‘New Mechanism Feasibility study for REDD+ in Prey Long Area, Cambodia’

By Conservation International Japan

FS Partner(s)	**- Conservation International Japan (CI Japan)** **- CI Foundation（CI-HQ and CI-Cambodia Progra** **- Kyusyu University** **- University of Hyogo**
Location of Project Activity	**The Prey Long Area, Cambodia**
Category of Project Activity	**REDD+**
Description of Project/Activity	**The target of this feasibility study (the study) is to assess the REDD+ project in the Prey Long Area, located in the center-north part of Cambodia. Currently, the target project area is around 560,000 ha. The boundary will be revised according to the final area of the Protected Forest to be established by Cambodian government.** **In the Prey Long Area, deforestation continues due to small scale, unplanned logging by local communities for their livelihood, and due to large scale logging by obtaining land concessions that lead land use change into agricultural activities. The deforestation rate in the Prey Long Area is much higher than average deforestation rate/year in Cambodia reported as 0.8%, therefore conservation of the Prey Long Area and the potential for REDD+ is regarded very highly.** **The study assess the feasibility of combining forest conservation activities by Conservation Agreement at the community level and the forest management by FA at each provinces in the Prey Long Area to reduce deforestation and emissions from deforestation in the area.**
Reference Scenario and Project/Activity Boundary	**The project area will be the area of Protected Forest which is under the process of establishment by Forestry Administration with the support of CI. Though the area has not been finalized as of February 2012, the overall consensus has been made between the provincial governors. The boundary stretches to provinces of Kratie, Kampong Thom, Stung Treng and Phear Vihear and FA estimates it is going to be around 400,000 ha.** **Reference region is the area where the project analyzes its deforestation rate, driver, and pattern as a geographical reference. Cambodian government identifies the nested approach from sub-national to national-level as national strategy on REDD+ in the REDD+ Roadmap. The candidate sub-national units under the examination were a province, cantonment or sub-cantonment level.** **For facilitating future process, the reference area needs to be consistent with a possible sub-national boundary decided by Cambodian government. Under this circumstance, the study applied entire four provinces where project boundary would locate as a reference region to draw the reference scenario.**
Monitoring Methods and Plan	**As the methodology for classification of forest cover and change (deforestation), the project applied method CI applies to more than eighteen countries around the world using Landsat imagery. This method overlays the images from two observed year to detect the area of land cover change considering the change of**

	reflection by using supervised classification method By overlaying the change detected from this classification method to land cover classification map, the type of forest that were deforested could be identified. The study applied the map created by Cambodian government for the land cover classification map. In addition, by referencing the data obtained during the field survey, various polygons were created using Google Earth according to the land cover classification as a training data. As previously described, the aim of this method is to detect the deforestation. Classification method applied two points of timing by using six bands of Landsat imageries.
GHG Emissions and Reductions	**The study estimated a few scenarios of GHG emission reductions amount by using the existing carbon stock data. Below is the extract of one result;** **・ Option 1: About 1.17 million tCO2 (2011-2020), about 3.25 million tCO2(2011-2025)** **・ Option 2: About 11.74 million tCO2 (2011-2020), about 21.06millon tCO2(2011-2025)**
MRV System for GHG Reductions	**<u>Overall</u>** **− The method based on IPCC's Guidelines for National Greenhouse Gas Inventories is preferred.** **<u>Measuring</u>** **− For the forest change and biomass, please refer section 4.4.** **− Collect the GIS data for existing approved information that leads to the deforestation (i.e., annual logging allocation, Concessions, Community Forestry.** **<u>Reporting</u>** **− Apply 'Approach three' of IPCC report the forest change based on the collection and understanding of spatial information.** **− The external validation process is also being discussed by UNFCCC. It is ideal to establish the external validation system to secure the transparency and reliability.** **− As for verification method, the comparison of the analysis result for forest change can be considered. As for biomass, literature review and comparison with national and international REDD+ projects can be considered.**
Analysis of Environmental, Socioeconomic and other Impacts (including Securement of Environmental Integrity)	**When PDD needs to be developed for the Prey Long Area in 2012 at the sub-national level, the project needs to consider applying either CCBS or REDD+ SES according to the discussion with FA.**
Financial Planning	**The budget for REDD+ activities for the Prey Long Area was estimated by applying 5% inflation rate for the period of 20 years of activities. The cost for carbon related projects such as monitoring etc. was not included this time.** **About 36 million USD was estimated for twenty years of REDD+ activities.**
Introduction of Japanese Technology	**The possible introduction of Japanese technologies are; the establishment of rangers' station, capacity building for satellite image analysis and biomass survey with high quality that are required for REDD+, the support for the sustainable agricultural technique, improvement of irrigation facilities, and finally transferring the ownership of the project to local entity after the capacity building. Regarding the transferring the ownership of activities, the scheme could be developed beyond the existing framework of JICA and could include the partnership with private sectors such as financial industries.**

"Co-benefits" (i.e. Improvement of Local Environmental Problems)	**The protection of the Prey Long Area would restore the very rare lowland ever green forest and also would contribute to conserve the ecosystems with globally recognized endangered species. This could be a great example for Cambodian government to contribute to the goal established by CBD by utilizing the REDD+ scheme also.**
Contribution to Sustainable Development in Host Country	**The forest in the Prey Long Area is important watershed to sustain the fishery and agriculture activities in Cambodia and in Vietnam, and also is the source of Non Timber Forest Product such as Resin which local communities are depending on their lives. The Prey Long Area is the remnant of large scale lowland evergreen forest and its protection is now at the highest priority. In addition, there are many indigenous communities living in the Prey Long Area. With their cultural background to depend their lives on the forest, those communities are protesting against the forest loss due to Economic Land Concessions. Based on these reasons, FA is preparing to declare the Prey Long Area as the Protected Forest by utilizing REDD+ scheme to contribute to create the benefit forest dependent local communities. Cambodian government regards the REDD as the most prioritized strategy within National Forest Program (2010-2029). Cambodian government aims to maintain the 60% of the forest rate by 2015 and aims to enhance the law enforcement and to strengthen the governance to protect forest. As a conclusion, the implementation of REDD+ in the Prey Long Area would definitely contribute to the most prioritized strategy of Host County.**

