions given by the project are incorporated into national-level REDD+ mechanism.
Project Purpose: REDD+ mechanism is operationalized in the target province(s).	1 A provincial plan for wider application of methodologies of reducing CO_2 emissions from forests established through the project is developed. 2 A provincial MRV method is operationalized in the target province(s).

Output	Indicator	Activity
Output 1 A provincial REDD+ development plan *2 is drafted in the target province(s).	1-1 Causes of deforestation and forest degradation are identified in the target province(s). 1-2 Methodologies of reducing CO_2 emissions from forests against the above causes are developed. 1-3 Methodologies of enhancing carbon stock, environmental services of forest and its biodiversity are developed.	1) Organize a provincial REDD+ task force *3. 2) Conduct information sharing and study tours on REDD+ targeting the local government leaders and other stakeholders. 3) Conduct a series of surveys to grasp the ongoing and anticipated deforestation, forest degradation and associated socio-economic conditions in the target area for drafting a provincial REDD+ development plan *4. 4) Assess REL of the provincial level. 5) Elaborate methodologies of reducing CO_2 emissions from forests against several causes of deforestation and forest degradation in accordance with District/Provincial Spatial Plan *5, *6. 6) Elaborate methodologies of enhancing biodiversity, carbon stock and environmental services as "plus" activities of REDD+ in accordance with District/Provincial Spatial Plan *7. 7) Identify pilot sites for application of the methodologies and assess the anticipated impacts of their trials *8. 8) Draft the REDD+ development plan in the provincial level based on the outputs of the survey
Output 2 REDD+ implementation mechanisms is elaborated in the target province(s).	2-1 A provincial REDD+ strategy is drafted. 2-2 Provincial REDD+ institutions are developed. 2-3 A provincial MRV method is identified	1) Support the process of drafting a provincial REDD+ strategy and developing provincial REDD+ institutions to implement the Strategy 2) Support the process of developing a provincial MRV system. 3) Support capacity building of concerned actors for the operationalization of provincial REDD+ mechanism.
Output 3 Methodologies of reducing CO_2 emissions from forests and approaching the carbon trade market are established in the target province(s).	3-1 Methodologies of reducing CO_2 emissions from forests are demonstrated in the pilot sites. 3-2. Purchaser of carbon credit (market) are found.	1) Apply methodologies against the causes of deforestation and forest degradation that were elaborated in the activities of "Output 1" in the pilot sites. 2) Apply methodorogies to enhance carbon stocks, environmental services, biodiversity, etc. 3) Assess impacts of applying the methodologies in the pilot sites in terms of CO_2 emission reduction and carbon stock enhancement by using the provincial MRV system. 4) Assess impacts on enhancement of biodiversity and livelihood improvement. 5) Support the process of approaching the carbon trade market
Output 4 Project findings and experiences are referred to in the process of developing the REDD+ implementation mechanisms of national level.	4-1 Project achievements are referred to by national actors during the process of developing national REDD+ mechanism. 4-2 Project achievements and their relevant information are shared with donors and concerned organizations.	1) Support case studies of developing national level new carbon monitoring methods *9. 2) Support information sharing and technical assistances on carbon trading of national level *9. 3) Analyze implementation processes of the project and its achievements by articulating them with local cultural and socio-economic contexts as well as with pre- and external conditions. 4) Share project achievements and relevant information with concerned organizations of national and sub-national level. 5) Support the process of developing national level REDD+ mechanism if necessary.

Notes:

*1: Activities in Central Kalimantan province are limited to a part of output 2 and output 4 because it does not include ground based activities.

*2: Provincial REDD+ development plan covers the scope of REDD+ related activities, in terms of the specified target area, the methodologies to reduce the emission and enhance the carbon stocks and the implementation mechanism. It is supposed to be formulated simultaneously with or prior to the issuance of the Provincial REDD+ strategy and the provincial/district spatial plan.

*3: Members include MoF, local government, NGOs, research institutions, universities, companies, forest management unit (FMU) to supervise the field activities, community organizations and others.

*4: Survey reviews existing spatial plan if it is available, land uses, forest and other vegetation, their carbon stocks and trends of changes, biodiversity, causes & driver of deforestation and forest degradation, status of livelihoods, etc.

*5: The methodologies include technical development, fund establishment, development of incentives for participation, benefit sharing mechanism, etc.

*6: In case the spatial plan has not been prepared by the local government, the methodologies are proposed as a part of the plan to be formulated.

*7: "Plus" activities includes technical options for sustainable forest management such as low impact logging, enrichment planting, assisted natural regeneration, etc.

*8: The assessment includes estimated CO2 emission reduction, additionality of the activities and their leakage predicted in the target area.

*9: These supports are provided whenever necessary based on collaboration with the concerned organizations of national-level, donors and international organizations.

