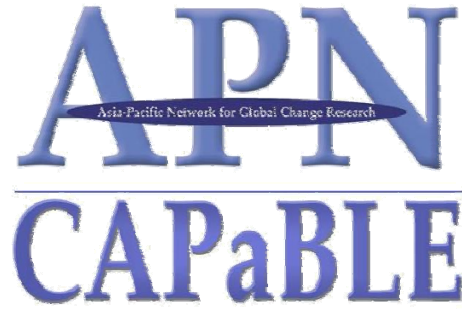


**FINAL REPORT for APN PROJECT
CBA2009-03NSY-Bishry**



- Making a Difference -
Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

Project Scoping and Training Workshop for REDD in Indonesia, Cambodia, and Lao PDR

PROJECT LEADER:

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**MICHIGAN STATE
UNIVERSITY**



***Project Scoping and Training Workshop for REDD in
Indonesia, Cambodia, and Lao PDR***

Project Reference Number: [CBA2009-03NSY-Bishry](#)
Final Report submitted to APN

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OVERVIEW OF PROJECT WORK AND OUTCOMES

Non-technical summary

This project is cross-cutting topics of (1) climate, (2) ecosystems and land use, and (3) the use of resources for sustainable development. This project supports regional collaboration of basic research for developing potential REDD carbon offset projects (goal 1). The project includes both scientist and policy-makers as part of our project team (goal 2). The project includes technical capacity-building in using remote sensing, GIS, and carbon models for implementing REDD carbon offset projects, and in understanding markets for REDD activities (goal 3). Land use change, particularly deforestation, is responsible for approximately 20% of all anthropogenic CO₂ emissions. Market opportunities are emerging to support interventions that reduce deforestation rates under “Reduced Emissions from Deforestation and Degradation” (REDD) projects. The protocols and methods for establishing REDD projects are complex. We propose a regional scoping workshop for identifying potential projects.

While emissions from energy use are primarily a problem in the developed countries (and China and India), deforestation and forest degradation are a problem primarily in the tropical, developing countries in South America, West Africa, and Southeast Asia. The questions being tackled today have less to do with understanding source emissions, however, than with how to address them and implement policy that are effective. New opportunities to reduce deforestation are emerging due, in part, to international treaties like the Kyoto Protocol and to the growing international agreement that climate change is real and needs to be addressed.

Objectives

The main objectives of this activity are

- 1) training and capacity-building in understanding REDD and methodologies for implementing REDD activities, and
- 2) initial identification of potential REDD activities in each of the three countries.

As individual nations and the international community collectively works to find ways for mitigating climate change, emerging projects that tie land use activities, aimed at reducing carbon emissions, to financial markets in the model of payments for ecosystem service will grow in importance. REDD projects, however, must demonstrate, through robust methods, true emissions reductions, as well as show leakage is not prevalent. Implementing REDD activities requires a level of understanding in both carbon cycle science and carbon market economics that is currently not commonplace among scientists or policy-makers

Amount received and number years supported

The grant awarded to this project was: US\$ 24, 400 for 1 year 2009/2010

Activity undertaken

A Workshop on “Project Scoping and Training Workshop for REDD in Indonesia, Cambodia, and Lao PDR” held at BPPT and Hotel Arcadia Jakarta Indonesia from 19th to 23rd of January 2010. It was participated by 30 participants from Indonesia, Cambodia, Lao, and The United States of America.

Project Website: <http://neonet.bppt.go.id/redd/>

Results

Developed future implementation of REDD in each country (Indonesia, Cambodia, and Lao PDR) and identified prospect sponsorships.

Relevance to APN’s Science Agenda and objectives

As individual nations and the international community collectively works to find ways for mitigating climate change, emerging projects that tie land use activities, aimed at reducing carbon emissions, to financial markets in the model of payments for ecosystem service will grow in importance. REDD projects, however, must demonstrate, through robust methods, true emissions reductions, as well as show leakage is not prevalent. Implementing REDD activities requires a level of understanding in both carbon cycle science and carbon market economics that is currently not commonplace among scientists or policy-makers

Self evaluation

The main objectives of this activity are training and capacity-building in understanding REDD and methodologies for implementing REDD activities, and besides that is the initial identification of potential REDD activities in each of the three countries. The objective of this workshop is the REDD capacity building has been done by several parties including some donor agencies such as the world Bank, European community and many other developed countries.

The capacity building is expected to prepare for the technical issue of the REDD for every country involved, and others. Full implementation of REDD will start in 2012, it is expected that this activity will support this target. The workshop should have been participated by other countries, especially in ASEAN.

Potential for further work

Dissemination in each country is important to support future implementation of REDD particularly in Southeast Asian countries. Plans for further workshop for evaluation and monitoring the implementation of REDD have been discussed. It is proposed that the follow-up workshop could be held at either Cambodia or Lao PDR.

Publications

Bishry, Rony (2010), "REDD: Forest Community Participation," a paper, Training Workshop for REDD in Indonesia, Cambodia and Lao PDR, Asia-Pacific Network for Global Change Research (APN).

Masripatin, Nur (2010), "REDD: The Case of Indonesia," a paper, Training Workshop for REDD in Indonesia, Cambodia and Lao PDR, Asia-Pacific Network for Global Change Research (APN).

Thongmanivong, Sithong et.al (2010), "REDD: The Case of Cambodia, A Paper, Training Workshop for REDD in Indonesia, Cambodia, and Lao PDR, Asia-Pacific Network for Global Change Research (APN).

Vanna, Samreth (2010), "REDD: The Case of Lao PDR, A Paper, Training Workshop for REDD in Indonesia, Cambodia, and Lao PDR, Asia-Pacific Network for Global Change Research (APN).

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2. GOF-C-GOLD. 2008. Reducing greenhouse gas emissions from deforestation and degradation in developing countries; a sourcebook of methods and procedures for monitoring, measuring and reporting. (draft version June 2008).
3. IPCC. 2007. Climate Change 2007: Mitigation of Climate Change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.
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6. Bishry, Rony(2007), "Akunting Sumberdaya Alam dan Lingkungan Kabupaten Solok", Jurnal Teknologi Lingkungan, Center for Environmental Technology, The Agency for The Assessment and Application of Technology, Jakarta.
7. Bishry, Rony(2008),"Cost Benefit Analysis for Climate Change Mitigation Technology", Invited paper, The Agency for the Assessment and Application of Technology", Jakarta.