2011 New Mechanism Feasibility Study Final Report（summary version）
New Mechanism Feasibility Study 2011 – Final Report

Title: 'New Mechanism Feasibility study for REDD+ in Prey Long Area, Cambodia'

Name of Organization：Conservation International Japan

1. Implementation scheme of the study：

- Conservation International Japan (CI Japan)
- CI Foundation（CI-HQ and CI-Cambodia Program）【Study conducted by the outsourcing Entity】: Collection of local information, Communication and consultation with Cambodian government, Support organizing workshop, Collection of existing data and information at local level
- Kyusyu University: Partnership for forest inventory survey
- University of Hyogo：Translation of REDD+ training manual into Khmer

2. Project/Activity Summary：

（1）Project/Activity content

The target of this feasibility study (the study) is to assess the REDD+ project in the Prey Long Area, located in the center-north part of Cambodia. The REDD+ in Cambodia has been led by Cambodian government as a national level, supported by REDD+ Taskforce established by UN-REDD. Currently, the target project area is around 560,000 ha. Along with this study, Cambodian government is finalizing the boundary to establish Protected Forest in the area, and the final boundary is estimated to be around 400,000 ha.

In the Prey Long Area, deforestation continues due to small scale, unplanned logging by local communities for their livelihood, and due to large scale logging by obtaining land concessions that lead land use change into agricultural activities. According to the current analysis, evergreen forest is deforested at the rate of 1.81%/year and deciduous forest is deforested at the rate of 1.39%. As a whole, this deforestation rate is much higher than average deforestation rate/year in Cambodia reported as 0.8%, therefore conservation of the Prey Long Area and the potential for REDD+ is regarded very highly. Since 2002, CI had been implementing the forest conservation activity at the Central Cardamom Protected Forest located in the Southern East of Cambodia in partnership with local communities and Forestry Administration (FA). In Cardamom, Conservation Agreement with local communities by CI and law enforcement for forest management by FA had been implemented together. Since Cardamom project had shown success in the region, FA tasked with CI to explore the opportunity to implement the same scheme for the Prey Long Area by utilizing the REDD+ mechanism.

At this moment, the establishment of the Protected Forest in the Prey Long Area has been prepared by FA based on the support by CI. The aim of the study is to assess the feasibility of implementing the existing forest conservation project to the other region by designing the long-term financing plan as a REDD+ project. In summary, to assess the feasibility of combining Conservation Agreement at the community level and the forest management by FA at each provinces in the Prey Long Area in the longer term by involving community to reducing emissions from deforestation in the area.

(2) The status of host country

Cambodia has one of the highest levels of forest cover in Southeast Asia, with approximately 60% of its land is covered by the forest. Though 'the Cambodian Millennium Development Goal' aims to keep the 60% forest cover by 2015, the deforestation still continues at this moment. Forest falls under the regulatory and management jurisdictional authority of the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Environment (MOE). Protected Areas fall under the jurisdiction of the MOE, while Permanent Forest Reserve, flooded forests and mangrove areas fall under the jurisdiction of MAFF for direct management. Protected Forest falls is established in the area of Permanent Forest Reserve and its legal effect for forest protection is said to be stronger than the Protected Area.

Experiencing high deforestation rate due to commercial logging concessions after Pol Pot Government, Cambodian government issued declaration to halt the logging concessions in 2002 to reform the forestry sector and with the aim of introducing the sustainable forestry management. As a result, 3.4 million hectares of the existing concessions are remained as non-managed area without legal framework and are facing with potential threat of logging activities.

One of the biggest drivers of deforestation is Economic Land Concession (ELC). ELC is a kind of concession issued for land use for agricultural or forestry activities and is identified as the cause of deforestation at the big scale. Some of the ELCs are issued to foreign companies and being criticized that they are threatening the lives of local communities who depending their lives on the forest. ELCs and other concessions such as for mining are also being issued within the boundary of Protected Area under the jurisdiction of the MOE (IGES, 2011).

Meanwhile, REDD+ Taskforce was established encompassing various ministries in 2010, and the REDD+ Roadmap was created. The UN-REDD Programme approved funding to support the Cambodian government to prepare and to implement national REDD+ strategy and the activities started from November 2011 officially. REDD+ Roadmap is aiming the activities as follows;

I. to create REDD+ readiness plan including stakeholder consultation
II. to establish national REDD+ strategy and its framework
III. to establish monitoring system as well as to promote the capacity building to utilize the system

(3) Eligibility as a new mechanism:

Cambodia also has a relatively high rate of land-use change with FA statistics showing that 379,485 hectares of forest were lost between 2002 and 2005/6 (FA, 2007) equivalent to a deforestation rate of 0.8% a year[1]. As a consequence Cambodia has been classified as a "high forest cover, high deforestation country"[2]for the purposes of REDD+. Under the negotiation of UNFCCC, prioritization is given to identify drivers for high deforestation countries, to identify the way to stop the deforestation as well as to find the methodology to quantify the emission reduction amounts. Since about 20% of global GHG emissions are from deforestation, it is very meaningful to scientifically justify the importance of REDD+ in the national climate strategy of high deforestation countries with urgency. According to IPCC Assessment Report 2007, Of 49 billion tons of global GHG emissions (at the time of 2004), the emissions from deforestation is 5.8 billion tons. If we invest US$100 to 1 ton of CO2, forest can store 2.7 billion CO2 tons per year. If we invest US$20 to 1 ton of CO2, forest can