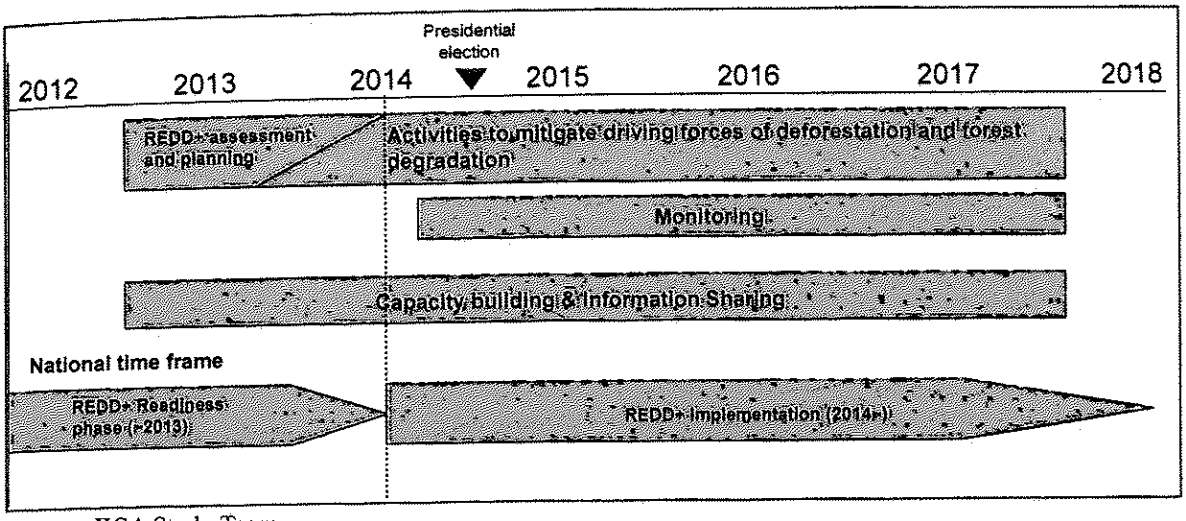
Source: JICA study team

6.5.2 Provisional timeframe of the future Project

Figure 6.10 indicates provisional timeframe of the Project implementation. The Project has two phases according to the nature of the activity, namely (1) assessment and planning and (2) implementation of field activity, which are supported throughout their processes by the capacity building and information sharing. In the first stage, the assessment and planning are conducted to identify the driving forces of deforestation and forest degradation. Reference scenarios of CO_2 emission, fauna and flora distribution and levels of community welfare are also identified. The assessment and planning is followed by the ground level activities in the second phase to conserve the target forest through community based forest management.

It should be noted that the timeframe of the Project is on a parallel with the national timeframe which specifies REDD+ readiness phase (~2013) and Implementation (2014~). The Project is designed to complete its assessment and planning by the end of year 2014 which is also the termination of readiness phase. By this timing the national level mechanisms is scheduled to be completed to nest sub-national (provincial) level mechanisms. The field activities to conserve the target forest and the safeguard policy for local communities, etc. in the Project will be implemented and assessed by the provincial MRV and other methods nested in the national framework in REDD+ implementation phase from 2014.

It should be also noted that an election for presidency of Indonesia will be held in the year of 2014 which poses some uncertainty of the continuity and consistency of the Government's efforts in REDD+ readiness and implementation. According to the Director General of UKP4, Mr. Heru, organizational setups to promote REDD+ should be firm and consistent even after the changes of presidency in 2014 (this comments was presented at the meeting in August 2011 attended by major donors, embassies and international organizations who have their concern to REDD+).



Source: JICA Study Team

Figure 6.10 Provisional timeframe to implement the Project

6.5.3 Recommendation of the Study team for the future Project

According to the observation and findings in the field and the provisional frame of the future project, the Study team recommend the project which covers 1) to support local governments of Central Kalimantan province to develop REDD+ implementation mechanism, and 2) to support local governments of Jambi or Gorontalo province to develop REDD+ implementation mechanism and to conduct the field activities to conserve forest and ensure the safeguards policy for the local community, etc. The pilot site in those target areas shall be identified through further investigations in the field. Watershed and landscape management (*Satoyama Initiative*) approach shall be applied according to the geographical and managerial conditions of target sites.

6.6 Potential roles of JICA in private sector partnership

6.6.1 REDD+ as a distinct approach in private sector partnership

Unlike ordinary CSR activities that can be developed and implemented with discretion of respective private sector organizations, an emerging REDD+ scheme in Indonesia will oblige participating organizations to follow the certain rules and regulations that are to be stipulated by the forthcoming REDD+ Agency. This indicates that private sector organizations that are supposed to participate in the REDD+ scheme have to make preparation in advance for REDD+ planning and implementation.