Acknowledgments

Our gratitude is to APN for the sponsorship of this Workshop. The Workshop is organised in collaboration of Cambodian participants led by : Ms. Pum Vicheth, Ministry of Environment; Indonesian participants led by : Dr. Rony Bishry, Agency for the Assessment and Application of Technology (BPPT); Lao PDR participants led by: Dr. Sithong Thongmanivong, Faculty of Forestry, National University of Laos; and the United States participants led by: Dr. David L. Skole, Michigan State University.

Preface

REDD is a new global climate change mitigation agreed in the UNFCCC. This effort is related to the training and capacity-building in understanding REDD and methodologies for implementing REDD activities. Besides, the initial identification of potential REDD activities in each of the three countries, Indonesia, Cambodia and Lao PDR was discussed in the workshop.

The workshop was sponsored by Asia-Pacific Network for Global Change Research (APN) with collaboration from three countries (Indonesia, Cambodia and Lao PDR) and the Michigan State University.

It is expected that this workshop will support the implementation of workshop in developing countries, especially in the three countries.

1.0 Introduction

This project is cross-cutting specific to the APN Science Agenda priority topics of (1) climate, (2) ecosystems and land use, and (3) the use of resources for sustainable development. This project supports regional collaboration of basic research for developing potential REDD carbon offset projects (goal 1). The project includes both scientist and policy-makers as part of our project team (goal 2). The project includes technical capacity-building in using remote sensing, GIS, and carbon models for implementing REDD carbon offset projects, and in understanding markets for REDD activities (goal 3).

2.0 Methodology

The project methodologies are as follows:

1. Capacity building and technology transfer in REDD methods for calculating carbon and monetizing avoided deforestation fluxes,
2. Capacity building in developing REDD project documents for compulsory and voluntary carbon markets,
3. Expert in-country knowledge for identifying potential REDD project activity areas, and
4. International team collaborative planning of REDD project activity calendars for near-term implementation.

3.0 Workshop presentation

A. INDONESIA'S TECHNOLOGY NEEDS ASSESSMENT (TNA) FOR CLIMATE CHANGE MITIGATION

Prof. Dr. Jana T. Anggadiredja

Deputy Chairman of BPPT for Natural Resource Development Technology, as TNA Coordinator

Objectives of TNA

- Identify, analyze and prioritize technologies that can form the basis for a portfolio of Technology Transfer programs for GHG mitigation.
- Identify human and institutional capacity needs that ensure the smooth development, transfer and acquisition of technologies.

- Enlist interests and commitment from key stakeholders and forge partnerships to support investment or barrier removal actions for enhancing the commercialization and diffusion of high prioritized technologies.

Purpose of TNA

- Contribute to the global effort towards sustainable development and the protection of the climate system;
- Communicate to UNFCCC and the global community on the Indonesia's climate change technology requirements;
- Become a resource document to identify and prioritize climate change mitigation technologies needed by Indonesia that require support and co-operation from developed countries;
- Establish a foundation of a database for climate change technologies of Indonesia.

Background of the Study

- Indonesia is a maritime country with thousands of islands scattered in a tropical region between two large oceans (Pacific and Indian) and two continents (Asia and Australia).
- Its population is now more than 220 million; around 59 % population lives in Java Island which is only 7% of the total area.
- Indonesia has forest land about 120.3 million hectares which serves as the lung of world climate.
- More than 80% of country's population live in agriculture and fishery sectors, which is highly susceptible to climate variability.
- Several impacts of climate extremes have been subjected to vulnerable agriculture including flood, drought, occurrence of crops pests and diseases where its frequency and intensity have grown.
- High growth of economy in the last decades led to growing demand of energy supply and utilization.

In line with all those factors, the Indonesian Technology Needs Assessment (TNA) was prepared with focus on 7 development sectors, i.e. energy, industry, transportation, waste, agriculture, forestry and ocean.

Examples of TNA in Indonesia

Waste Sector: Potential Resources

Municipal Solid Waste (MSW)

- Indonesia produces 48.8 Mt/year of MSW, 40% is transported to the Solid Waste Disposal Sites SWDS/'landfill';
- The rest is illegally dumped (8%), composted and recycled (2%), open burned (35%) and treated in other ways (15%) .
- Currently around 460 open dumping landfill sites in Indonesia emitting GHGs (CH₄ and CO₂) as well as gaseous and liquid pollutants.
- Following execution of the MSW management Law 2008, all the existing open dumping landfills must be closed and changed with the sanitary ones, no latter than 5 years to come.
- The environmentally-friendly technologies for recovering (mining) and utilizing the existing landfill gas before their closure is highly required.
- Also, environmentally-friendly technologies for new sanitary landfills and their landfill gas utilization are equally important to be addressed.

Oil Palm Waste

- Indonesia currently owns 320 palm oil factories with average annual capacities of **9,816,400** tons of fresh fruit bunch (FFB).

- The total solid waste is around 4.2 M tons per year and its liquid waste is around 6.5 M tons per year that potentially produce GHGs emissions.
- Most of palm oil industries do not yet treat their wastes properly using environmentally – friendly technologies.
- The potential of converting palm oil waste to energy is highly recommended and therefore it needs the transfer of technology . It also maximize the total efficiency of the process.

B. PROJECT OVERVIEW

Jay Samek, GOES/Forestry/MSU

- Deforestation/Forest Degradation & Climate Change
 - Land use change, particularly deforestation, is responsible for approximately 20% of all anthropogenic CO2 emissions (1990s)
 - Nearly 90% of all CO2 emissions in Indonesia are from deforestation. Indonesia ranks third, overall, behind China and the United States in terms of total annual CO2 emissions.
 - Deforestation rates and forest degradation in Indonesia and Lao PDR have remained consistently high between 1990 – 2000 and 2000 – 2005; the deforestation rate in Cambodia has increased from (1.1 %) 140,000 ha/year from 1990 – 2000 to (2.0 %) 219,000 he/year from 2000 – 2005 (FAO FRA 2005).
- COP-15 (Dec. 2009): Copenhagen Accord
 - (Item 6 of the Accord): We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions through the immediate establishment of a mechanism including REDD-plus, to enable the mobilization of financial resources from developed countries.
 - “Scaled up, new and additional, predictable and adequate funding” is to be provided to “developing” countries, “including substantial finance” for REDD. The Accord explains that the Copenhagen Green Climate Fund will be worth US\$10 billion a year from 2010-2012. Financing for “forestry” is included in this figure. **By 2020, “developed countries commit to a goal of mobilizing jointly USD 100 billion dollars a year”**. Carbon markets are one of the ways of raising the finance:
 - * (Item 7): We decide to pursue various approaches, including opportunities to use markets, to enhance the cost-effectiveness of, and to promote mitigation actions.
 - Towards the end of the Copenhagen meeting, **six countries, the US, UK, France, Japan, Australia and Norway, pledged US\$3.5 billion over the next three years to kick-start REDD.**
- During Copenhagen, REDD was discussed in two bodies: the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Ad Hoc Working Group on Long-Term Cooperation Action (AWG-LCA).
 - The SBSTA produced a draft decision on methodological REDD issues, which was adopted by COP-15.
 - The LCA draft text on REDD
- Copenhagen Accord
 - http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf
- The SBSTA produced a draft decision on methodological REDD issues
 - http://unfccc.int/files/na/application/pdf/cop15_ddc_auv.pdf
- The LCA (Ad Hoc Working Group on Long-Term Cooperation Action) draft text on REDD
 - <http://unfccc.int/resource/docs/2009/awglca8/eng/l07a06.pdf>