[1] Forestry Administration, 2007

[2] Griscom, B., Shoch, D., Stanley, B., Cortez, R. and Virgilio, N. 2009. Sensitivitiy of amounts and distribution of tropical forest carbon credits depending on baseline rules. Environmental Science and Policy 12: 897-911

store 1.6 billion CO2 tons per year.[3] Based on the background, REDD+ is considered as one of the most important climate change mitigation scheme by UNFCCC. If Japanese government wants to aim more ambitious emission reduction goal and wants to contribute to global climate change mitigation by contributing to support the developing countries' effort for their mitigation activities, REDD+ has to be clearly positioned within Japan's emission reduction strategy. When Japan considers this point, the consensus and applicability of negotiations under UNFCCC should be considered, and Japan should be open to the various support and expectation by developing countries when developing new mechanism.

The deforestation rate of The Prey Long Area is higher than the other areas, and it proves the urgency for the conservation of the area and its potential for developing REDD+ project.

(4) The method to disseminate the Project/Activity:

At the end of November 2011, CI Japan held the workshop attended by central/local government representatives and local NGOs. 50 attendees including the Deputy Director General of FA attended the workshop for three days to identify the drivers of deforestation based on the input from local people, and discussed the effective conservation method to deal with identified drivers. It is inevitable to establish the cross-cutting partnership between Cambodian government, provincial governments, International NGOs, local NGOs to disseminate the project/activity of the study since the target area under the study is too large with many indigenous communities. It is especially important that the project to follow the 'Free, Prior, Informed Consent (FPIC)'process to establish the governance encompassing the large area of four provinces. The international partnership with aid agency such as JICA can be also effective for establishing the network with local governments and NGOs to disseminate the project/activity.

3. Content of the Study

(1) Subjects of the Study:

- Identification of the deforestation drivers and developing the REDD+ strategies
- Collecting information on the driver for setting reference scenario
- Determining the project boundary
- Forest change detection
- Future deforestation prediction
- Developing a manual to support local communities to understand REDD+
- Host country's polity on Nested approach and sub-national level
- Applicable methodologies
- MRV

(2) Content of the Study:

Four surveys had been conducted in Cambodia during the period of this study.

① The first survey: August 22nd to 28th, 2011

CI Japan discussed the strategy of REDD+ in the Prey Long Area with FA. Along with this feasibility study, FA was preparing to establish the Protected Forest in the Prey Long Area with the support of CI. Thus, this study had been recognized as an important step to continue the forest conservation activities once legal framework was established. In addition, we

[3] Edited by Yasuko Kameyama and Yukari Takamura, 'Climate change and international cooperation: Kyoto Protocol and the path for multi-national collaboration' Chapter 5, Masahiro Amano, 'The treatment of forest in international measures and the direction for way forward'

obtained the full support from FA for conducting the workshop in October (extended to November) as well as collecting local data and information. CI Japan discussed the content and procedure of the study with CI Foundation including CI Cambodia, and confirmed the way to collect information to determine the approach, as well as to design the plan of the workshop.

② The Second survey: November 12th to December 5th, 2011

Filed Survey: To draw reference scenario by using the spatial model and to analyze the forest/non-forest classification based on the data and information from satellite image, CI Japan conducted the survey for the status of forest and deforestation within reference area with the support from FA. The targeted area included Stung Treng Province, Kratie Province, Kampong Tom Province, where most of area were included as the candidates for project boundary. As a preparation for this survey, the forest change map past ten years was created and the area of deforestation occurred were identified. Based on this analysis, CI Japan planned the route for field survey to prioritize to understand the pattern of deforestation in the specific area.

③ The third survey: February 12th to 17th, 2012

We continued to collect the information for ELC as the major driver of deforestation within the project area. We also met Dr. Omaliss Keo, REDD Focal Point for Cambodian Government, to exchange the information based on the draft report. The followings are the comments from FA;

- Dr. Omaliss and FA staffs are discussing governors to establish the Protected Forest in the Prey Long Area and the discussion is still continuing. Meanwhile, the boundary is almost finalized and agreed, and Dr. Omaliss mentioned that the boundary would be 10,000 hectors less than the one listed in the draft final report.
- The Prey Long Area is not listed as the REDD+ demonstration site by Cambodian government yet. However, since FA is considering to establish the Protected Forest in the Prey Long, they would like to establish the ranger's stations in the area by utilizing the existing grant from Japanese government.
- CI Japan shared the report of 'Driver's workshop' CI Japan held in November 2011 and asked for input.

The main outcomes for each of the subjects shown in 3(1) are as follows.

- Identification of the deforestation drivers and developing the REDD+ strategies
  - The three-day workshop was held at the end of November, 2011, and the main deforestation drivers were identified. The participants discussed the deforestation mitigation measures.
- Collecting information on the driver for setting reference scenario
  - Some data owned by FA were provided upon our requests.
  - Biomass data measured near the Prey Long Area were provided by Forestry and Forest Products Research Institute, Japan, and Kyushu University.
- Determining the project boundary
  - The information on the preparation process of the establishment of the Protected Forest in the Prey Long Area was updated.
- Forest change detection
  - Historical forest change maps were developed using Landsat images.
- Future deforestation prediction

- Future deforestation areas were predicted by applying two options.