6.6.2 Provision of concerned information

Considering the above mentioned characteristics of the REDD+ scheme, the main function that JICA may hold is to provide private sector organizations with concerned information that guide them to be ready for participating in the REDD+ scheme in an appropriate manner. For that purpose, JICA may provide the following information on REDD+ to private sector organizations:

- Legal framework and governance mechanism
- Contact personnel in concerned agencies
- Technical guidance such MRV
- Process of and issues in preparation, planning and implementation of a REDD+ project
- Lessons learned of on-going REDD+ demonstration projects
- Potential local partners and project site

Chapter 7 Provisional overall framework of JICA cooperation on REDD+ in Indonesia

7.1 Needs for overall frame of cooperation

The Study team recommended the future cooperation Project on REDD+ in **Chapter 6** consisting of the supports for the ground-based REDD+ activities and the establishment of its implementation mechanisms at provincial level. Meanwhile the provincial mechanisms including institutional and organizational setups and MRV methodologies shall be developed in accordance with the directions and overall frames prepared at the national level.

Among them the MRV methodologies needs to be developed in the national level first through international cooperation. As mentioned in **Chapter 5.3**, carbon monitoring system using the satellite image of ALOS/PALSAR could be utilized to improve the existing INCAS established by Australian cooperation. JICA/JST (HOKUDAI) project also could contribute to elaborate further INCAS through applying the technologies to monitor the carbon flux in the forest.

Therefore JICA cooperation on REDD+ need to have an overall framework which covers to support in developing REDD+ methodologies of national level as well. To come up with the framework, the ongoing JICA Program for Climate Change Cooperation needs to be referred first as an overall umbrella to form the frame.

7.2 Provisional overall framework of JICA cooperation

7.2.1 JICA Program for climate change cooperation

JICA is implementing the program for climate change cooperation in Indonesia which covers the sectors relevant to mitigation of carbon emissions. The program is supported by the technical cooperation project focusing on capacity building for climate change mitigation and adaptation in the relevant sectors. The project has three sub-projects under its overall frame which are (1) formulation of Nationally Appropriate Mitigation Action (NAMA) and mainstreaming of adaptation in development plan, (2) evaluation of vulnerabilities, and (3) establishment of national GHG inventory. In this structure, forestry and REDD+ sector is supposed to be placed under the sub-project (3). The project is collaborating with the National Development Planning Board (BAPPENAS) for sub-project (1), with Agency for Meteorology Climatology and Geophysics (BMKG) for sub-project (2), and with Ministry of Environment (KLH) for sub-project (3).

Although it has not been established yet, the framework assume to support REDD Agency[1] to coordinate with these institutions related to climate changes in developing MRV methodologies and carbon market mechanisms in the country.

7.2.2 MRV

Technologies developed through the JICA technical cooperation on the "Support on Forest Resources Management through Leveraging Satellite Image Information" could be applied to establish MRV systems using "cloud free" satellite images of ALOS/PALSAR.

A Landsat based monitoring method will be used in a national and sub-national level to assess historical deforestation rate and reference emission level in the target area of demonstration activities. In order to do the "cloud free" monitoring of deforestation, forest degradation and land use change during the implementation of demonstration activities, both Landsat and ALOS-2 based monitoring methods needs to be developed and applied to the REDD+ activities in sub-national level. This will be materialized in collaboration with LAPAN, MoF, Australian institutions and JAXA. Detail process