Project Objectives:

1. Training and capacity-building in understanding REDD and methodologies for implementing REDD activities, and
2. Initial identification of potential REDD activities in each of the three countries. REDD projects must demonstrate, through robust methods, true emissions reductions, as well as show that leakage is not prevalent.

Implementing REDD activities requires a level of understanding in both carbon cycle science and carbon market economics that is currently not commonplace among scientists or policy-makers.

Expected Outcomes:

1. Identification of REDD project activities in Cambodia, Indonesia, and Lao PDR,
2. REDD project implementation plan for each of the three country REDD projects,
3. Development and dissemination of REDD materials (PDF background documents, relevant literature, PowerPoint presentations, etc.),
4. Establishment of a workshop website providing wider dissemination of training materials.

The training and project identification will lead to near-term activities for developing REDD projects with the express purpose of trading the avoided deforestation emissions on either the compulsory (e.g. Kyoto post 2012) market (post-2012) or the voluntary carbon market (e.g. Chicago Climate Exchange)

Workshop / Meeting Focus and Goals:

- Build a SEA-REDD collaborative team
 - Existing expertise in this meeting
 - * Technological/Analytical (Measurement and monitoring)
 - * Forest bio-metrics
 - * Natural Resource Policy – land tenure, community involvement, PES mechanisms
 - * Forest Economic – Natural resource valuation
- ID potential (viable) REDD project areas and opportunities
- ID project component gaps
 - Data and/or tech./analytical
- Develop proposals to fund REDD project and activities

Funding Commitments to REDD:

- 100 B USD by 2020 (COP-15)
 - \$3.5 billion financing package assembled by the United States, Australia, France, Japan, Norway, and the United Kingdom to support Reducing Emissions from Deforestation and Degradation (REDD) incentives
 - The US will provide \$1 billion of the total, Australia \$108 million
- 27 M Euros to Indonesian REDD (Germany)
- 30 M USD Jambi REDD project (Australia)
- 440 M USD Norway

C. REDD ISSUES

Dr. Larry Leefers, Department of Forestry, Michigan State University

Global climate change scientists have to be policy advocates as well!

Property Rights

- Well specified—rights, penalties, etc.
- Who has the rights
- Transferable
- Enforceable and enforced

Relates to land tenure, governance, compensation...and carbon.

Differs in Laos, Cambodia, and Indonesia.

Examples :

Objectives of project in Mwekera National Forest No. 6.

- To identify the forest cover change that have occurred from 1984 to 2006 in Mwekera National Forest No. 6.
- To determine the extent of illegal firewood harvesting and charcoal production activities in MNF.
- To identify characteristics of illegal charcoal and firewood in MNF.
- To recommend policies for reducing illegal firewood and charcoal activities—addressing drivers of change.

Economics Analysis

Cost minimization

- Opportunity costs, transaction costs and compensation
- Co-benefits or multiple benefits
- Trade-offs
- Socio-economic impacts—distribution
- Financial management

Final comments

- Global change scientists must advocate for policies related to their science.
- The hard science deals with property rights, economics, social issues, and policy...
- ...Your science is hard, too!
- Identify focus and direction of next steps in collaborative work (CIFOR's *Emerging REDD+* may be helpful)

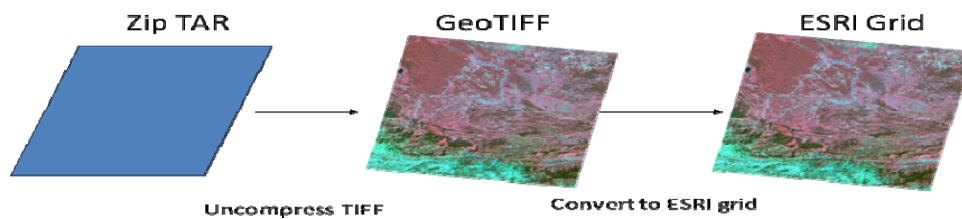
D. GLOBAL RATES OF TROPICAL FOREST COVER CHANGE

Jay Samek GOES/Forestry/MSU

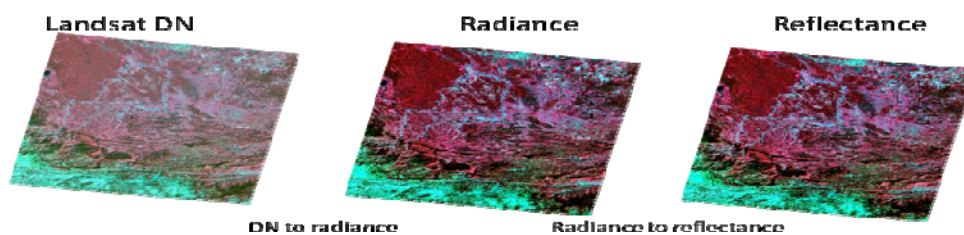
- Remote Sensing Satellite based; wall-to-wall coverage; 30-meter resolution
- Landsat TM (1990) and ETM+ (2000) Orthorectified data sets for 10 year baseline deforestation rate
- Four Processing Stages
 - 1: Data preparation and staging
 - 2: Radiometric correction (TOA)
 - 3: Tasseled cap transformation + SRTM Water Mask + MODIS VCF
 - 30-meter VCF Forest Cover Product
 - 4: Change Detection
 - Deforestation

- Forest re-growth

Data Staging for TM and ETM+



Satellite Image Processing Radiometric Correction of Landsat



DN=Digital Number

Radiometric corrections serve to remove the effects that alter the spectral characteristics of static land features

Tasseled Cap Transformation

The Kauth-Thomas tasseled cap transformation combines Landsat spectral bands to reduce band-to-band correlation. It is a form of principal component transformation but with fixed coefficients supporting average conditions over vegetated landscapes. The TOA version of tasseled cap is used (Huang et al., 2001) in this algorithm.