- Developing a manual to support local communities to understand REDD+
  - "REDD+ Trainer's manual" was translated into Khmer.
- Host country's polity on Nested approach and sub-national level
  - The reference region, which was aimed to be consistent with the sub-national boundary, was determined for the study through discussion with FA.
  - Interviews to FA staff were conducted several times and revealed that FA was interested in VCS as the only standard currently available and also VCS's Jurisdictional and Nested REDD.
- Applicable methodologies
  - Two methodologies were identified as candidate methodologies: VM-0015 and VM0007.
- MRV
  - Cambodia's UNREDD program was launched at the end of 2011, and MRV is being designed under the REDD+ roadmap with supports from JICA.
  - MRV related discussions under UNFCCC and requirements under VCS were examined.

4. The result of feasibility study for New Mechanism Project/Activity

(1) The emission reduction impact of the project/activity

Since the deforestation continues in the Prey Long Area, it is possible to deal with the drivers of deforestation to halt the deforestation by conducting the project or activities that can reduce the emissions of GHGs. As a result of the 'Driver's of deforestation workshop' conducted within the period of the study, the most prominent drivers of deforestations in the area were; 1) small scale logging activity by local communities for their livelihood and 2) Large scale logging by private sectors. In order to deal with the first driver, identifying the area with high deforestation pressures and conducting the forest conservation activities such as Conservation Agreement and strengthening patrolling activities can be effective. To deal with the second driver, at first, turning the Prey Long Area into Protected Area or Forest Conservation Concession in order to implement REDD+ project was considered to stop turning the area to be assigned as a large concessions for large scale agricultural or forestry activities for the future. After a while, FA advanced their approach to turn the Prey Long Area into Protected Forest as a legal status based on CI's support. After the Protected Forest is established, the provincial governments within the Prey Long Area, Kampong Thom Province, Kratie Province, Stung Treng Province and Preah Vihear Province and FA will collaborate for law enforcement. The scheme to protect the forest after turning it into the Protected Forest along with local community and FA is already proved to be successful in CI's activity in the Cardamom Protected Forest. The long-term benefit as a result of support for REDD+ implementation will continuously support the implementation of these activities.

In order to prove the emission reduction impact, setting the reference scenario at the prior stage and the monitoring at the later stage is required (see section 4.2 and 4.5 in the detailed report). Since Cambodia plans to adopt the Approach three by IPCC based on their REDD+ Roadmap process, the ex-post monitoring requires the land cover change detection using the spatial analysis by using the satellite image.

As for methodology, the project plans to apply the approved methodology from Verified Carbon Standards (VCS) as the most developed methodology at this stage with possible deviation if required. Specifically, the project plans to apply 'Methodology for Avoided Unplanned Deforestation（VM0015）'for unplanned logging activities, and plans to apply 'REDD Methodology Modules (REDD-MF), v1.0（VM 0007）' for planned logging activities. Meanwhile, the logging of the forest by ELC is not very easy to treat as the planned logging

activities. This point needs further discussion with Cambodian government as the project lead so that the project can satisfy the standard required by VCS (See the section 4.5 in the detail report).

(2) Reference scenario and project boundary:

① Project Area

The proposed Protected Forest, which is under the process of establishment, will be the project boundary. The area of the inside boundary of the protected forest was approximately 560,000 ha as of the end of January 2012, but it will probably be close to 400,000 ha, according to FA. The boundary stretches to provinces of Kratie, Kampong Thom, Stung Treng and Phear Vihear.

② Reference region

Reference region is the area where the project analyzes its deforestation rate, driver, pattern as a geographical reference. At this moment, Verified Carbon Standard (VCS) has stated the consideration for 'Jurisdictional and Nested REDD Initiative (JNRI)' in order to analyze the reference level at the sub-national level. Cambodia government also shows interest in JNRI. Cambodian government also has started consideration for the way to divide their land into sub-national. The nested approach from sub-national to national has been identified as national strategy on REDD+ in the REDD+ Roadmap, and therefore sub-national delineation will have strong influence on the proposed REDD+ project in the Prey Long Area. For facilitating future process, it was considered that the reference area would need to be consistent with a possible sub-national boundary as much as possible. The candidate sub-national units under the examination were a province, cantonment or sub-cantonment level.

In this study, the entire four provinces, that is, Kratie, Kampong Thom, Stung Treng and Preah Vihear, were chosen as the reference area. Kampong Cham was also suggested to include due to its influence to the Prey Long Area. However, the study could not include this fifth province for the analysis this year due to time limitation.

(3) Monitoring method and plan:

Cambodia is planning to apply 'Approach three of IPCC' in their REDD+ Roadmap. For the REDD+ project in the Prey Long Area, Spatial modeling for forest change detection (activity data) by using satellite image and the change of carbon stock/hector before and after the logging activities will be used for calculating emission reduction amount.

① Forest change detection

CI has developed a simple and fast methodology for classification of forest cover and change (deforestation) that can be applied to forest monitoring efforts throughout the world. The classification process that CI uses is a supervised classification using two dates of imagery together. There are several methods, e.g., maximum likelihood classifier or decision tree classifier for a supervised classification process.

We used a decision tree classifier, which is more powerful, easier, faster and more accurate than MLC in this study. The Landsat scenes classified were 125/051 and 126/051, as defined by the world reference system of paths and rows for Landsat imagery. The classification goes back 10 years and includes 4 time periods namely circa 2001, c.2005, c.2008, c.2011. A 3x3 majority filter was used to reduce small variations and a final classified product with a minimum mapping unit of 1 hectare was created. Overall accuracy of the classification was 81%, while there was misclassification of pixels from non-forest to deciduous. The historical annual deforestation rates over the reference region were calculated as 1.81% for evergreen

forest and 1.39% for deciduous forest.