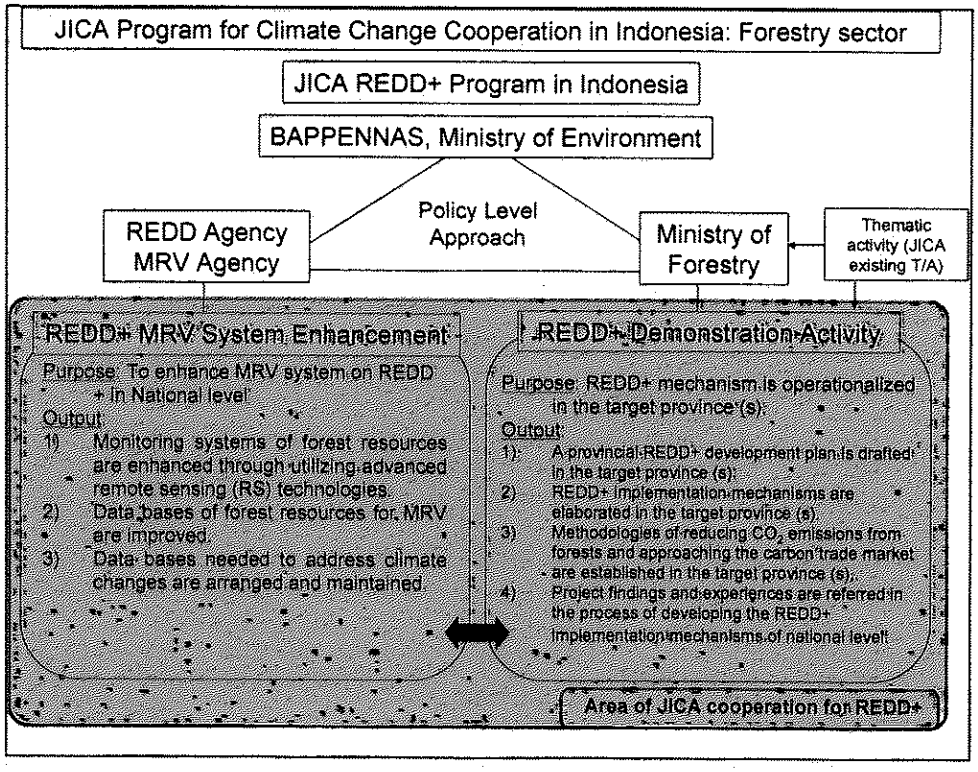
[1] Practically UKP4 remains to be the key institute to promote REDD+ readiness. It is therefore subject to the support by JICA cooperation in developing the national MRV system.

and design of monitoring methods as well as a process of collaboration will be identified after the completion of the Study.

Practically, the Landsat and ALOS-2 methods will also have to be combined with various types of satellites and other devices which have their specific functions to monitor the carbon fluxes and those facilities should be appropriately integrated into holistic monitoring designs applied to sub-national levels which vary largely in their natural conditions and status of land uses and human settlements on the grounds. As one of the monitoring design, a GOSAT based monitoring method will be examined, as a research to develop a new and innovative MRV mechanism, by the team of scientists from Hokkaido University (HOKUDAI) of Japan. The team has already accumulated the data on CO_2 flux on the ground at peat swamp sites in Central Kalimantan province and currently examines the linkage between on-the-ground and satellite data under the scientific cooperation of JICA/JST project. It is expected that the team will further elaborate the method to validate its applicability in different land use and forest types in Indonesia and contribute, in particular, to the identification of emission factors in respective land use types.

7.2.3 Provisional framework of JICA cooperation

Through the analysis of data/information collected and the considerations above, the Study team proposes an overall framework of JICA cooperation on REDD+ in Indonesia as illustrated in **Figure 7.1**. As illustrated, the frame is outlined by the JICA Program for Climate Change Cooperation in Indonesia. Cooperation to REDD+ is placed under the Program as one of the sub-programs of forestry sector. It is titled "JICA REDD+ Program in Indonesia" and founded on the policy level approaches and coordination connecting the National Development Planning Board (BAPPENAS), Ministry of Environment, REDD+ Agency (as it is supposed) and MoF. As mentioned, supports to develop MRV systems shall be provided to the UKP4 or REDD+ Agency and MRV agency (both of them are supposed to be founded sooner or later). Meanwhile REDD+ field activity shall be implemented through technical cooperation conducted based in MoF. Thematic activities of JICA existing technical cooperation projects shall also contribute to plan and implement the field activities so long as they are compatible to the requirements of REDD+.



Source: JICA Study team

Figure 7.1 Proposed JICA cooperation framework

Chapter 8 Conclusion and further steps after the Study

8.1 Conclusion of the Study

Through the first and second field survey in Indonesia and in-country survey, the Study team proposes the ideas of the future cooperation project which is proposed to focus on development of REDD+ implementation mechanism at provincial government in Central Kalimantan and the full scale REDD+ activities in Jambi or Gorontalo provinces. The team also comes up with the overall framework of JICA cooperation on REDD+ which covers the development of national MRV systems in the forthcoming REDD+ Agency.

Because the time for implementing cooperation project is limited by the national road map showing REDD+ readiness ending before 2014 the process to formulate the future project need to be accelerated after the completion of the Study in September 2011 so that it can commence in early of Japanese fiscal year of 2012.

8.2 Further selection of potential target area

As a conclusion of the Study the future cooperation project on REDD+ is proposed to focus the potential target provinces as stated above. However if other potential areas need to be examined further after the completion of the Study, it should follow the process as below.

1) To select the national parks ranked next to Bukit Dua Belas in Sumatera in **Table 6.2 (1)**.

2) To examine the national parks individually where REDD+ demonstration activities are currently implemented/planned by other donors and NGOs whether effective collaboration with those leading organizations could be possible or not in developing implementation mechaninsms and methodologies at provincial and district level.

3) To consult further Ministry of Forestry in order the selection to be exactly consistent with the latest policy of the Ministry on REDD+ readiness.