Identification of Forest for Tasseled Cap normalization

- The forest class is identified in the ETM+ images using the MODIS 500m Vegetation Continuous Fields (VCF) product. ETM+ pixels with NDVI values > 0.75 and VCF treecover > 70 are considered forested. Forest in the TM image is a subset of the ETM forest that did not decrease in wetness by more less than -20.

Disturbance Index

- The Disturbance Index (DI) records the normalized spectral distance of any pixel from a mature forest to bare soil. The disturbance index (DI) is a linear combination of the three Tasseled Cap (Christ & Cicone, 1984) indices: Bright, Green, and Wet. The formulation of DI takes advantage of the assumption that recently cleared forest exhibits high Bright values, and low Green and Wet Values in relation to undisturbed forest. This assumption has been validated at test sites in Brazil and Southeast Asia.

DI

- The DI transformation is a linear combination of Bright, Green, and Wet values. Before the transformation the values are rescaled using the equations below. Each band is rescaled to its standard deviation above or below the images mean forest value

- $B_r = (B - B_{\mu}) / B_{\sigma}$

- $G_r = (G - G_{\mu}) / G_{\sigma}$

- $W_r = (W - W_\mu) / W_\sigma$
- B_r, G_r, W_r = rescaled Bright, Green, Wet
- B_μ, G_μ, W_μ = mean forest Bright, Green, Wet
- $B_\sigma, G_\sigma, W_\sigma$ = standard deviation of forest Bright, Green, Wet
- The rescaling process normalized pixel values across Tasseled Cap bands in a way that allows their subsequent algebraic combination. The referenced population from which the mean (μ) and standard deviation (σ) are drawn should be representative of the scenes forested pixels). Once the three component indices are normalized, they can be combined in the following equation:

$$DI = B_r - (G_r + W_r)$$

- The DI records the spectral distance of a pixel from the mature forest class in units of standard deviations. Given the assumption that disturbed areas will have high positive B_r (brighter than average) and low negative G_r and W_r , (less green and wet than average) values of deforested areas should display high DI values. Areas with low negative B_r and high positive G_r and W_r (forest regeneration) will exhibit low DI values and all others will tend toward zero. DI values greater than 1 have a high probability of being non-forest.

Calculation of DI and Δ DI

- Using the mature forest pixels from the above step the mean and standard deviation of each tasseled cap component are calculated. Each tasseled cap component is normalized using the equations in the algorithm overview section. The Δ DI is calculated as $DI_{ETM} - DI_{TM}$. The Δ wet is calculated as $wet_{ETM} - wet_{TM}$. Areas of disturbance have a Δ DI > 1 and a Δ wet < -20 (for deforested areas) and Δ DI < -0.5 and Δ wet > 10.

Change Detection

- The tropical forest change algorithm uses the decadal change in DI (Δ DI) value as well as the change in wetness to identify disturbance and regrowth. Large changes in DI that are accompanied by a negative change in wetness are areas of forest disturbance. Change in wetness (Δ wet) is calculated ETM wetness – TM wetness therefore a negative change in wetness indicates the TM pixel was ‘wetter’ than the corresponding ETM pixel. Agricultural and grassland land-cover transformations may be inadvertently identified by Δ DI and Δ wet therefore we threshold the Δ DI and Δ wet layers and filter using a forest/non-forest classification.

E. COMMUNITY PARTICIPATION

Rony Bishry

Local communities and indigenous peoples

- The need and possible approaches to appropriately account for any potential risks of REDD on local communities and indigenous people.
- Potential adverse impacts stem primarily from the lack of clearly defined and well-established and enforced property rights in some potential REDD-host countries.
- Indigenous peoples play an important role in biodiversity conservation and sustainable use.
- Community-based forest management schemes and actions will have strong linkages to environmental effectiveness.
- The effective participation of indigenous peoples (IPs) and local communities (LCs) in a REDD mechanism and actions will have strong linkages to environmental effectiveness. The forest sector in many developing countries presents challenges for IP and LC participation due to the

remote location of communities, illegal forest exploitation, weak governance, and lack of clarity regarding rights to land and natural resources.

- The terms indigenous peoples and local communities are often highly generalized, but their interpretation could inhibit their participation in REDD. IPs and LCs are understood differently within differing legal and cultural contexts. In addition, while both IPs and LCs will be affected by REDD implementation, and rights reform, and good governance.

Promoting Participation

Ensuring effective participation in REDD is likely to be context specific and in many cases may require governance reform well beyond the forest sector, significant political will, and time to build inclusive processes. Nevertheless, recognition of the following principles could promote participation:

- Definition of right to land resources, including ecosystem services;
- Representation in REDD decision making, both internationally and nationally, including access to dispute resolution mechanisms; and Integration of REDD into long-term national development

International Instruments Processes

- Ensuring IP and LC participation through provisions adopted under the UNFCCC is challenging. Stringent international rules on participation of IPs and LCs in the LC participation can be promoted through procedural international climate regime may infringe on national sovereignty, and there is an argument that issues of human rights are addressed through other international instruments other than the UNFCCC.
- An appeals system could be established that gives the opportunity for non-state actors to submit a complaint regarding a party that has failed to abide by the international standards agreed under a REDD agreement.
- Similar appeals systems exist in some other international environmental treaties. Such a system would enhance effectiveness, but national sovereignty concerns may render it. While it may be feasible for Parties to agree on general procedural principles, it may be difficult for them to come to agreement on more definitive references to rights.
- The impact of such guidelines in other international processes has been mixed. Nonetheless, guidelines for IP and LC participation in REDD should be developed as soon as possible to help ensure participation from an early stage.
- Guidelines could be strengthened through provision of financial support for participation at the international level and/or by making delivery of REDD.

Requirements

The principles would further enhance participation. Reducing participation if countries/actors cannot meet the requirements and undermining local accountability structures. Requirements are:

- Broad references to “rights” that include both procedural rights within REDD processes and rights to land and natural resources.
- Broad terminology to refer to “Indigenous Peoples and Local Communities,” encompassing a broad category of actors and recognizing collective rights .
- Cross-referencing to obligations in human rights instruments such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) (Annex 5.3.1).⁵² This has the advantage of avoiding renegotiation but the disadvantage that some parties are not signatories of such agreements.