Unlike deforestation, methodology for detection of forest degradation has not yet technically established. In Kampong Thom, legal loggings to satisfy domestic timber demands are carried out, under Annual Coupes. Further examination is needed to determine how legal logging practice should be incorporated into REDD+ scheme.

② Forest Carbon Stock

Cambodian Government is developing the plan for National Forest Inventory with technical supports from JICA. The BOCM's monitoring plan should align with such effort to maximize efficiency and effect of capacity building, which will be a key for quality control of monitoring.

Below is a possible monitoring plan for forest carbon stock.

Table 1: Possible monitoring plan for forest carbon stock

Data	Frequency	Method
DBH, Species, Height (not all individual)	Every 5-year	・ Determine sample number for each of forest types ・ Set permanent sampling plots ・ 50 x 50 m plot for trees DBH > 30 cm ・ 20 x 20 m sub-plot for trees DBH > 7.5 cm
Allometry equation	If no parameter available, once	・ Use the manual being developed by FFPRI

(4) GHG emission reductions:

Expected GHG emission reduction was estimated by following the steps below.

Step 1. Definition of boundaries
Step 2. Analysis of historical land-use and land-cover change
Step 3. Analysis of agents, drivers and underlying causes of deforestation and their likely future development
Step 4. Projection of future deforestation
Step 5. Calculation of reference emission level (ex-ante)
Step 7. Calculation of project emission level (ex-ante)
Step 8. Estimation of leakage (ex-ante)
Step 9. Estimation of total net anthropogenic GHG emission reductions (ex-ante)

We applied two options to calculate reference emission level. Under the option 1, ELC-driven deforestation was not separated from unplanned deforestation, and spatial model was used for predict future deforestation inside the project boundary. Under the option 2, ELC-driven deforestation and unplanned deforestation were separately analyzed and future deforestation was estimated without applying spatial model. In the analysis, we used existing biomass data collected in the provinces of Kratie and Kampong Thom as no systematic plot survey had been conducted inside the Prey Long area yet. There were significant differences between the results from the two options.

Table 2: Estimated GHG emission reduction

Source of applied biomass data	GHG emission reductions （ton CO2）			
	Option 1		Option 2	
	2011 - 2020	2011 - 2025	2011 - 2020	2011 - 2025
FFPRI	1,170,546	3,251,908	11,741,149	21,055,583
Kyushu Univ.	1,348,166	3,759,105	13,516,528	24,250,739
Top, et al (2004)[4]	1,482,919	3,906,875	14,970,909	26,671,978

（5）MRV method for emission reduction impact：

Establishment of MRV (Measuring, Reporting, Verification) system is one of the six main themes of Cambodia's REDD+ Roadmap process. Demonstration activities have a role of contributing to the preparation process of REDD+ implementation according to REDD+ Roadmap. The REDD+ project in the Prey Long Area also plans to be recognized as a demonstration activities by national government and to contribute to the establishment of MRV and other areas needed for REDD+ implementation.

To coordinate the process of establishing MRV system, MRV/REL (Reference Level) technical team is planned to form within REDD+ Taskforce. This technical team is consisted of the members of FA, General Department of Administration for Nature Conservation and Protection, Fisheries Administration, Ministry of Land Management, Urban Planning and Construction and other relevant agencies as well as experts from outside and representatives from communities. As the first step, the role of each entity will be clarified in order to survey the needs for the training for MRV. As previously described, MRV for REDD+ will be based on 'Approach three' of IPCC and will measure, report and verify the activity data and emission factors. REDD+ Roadmap seeks the coherence for monitoring between sub-national and national level and the process will likely to encompass other provinces which have a potential for including other REDD+ projects. MRV of REDD+ should also consider the nested approach.

The REDD+ activity in the Prey Long Area calculates emission reduction amount based on the forest change detection and difference in carbon stocks of forest and post-deforestation. The method for measuring that are applicable for VCS methodology is considered at this moment, but the detailed plan for plot measurement and the establishment of implementation scheme by involving provincial governments and local communities are still pending issues within Cambodia.

CI Japan met Mr.Chivin Leng, Chief of Watershed Management & Forest Cover Assessment Office and Country Focal Point of REL/MRV to UN-REDD several times during the study period. At the time of second meeting, we heard the plan for MRV/REL technical team to start their work after January 2012 based on the decision of COP17.

Meanwhile, Cambodia already approved the REDD+ project in Oddar Meanchey targeting the community forestry site validated by VCS and The Climate, Community and Biodiversity Standards (CCBS). In addition, Wildlife Conservation Society (WCS) is also planning to develop project and PDD in the eastern part of Cambodia called Seima Forest targeting VCS validation. VCS also initiated the 'Jurisdictional and Nested REDD Initiative (JNRI)' which enables to nest the REDD+ project from project to sub-national level from early 2011, and guideline was publicized for public comment period. Since CI has many experiences for registering REDD+ projects by VCS in the world, CI contributed to the public comment

[4] Top, Neth, Nobuya Mizoue, and Shigetaka Kai, 2004, Estimating forest biomass increment based on permanent sample plots in relation to woodfuel consumption: a case study in Kampong Thom Province, Cambodia. J. For. Res., 9:117-123

process based on the current status and needs of REDD+ activities and one staff is appointed as a member of advisory committee. Thus, CI set up the meeting between Mr. Len Chivin and VCS AFOLU manager during COP17. Mr. Chivin was very interested in VCS's JNRI approach since there are a few projects are moving toward VCS validation within Cambodia and assured to exchange information between VCS for considering the MRV process from 2012.

As described above, the consideration of MRV process in Cambodia will start in 2012. However, contents considered for VCS JNRI's section can be referenced since reflecting the interest of Cambodian government. The consideration for MRV is divided into four parts in MRV section. Below is the list of main points at the time of public comment stage.

① The purpose and the components of monitoring and monitoring report
- Monitoring and monitoring report has to clarify the change of carbon sink and emission change within the targeted area, leakage and its activity area.
- Monitoring inventory has to follow the format which VCS is going to develop
- Monitoring report has to be verified by the third periodically.

② The scale of activities that can be the target of monitoring and he utilization of the data from small scale project
- As a boundary of monitoring, the area registered for other projects or areas that are registered VCS's JNRI can be excluded.
- If appropriate, higher level (i.e. sub-national project vs. project) scheme can apply to lower level scheme. Alternative way can be also applicable.
- If there are existing data both at higher level and lower level, consider the data from the lower level is more precise.

③ Monitoring method
- For RED, Land use change references 'approach three by IPCC'.
- For REDD and monitoring for forest carbon stock enhancement, direct or indirect method to be used.
- For the monitoring of AR projects, use remote sensing or inventory data.

④ Internal verification and quality control
- Include the text in the report with the quality control method based on IPCC Good Practice Guidance.

As for international negotiation, COP17 discussion for REDD+ adopted the decision for 'Safeguard information system' and 'Technical guidance for forest reference level', but failed to secure the time to discuss MRV. Regarding MRV, SBSTA will seek more detailed guidance from IPCC and will discuss at the 37th sessions of SBSTA to be adopted by COP18. The underlying cause of the delay of MRV discussion could be due to the fact that the modality of MRV will lead to the results based payment from REDD+ which will affect the financial assistance each countries will obtain. Since developing countries are at the various stages of REDD+ readiness phase, they might want to consider the topic very carefully. The venue for information exchange on this matter such as REDD+ Partnership and MRV Workshop will be more important for future process.

Based on the above, below is the content of MRV method that could be deployed for BOCM.

<u>Overall</u>
- The method based on IPCC's Guidelines for National Greenhouse Gas Inventories is preferred.

<u>Measuring</u>

- For the forest change and biomass, please refer section 4.4.
- Collect the GIS data for existing approved information that leads to the deforestation (i.e., annual logging allocation, Concessions, Community Forestry.

Reporting

- Apply 'Approach three' of IPCC report the forest change based on the collection and understanding of spatial information.
- The external validation process is also being discussed by UNFCCC. It is ideal to establish the external validation system to secure the transparency and reliability.
- As for verification method, the comparison of the analysis result for forest change can be considered. As for biomass, literature review and comparison with national and international REDD+ projects can be considered.

(6) Securing environmental integrity:

The most important point that the project has to consider when conducting REDD+ projects is the land use conversion from natural vegetation to others. By introducing monitoring method with high quality forest classification map and spatial analysis, the conversion of natural vegetation can be detected. In order to do so, the project needs to refine the leakage belt by understanding the drivers of deforestation. The project also needs to plan the way to deal with the drivers of deforestation.

As one way to acquire the environmental integrity, 'Climate, Community and Biodiversity Standards (CCBS)'can be considered. One of the REDD+ demonstration projects in Cambodia in Oddar Meanchey had been already validated by CCBS. Cambodian government is also interested in CCBS. CCBS is a standard developed by 'Climate, Community and Biodiversity Alliance' which can be applied to REDD+ at the project level. CI is also a member of CCBA. Meanwhile, CCBA and Care International also developed 'REDD+ Social and Environmental Standard', which can be applied to national or provincial level REDD+ initiatives. As a result of interviewing REDD+ SES secretariat, they are discussing with Cambodian government for possible collaboration for the future. Meanwhile, since REDD+ SES creates indicators for REDD+ program at national level, it might take some time for Cambodian government to conduct the social and environmental analysis to join REDD+ SES. REDD+ SES and UN-REDD collaborates to exchange information and also held the side event during UNFCCC meeting in the past. When PDD needs to be developed for the Prey Long Area in 2012 at the sub-national level, the project needs to consider using either CCBS or REDD+ SES according to the discussion with FA.

(7) Other potential impact:

There are 250,000 people living in about 340 villages in the Prey Long Area. Most of them depend their lives on the forest. At the same time of preventing deforestation and degradation, it is also important to secure the access to forest resources for local communities and stakeholders. To educate the meaningfulness of REDD+ and to prevent the negative effect, we developed the 'REDD+ training manual' in Khmer. This Manual is aimed to use to raise the leaders who can disseminate the REDD+ concept in the communities. The actual training to local community is one of the pending issues for the next step.

(8) Stakeholder's comments:

The stakeholder for REDD+ is very diverse and spreads to the wide range of target. The understanding for REDD+ or need for forest conservation is lacking especially at the local level, thus the project needs to collect the comments through the training. Therefore, the

project prepared the training manual this year in Khmer as a preparation for collecting stakeholders' comments.

In addition, the project conducted the participatory workshop at the end of November to identify the drivers of deforestation and to exchange the various opinions between attendees. These comments were reflected to the reference scenario of REDD+. For the detailed report of the workshop, please refer to the section 4.2 of the detailed report.

(9) Project/Activity implementation scheme:

The project implementation scheme for the Prey Long Area had been discussed by FA and CI Cambodia. As a result, two implementation schemes for different phases could be considered at this stage.