Key Considerations

In the national implementation of REDD, the international architecture for REDD will set the framework for implementation, many of the social implications will relate to how governments

choose to implement REDD at national and subnational levels. Key considerations for promoting IP and LC participation include:

- Strengthening rights and governance through implementation of forest tenure reforms, mapping of lands, and recognition of rights to ecosystem services;
- Prioritization of “pro-poor” policies and measures to achieve REDD;
- Alignment with national development processes, for example, by integrating REDD into inclusive and broad-based development strategies;
- Using REDD funding to support local government reform processes and social capital development, to help channel financial flows to IPs and LCs, and also to improve broader forest governance; and
- Development of stronger accountability structures and institutions, for example, transparent information provision to IPs and LCs; inclusive multi-stakeholder processes; monitoring systems for the social impacts of REDD; and appeals systems.
- Donors could provide voluntary support for IP and LC participation through supporting rights reform processes, provision of technical assistance (e.g., on developing impact evaluation processes), supporting civil society across multiple sectors, and provision of sources of finance for IP and LC involvement in national and subnational REDD planning and implementation.

Thoughts of The Importance of Local Actors of REDD In Indonesia (Madeira, 2009)

- In spite of different legal tenure, local actor control over the forest.
- REDD program sustainability will depend on their involvement (eg.: receive benefits)
- Pro-poor and yield local benefits

There is link between local actors and project permanence

- Involvement of local actors can be through:
 - engagement of local actors in the REDD program
 - investment in community development program
 - job creation for forest community
 - investment in alternative livelihood
 - addressing tenure insecurity
 - compensation for management of community forest

Community Participation in REDD Program

- Indonesian Case
- Lao Case
- Cambodia Case

6. REDD Project in Cambodia

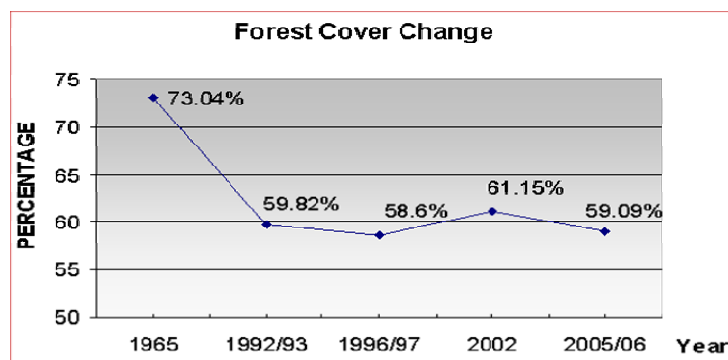
Mr. Samreth Vanna, Forestry Administration, Department of Forestry and Community Forestry

Outline

- Forest Cover Change in Cambodia
- Legal framework for REDD
- REDD Projects in Cambodia

Forest Cover Change in Cambodia

- 1965 : 73.04%
- 1992/93 : 59.82%
- 1996/97 : 58.60%
- 2002 : 61.15%
- 2005/06 : 59.09%



- Annual deforestation rate: 0.34% (1965-2006)
- Annual deforestation rate: 0.5% (2002-2006)

Legal Framework for REDD

1. Cambodia Millennium Development Goal
2. Rectangle Strategy of RGC
3. National Forest Policy
4. National Forest Program
5. Forestry Law and regulation under the law
6. Official Government Decision to support the forest carbon credit project in Cambodia.
7. FA –MoE working group on REDD

REDD Project in CAMBODIA

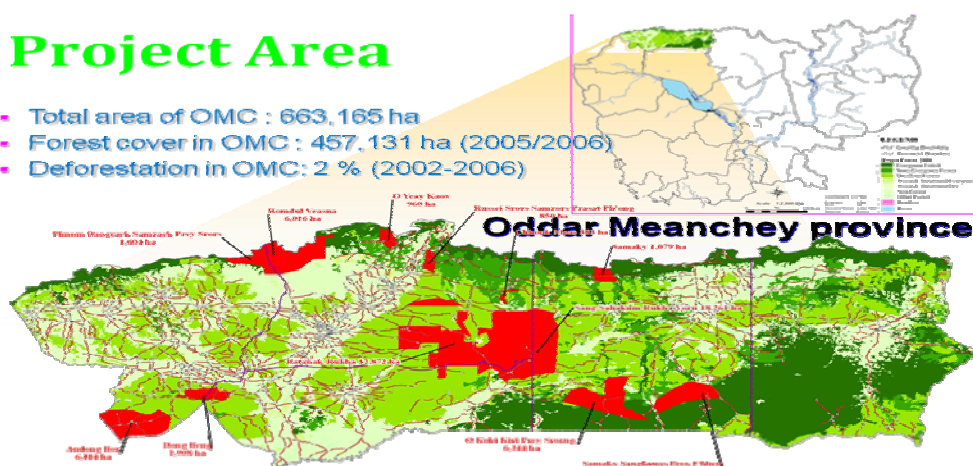
1. Community Forestry Carbon Credit, Oddar Meanchey
2. Carbon Credit from Avoided Deforestation: a Pilot Project in the Seima Biodiversity Conservation Area, Mundulkiri

Community Forestry Carbon Credit in Oddar Meanchey, Cambodia

- **Background**
 - Project start : March 2008
 - **Key stakeholders**
 - Implement Institution : Forestry Administration
- **Implement Partner : CFI/Pact, CDA, CFs**
 - Technical Assistance : TWG F&E, TGC, CCI,
 - Funded by : CCI, Pact, Danida/DFID
 - Project area (CFs) : 60,0477 Ha (12 CFs)
 - 6,182 families, 52 villages,
 - 08 communes, 04 districts

Project Area

- Total area of OMC : 663,165 ha
- Forest cover in OMC : 457,131 ha (2005/2006)
- Deforestation in OMC: 2 % (2002-2006)



Key Activities

- Project negotiation and agreement
- Project awareness raising, training and field implementation
- REDD Methodology Development
- Field Measurement
- Preparation of PDD for submission to Voluntary Carbon Standard (VCS) and the Climate, Community & Biodiversity Alliance (CCBA)
- Design efficient project monitoring protocol
- Carbon monitoring and prepare for first verification
- Validation
- Emission Reduction Purchase Agreement (ERPA)

Carbon Credits from Avoided Deforestation:

A Pilot Project in the Seima Biodiversity Conservation Area (SBCA), Mundulkiri, Cambodia

Project Profile

- Total area of MKR : 1,366,892 ha
 - Forest cover in MKR: 125,955 ha (2005/06)
 - Deforestation in MKR : 0.5 %
 - Population (2006) : 53,216
 - Project started : early 2009
- Key stakeholders : FA, TWG F&E, WCS, Local people, Local authorities
 Project area (SBCA) : 187,698 Ha

Key Activities

- Training of FA/WCS staffs
- Data collection in the field
- Baseline analysis and carbon projections
- Setting up legal mechanisms for carbon ownership and disbursement of carbon funds (ongoing)
- Writing and certification of Project Design Document (PDD) (ongoing)
- Sales (marketing has begun; formal sales after PDD)
- Estimated 1.5 MtCO₂/5years

Siem Reap REDD project protocol

- Google training 1 - familiarization with android mobiles and ODK
- Establish FA working group to develop Siem Reap forest carbon protocol
- Google training 2 – testing of new protocol and advanced functions
- Refine protocol

3 key questions

1. What are the current carbon stocks?
2. What are the future carbon stocks without REDD project activities?
3. What are the future carbon stocks with REDD project activities?