① Idea for implementation scheme at the readiness phase

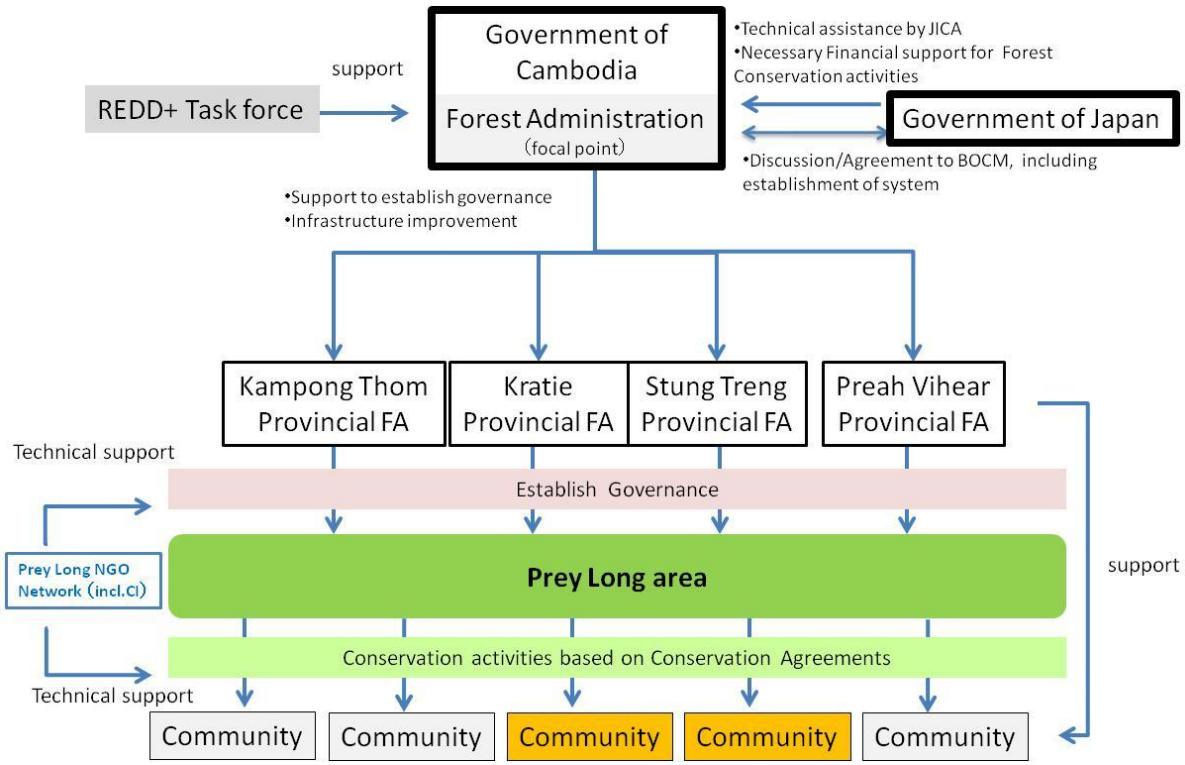

Figure 1 Project implementation idea for readiness phase

By considering the establishment of BOCM between Japanese and Cambodian government, the project prepares the infrastructure development needed for forest conservation activities based on Japanese government's existing support. By also combining the technical assistance by JICA, the project pilots the forest conservation activities based on Conservation Agreement CI Cambodia conducted in Cardamom. Since the Prey Long Area is too large and over 20,000 people live in the area, the project will identify and will prioritize the core zone to best protect the forest in consultation with FA and local governments, and start the pilot Conservation Agreement activities with community. At the same time, in partnership with aid agency such as JICA, the project will conduct the FPIC process to each provinces by creating 'Prey Long NGO Network' including CI Cambodia to disseminate the understandings of REDD+ to enforce the legal framework and finally to obtain the understanding from local communities. As a result, the pilot activity will be planed to prevent the displacement of

community to the other area, and will make an effort to strengthen the governance in the area. The local communities that are directly dependent on the forest are important contributor for the success of REDD+. By esteeming the rights of local communities, the project will seek the alternative sources instead of activities leading to deforestation and degrading ecosystem service through Conservation Agreements. Through this pilot activity, the project will identify the best implementation scheme for local community to be involved for the REDD+ project.