Techniques to answer the 3 questions

1. Remote sensing
 - Historical deforestation rates
 - Stratification of the current forests for better quantification of carbon stock densities
2. Field measurements
 - Actual measurement of carbon stock densities
3. Land use change models
4. Forest growth models

N.B. Forest carbon credits

- Forest carbon credits are only generated (and paid for) after project activities have occurred, and it has been demonstrated (and independently verified through actual measurements) that deforestation decreased
- Estimates of carbon credits in the Project Document are intended for planning purposes only.

8. REDUCING EMISSION FROM DEFORESTATION AND DEGRADATION IN LAO PDR

Sithong Thongmanivong, Chanhsamone Phongoudome, Sengrath Phirasack and Thoumthone Vongvisouk

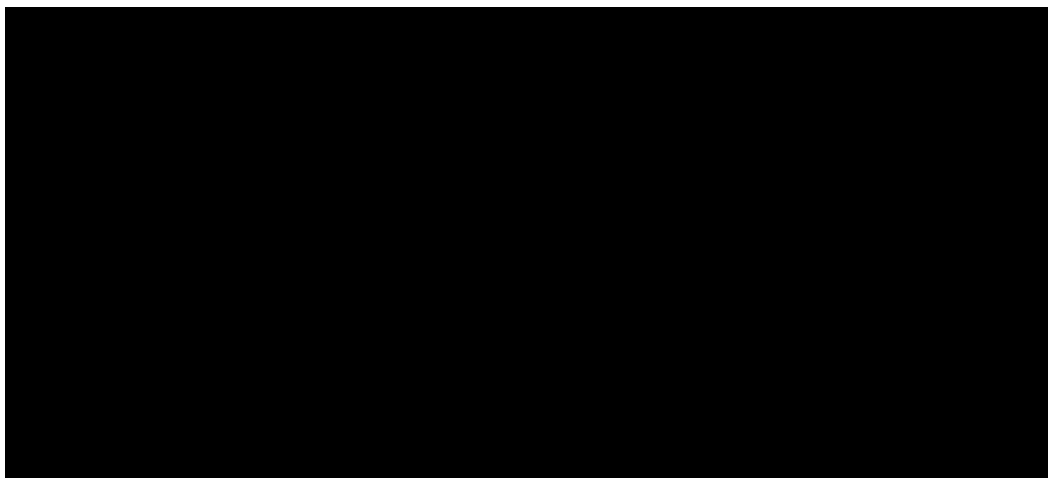
Project Scoping and Training Workshop for REDD in Indonesia, Cambodia and Lao PDR
Agency for the Assessment and Application of Technology, Jakarta, Indonesia
19th-23 Jan 2010

Lao PDR Response to Climate Change and REDD

- ☐ Lao PDR signed UNFCCC on 4/4/1995 and Kyoto Protocol in 2003 and is a Non Annex I Party of the UNFCCC
- ☐ Department of Environment, WREA is the focal point for UNFCCC and KP
- ☐ National Steering Committee on Climate Change was established in May 2008 by PM decree 48 (08/05/2008) comprising 17 parties, develop:
 - National Strategy on Climate Change up to 2020
 - Interim plan 2009-2011 and
 - First National Action Plan for 2011-2016
- ☐ DOF is the focal point for REDD

Forest Cover and Land Use Change

Average loss of current forest about 134,000 ha per annum equivalent to 0.6% of the total land area



Source : DOF

Main Drivers of Deforestation

- Encroachment into the forest for permanent cultivation
- Shifting cultivation (Northern part)
- Commercial timber logging (Central and South)
- Forest fires (Upland)

National Policies up to Present

- National Growth and Poverty Eradication Strategy
- Government strategy on environment protection
- National Biodiversity Strategy and action plan

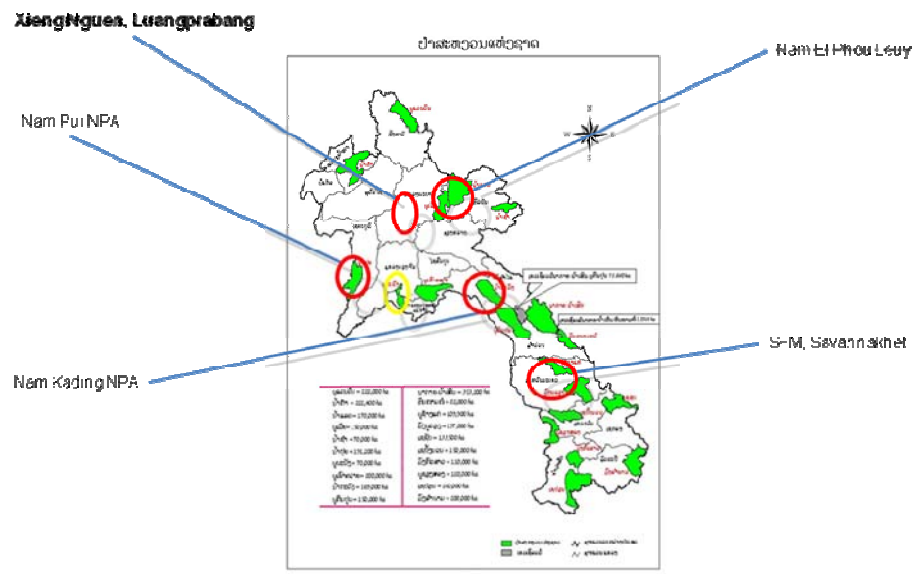
Forest policy and Forest strategy 2020:

- *Increase of forest cover 70% (through SFM, plantation development, forest restoration)*
- *Better management of protection forests*
- *Forest law enforcement and governance*
- Food Security and commodity production
- Land use planning and management policy
- National Climate Change Strategies

Actions on REDD and Progress

- Initiated by the Department of Forestry in 2007
- R-PIN of FCPF submitted in beginning of 2008 and approved in August 2008
- Setup Task Force for FCPF and REDD in Oct 2008, lead by DOF
- Application for R-Plan preparation (Draft)
- Study of deforestation drivers and forest cover changes
- Develop framework REDD and implementation strategies
- Develop baseline scenarios, monitoring system and inventory
- Institutional and stakeholder awareness and capacity building
- Identification of pilot project areas

Potential Pilot Project Area



Assistance Needs

- Development of spatial information technology include forest cover mapping as well as carbon stock accounting
- Monitoring and verification system
- Capacity building central, local and communities level in various aspects

9. REDD IN INDONESIA

Nur Masripatin

Director of the Centre for Social Economy and Policy Research, Ministry of Forestry

Email : nurmasripatin@ymail.com, nur_masripatin@forda_mof.org

INDONESIA: Climate Change relevance

- Country land area : app. 187 millions ha, population : app. 230 millions
- 7 major islands (from total of > 16 thousands islands), > 300 tribes,
- 33 provinces, > 300 districts, autonomous governance system
- $\pm 60\%$ of the country area are forest land/state forest ($\pm 37\%$ of them are degraded at various levels)
- Forest transition from the east (Papua : low historical DD) to the west (Sumatera : high historical DD, Java : forest cover increases)
- The Law No. 41/1999 on Forestry and Law No. 5/1990 on Biodiversity Conservation are the main references for managing forest.

REDD in Indonesia (REDDI)

- Phased approach (preparation : 2007-2008; readiness : 2009-2012; full implementation : 2013/ depending on Indonesia readiness and COP-decision),
- National approach with sub-national implementation,
- REDDI Readiness Strategy has been developed

I. Develop more effective conservation and management of protected area

- Review of national conservation plan,
- Completion of legal gazettal process of protected area boundaries,
- Training and professional capacity,
- Collaborative management and restoration ecosystem,
- Implementation of REDD demonstration activities involving a range of protected area types)

II. Develop more effective production forest management

- FLEG and VPA measures,
- Establishment of production forest management unit,
- Forest management certification,
- Investment in RIL,
- Establishment of community based plantation forest,
- Establishment of timber plantation in degraded forest land,
- Training and professional capacity building for production forest management unit (production FMU/KPHP) managers.

III. Options of supplying the requirement of the oil palm industry

Reducing pressure on forests

- Introduce way to avoid establishment of new oil palm plantation on forested land through provision for establishment by small holders in degraded lands.
- Rationalize the relationships between forest land (especially the functional zone of convertible forest) and non-forest land subject to land use decisions and spatial planning by local governments.

Policy guidance on land use for agriculture

- Agriculture expansion (including oil palm plantation) must be directed to area with mineral soils,
- Peat land uses for agriculture must comply with Minister of Agriculture Regulation (Permentan) No.14/2009,
- The issuance of new permits on degraded peat land forest for agriculture uses (including oil palm plantation)_taking into account forest land use policy_ shall meet the requirement and criteria for peat land utilization and based on recommendation resulted from environmental impact assessment.

IV. Capacity enhancement of local people in forest management related to REDD : will be one of the main activities for REDD readiness

Australian support for methodology development at the national level (development of National MRV system)

- Comprehensive and credible account of Indonesia's land-based emissions profile and sinks capacity
- Integrated system drawing together data from LULUCF sectors to provide a robust emissions profile using:
 - Remotely sensed land cover change data
 - Land use and management data
 - Climate and soil data
 - Growth and biomass data
 - Spatial and temporal ecosystem modelling

FCPF Indonesia Objective: Support REDDI Readiness

Three components

1. Analytical work
2. Management of Readiness process (synergy with activities supported by UNREDD)
3. Support Methodology development (REL and MRV)
(synergy with related activities supported by Australia , and UNREDD)

Activities supported by FCPF

- **Analytical works**
 - Analyze Drivers of Deforestation from a development perspective, land use and demands, demographic development; and
 - Identify priority investments needed to reduce deforestation and forest degradation
- **Management of Readiness**
 - Analysis of institutional setting and legal framework to manage the readiness process and ultimately the REDD implementation;
 - Capacity building of institutions involved in the implementation of REDD activities;
 - Financial Distribution Mechanism (in cooperation with Ministry of Finance);
 - Awareness Raising, Communication and Outreach; and
 - Monitoring of readiness activities including demonstration activities (management of data, lessons and donor coordination).
- **REL and MRV**
 - Studies to support the understanding of Land use and Management (indicated under MRV section in the R-PP):
 - (a) Analysis and possible mapping of nature and effect of land use on terrestrial carbon cycles;
 - (b) Development of a time series analysis of the primary social economic and policy aspects of land use change.
 - Other support on MRV and Information management
- **REDDI Readiness support : German Government**
 - Support to the forest management unit (FMU) development process at national and local level
 - Support to REDD regulatory framework
 - Support to the development of District REDD Demonstration Activities (3 Districts in Kalimantan, including collaboration with WWF)
 - Socio-economic baselines for pilot districts
 - Modeling of economic opportunities of REDD
 - Modeling of carbon stocks under different forest management scenarios.

4.0 Results & Discussion

INPUT TO THE WORKING GROUPS (Strawman - Discussion)

Opportunities – Funded REDD Pilot Activities

- Funding Targets for Implementation
 - US\$1 B bilateral funding
 - Other funds (existing or new but not bilateral)
- Project possibilities
 - National Level Approved New Activities (bilateral funds)
 - Assistance with existing projects (e.g. UNREDD, FCFP)
 - New activities in the “voluntary market”
- MSU Role: MRV systems & Policy support (backstopping)

Charge

- ID the way forward for us to propose potential REDD pilot activities (to develop project proposals)
 - Needs?
 - Project areas?
 - Funding level?
 - What agencies (people) need to be part of the project? Key people, agencies
 - In the next three months who can coordinate from each country team
- Report back tomorrow / discussion

Different REDD project models

- Concession areas
- Natural forest areas
- Community areas

Possible Criteria to Prioritize Project

- Katoomba (ROSE – REDD Opp. Scoping Exercise)
 - Amount of biomass/carbon
 - Size of area (large, medium, small)
 - Deforestation/degradation threat
 - Opportunity costs of alternative use
 - Clarity of land tenure
 - Potential for leakage
 - Replicability / Scalability
 - Potential social (community) and/or biodiversity co-benefits
 - Compatibility with livelihoods
 - Potential bundling with other PES
- FCPF
 - Demonstration activities
 - Governance level
 - Biomes

5.0 Conclusions

The outcomes of this project scoping workshop include:

1. Identification of REDD project activities in Cambodia, Indonesia, and Lao PDR
2. REDD project implementation plan for each of the three country REDD projects, including the identification of potential sponsorships. Another important aspect is the development and dissemination of REDD materials.

The training and project identification will lead to near-term activities for developing REDD projects with the express purpose of trading the avoided deforestation emissions on either the compulsory (Kyoto) market (post-2012) or the voluntary carbon market (Chicago Climate Exchange-pending an approved REDD protocol and/or to direct investors).

6.0 Future Directions

For each country, dissemination in each country will be important to support future implementation of REDD in each country. The dissemination to other developing countries especially in South East Asia is also important. Plans of further workshop for evaluation and monitoring the implementation of REDD have been discussed. It is proposed that the following workshop could be held at either Cambodia or Lao PDR.

References

- Bishry, Rony (2010), "REDD: The Forest People Participation," a paper, Training Workshop for REDD in Indonesia, Cambodia and Lao PDR, Asia-Pacific Network for Global Change Research (APN).
- Masripatin, Nur (2010), "REDD: The Case of Indonesia," a paper, Training Workshop for REDD in Indonesia, Cambodia and Lao PDR, Asia-Pacific Network for Global Change Research (APN).
- Thongmanivong, Sithong et.al (2010), "REDD: The Case of Cambodia, A Paper, Training Workshop for REDD in Indonesia, Cambodia, and Lao PDR, Asia-Pacific Network for Global Change Research (APN).
- Vanna, Samreth (2010), "REDD: The Case of Lao PDR, A Paper, Training Workshop for REDD in Indonesia, Cambodia, and Lao PDR, Asia-Pacific Network for Global Change Research (APN).

Appendix

Project Scoping and Training Workshop for REDD in Indonesia, Cambodia and Lao PDR

APN Project: CBA2009-03NSY-Bishry

PL: Dr. Rony Bishry

Implementing Agency: Badan Pengkajian dan Penerapan Teknologi (BPPT); Agency for the Assessment and Application of Technology

19 – 23 January 2010

Jakarta, Indonesia

Venue : Agency for the Assessment and Application of Technology (BPPT)

Participating Countries: Cambodia, Indonesia, Lao PDR, and United States

Expected Number of Participant: Cambodia = 4; Lao PDR = 4; US & International = 4; Indonesia = 10

Goals: Training and capacity-building in understanding REDD and methodologies for implementing REDD activities and initial identification of potential REDD pilot activities in each of the three countries.

19 January (Tuesday) P.I Dody (081328764158)

All day	Participants Arrive/Check in Hotel
15:00 – 16:45	Registration (for early arrivals)
17:00	Informal gathering for those who have arrived before 5 pm

20 January (Wednesday) Chair: Dr. Awal Subandar @ BPPT

08:00 – 08:45	Registration
09:00 – 09:10	Report by the Committee (Director of TISDA)
09:10 – 09:30	Opening Speech (Chairman of BPPT)
09:30 – 10:00	Overview of Project Activity: background/goals (J. Samek and R. Bishry)
10:00 – 10:30	<i>Morning break</i>
10:30 – 11:00	Keynote: REDD Issues (L. Leefers – tbc)
11:00 – 11:30	Keynote : Technology Needs Assessment for Climate Change in Indonesia (Deputy Chairman TPSA-BPPT)
11:00 – 12:00	Discussion, questions and comments
12:00 – 13:30	<i>Lunch</i>
13:30 – 14:00	REDD Cambodia – (tbd by H.E Ty Sukon)
14:00 – 14:30	REDD Laos World Bank FCPF R-PIN – Sithong Thongmanivong or other (tbd)
14:30 – 15:00	Nusantara Earth Observation Network at BPPT visit (P.I. Budi H Santosa)
15:00 – 15:30	Afternoon break
15:30 – 16:00	REDD Indonesia – Dr. Nur Masripatin
16:00 – 16:30	Discussion
16:30 – 16:45	Logistics & review of 21 st January's schedule
18:30	Dinner @ La Table Restaurant, Arcadia Hotel (Dinner @ La Table Restaurant, Arcadia Hotel)

21 January (Thursday) Chair Dr. Nani Hendiarti) @ Arcadia Hotel

09:00 – 10:30	REDD – MSU Peru (J. Samek)
10:30 – 11:00	<i>Morning break</i>
11:00 – 12:00	Technical session: baseline and monitoring (J. Samek)
12:00 – 13:30	<i>Lunch</i>
13:30 – 15:00	Technical session: Community participation (R. Bishry and tbd)
15:00 – 15:30	Afternoon break
15:30 – 17:00	Working group – Country specific: Issues & sub-
National level	REDD pilot projects
Evening	Dinner on your own

22 January (Friday) Chair. Dr. Rony Bishry @ Arcadia Hotel

09:00 – 10:30	Report back from working groups
10:30 – 11:00	<i>Morning break</i>
11:00 – 12:00	Discussion on way forward (data needs: RS/field; technical capacity), Final recommendations for sub-National REDD pilot projects and wrap-up
12:00 – 13:00	<i>Lunch</i>
13:00 – 17:00	Taman Mini Indonesia Indah (The Beautiful Miniature Park of Indonesia) visit (P.I. Meuthia Djoharin)
Evening	Dinner on your own

23 January (Saturday) P.I Dody (081328764158)

Various times	Participants depart
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Collaborating Institutions:

- Ministry of Environment, Cambodia
- Faculty of Forestry, National University of Laos, Lao PDR
- Global Observatory for Ecosystem Services, Department of Forestry, Michigan State University, United States
- Ministry of Forestry, Indonesia

List of Cambodian Participants to the REDD Meeting in Jakarta, Indonesia
19-23 February 2010

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	Gunawan Widyasmoko, Ssi.	LAPAN		
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Funding sources outside the APN

Contributions from Michigan State University

US\$2,600.00 for the travel and accomodation of Professor D. Skole – Principal Investigators from Michigan States University.

In kind contributions

- Ministry of Environment, Cambodia –personnel support and GIS data
- Agency for the Assessment and Application of Technology (BPPT), Indonesia- personnel support, workshop host, GIS data.
- Faculty of *Forestry, National University of Laos – personnel support, GIS data.*

List of Young Scientists

Dipl. Ing. Budi Heru Santosa, The Agency for the Assessment and Application of Technology, budihs@webmail.bppt.go.id, Role: Technical Material preparation fro the workshop and the technical documentation. Message: The workshop has provided broad perspective of the REDD and its potential implementation in the future years.

Glossary of Terms

BPPT: Badan Pengkajian dan Penerapan Teknologi (The Agency for the Assessment and Application of Technology)

REDD: Reduced Emissions from Deforestation and Forest Degradation

Workshop Photos