② Idea for implementation scheme after agreeing on BOCM

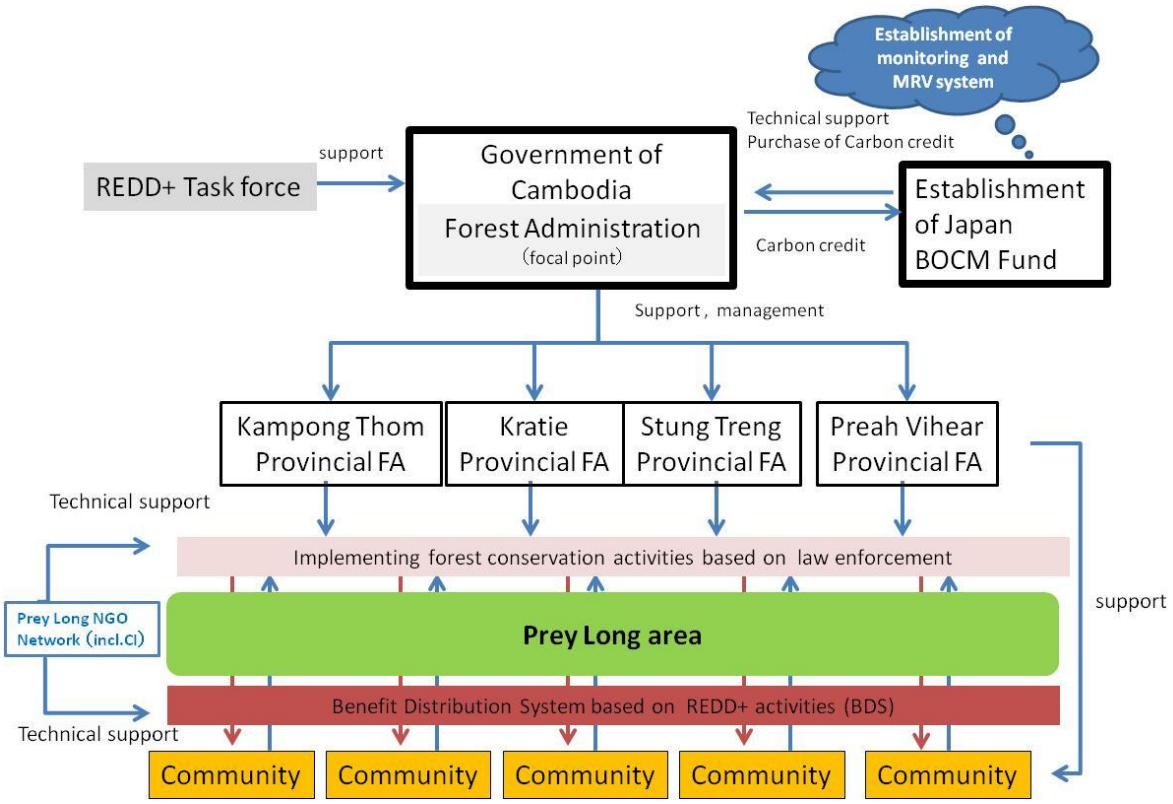

Figure 2 Project implementation idea after agreeing on BOCM

As a result of hearing, Cambodian government stated the establishment of the fund for REDD+ implementation in the Prey Long Area would be ideal. Cambodian government wants to establish the fund within the country, but the treatment of such fund should be discussed at the bi-lateral level. Meanwhile, as a result of merger of JICA and JBIC, the combination of technical and financial assistance including the establishment of fund can be now considered. If such combination can be materialized, the BOCM could be very meaningful for developing countries. When establishing the fund, the monitoring and MRV system should be established by considering the progress of negotiation of UNFCCC and VCS. In addition, the benefit sharing system between Cambodian government and communities should be determined. The Conservation Agreement activities that were identified as the most effective during the readiness phase should be continued to support the local communities.

While large amount of bilateral support had been observed such as by Norway, the delay of actual REDD+ activities on the ground had been also observed. The combination of technical assistance, BOCM and creation of NGO network who can be one of the players of forest conservation at the local level is something Japan can consider as the new way to support the REDD+.

In addition, the establishment of fund is also effective for promoting the investment by private sectors. According to the study session CI Japan had been conducting with Keidanren Nature Conservancy Fund, while the delay of negotiation for UNFCCC had been observed, there were many companies that want to contribute to biodiversity conservation or sustainable development of developing countries. If small amount of investment could be accepted by the fund, it was favorable since the company could communicate both CSR and climate change mitigation effort at the same time.

（10）Financial Plan：

The budget for REDD+ activities for the Prey Long Area was estimated as an assumption. As a preliminary assumption, we have applied 5% inflation rate for the period of 20 years of activities (Table 3). This time, we did not estimate the cost for carbon related projects such as monitoring etc.

Table 3: Budget for REDD+ activities

Classification	Cost Item
Project Implementation	Stakeholder Consultation
	Biodiversity Survey
	Quarterly meeting between government and community, Designing of patrol plan
	Training
	Patrol(Salary)
	Fuel
	Dissemination activities
	Biodiversity and socio-economic monitoring
	Automobile, Motorbike, GPS, Camera, Boots, Uniform
Project Management	Supervision of the project, Overall administrative management activities
Community Development	Conservation Agreement
	Small scale business for the communities
	Clinic
	School

About 36 million USD was estimated for twenty years of REDD+ activities.

The aim of this study is to manage the Protected Forest in long term by utilizing the REDD+ scheme after the establishment of the Prey Long Protected Forest. However, the time is required in order to issue the credit that can sustain the project from the income of marketing the credit.

Meanwhile, the success of REDD+ is dependent on the support for both to phase one (readiness stage) and to phase two (preparation and implementation phase). Japan supports Cambodia through various ODA and research program. Ministry Foreign Affairs supported Cambodian government with 900 million Japanese yen grant under ‘Forest Conservation Program’. JICA also provide various support for forest sector in Cambodia, while starting the pre-feasibility study for BOCM for Cambodia. In addition, Ministry of Economy, Trade and Industry support other feasibility study and Forest and Forest Product Research Institute of Japan provides monitoring support to Cambodia. It will be a responsibility of Japan to combine wisely those various support to contribute to establish most effective BOCM scheme. In addition, since JBIC and JICA have been merged, JICA can now provide financial support

such as 'Climate Change Program Loan' in addition to technical assistance they had been providing in the past. What is lacking in Cambodia now is to combine various supports from Japan to contribute to the success of national REDD+ program in Cambodia. Also, during the 'REDD+ study session' held by CI Japan with Keidanren Nature Conservancy Fund, there was opinion that the utilization of knowledge by private financial industry such as trust bank can be considered in order to manage and to distribute the benefit equally to the stakeholders.

(11) The promotion of Japanese technology to be deployed by the project:

Japan's ODA for forestry area is one of the top in the world and recognized highly in Cambodia also. Since REDD+ achieves the forest conservation and also contributes to the sustainable development of the host country while contributing to decrease the deforestation, the BOCM which can continuously provide the financial support for REDD+ activities has a very high potential. Meanwhile, there are large cost and support required to start REDD+ project. Combining the support for start up phase of the REDD+ and BOCM would not only uplift Japan's image in the host country but also would accelerate the dissemination of REDD+.

Based on the achievements of support by Japanese government in forestry sector, the possible promotion of Japanese technology deployed by the project include; the establishment of rangers' station, capacity building for satellite image analysis and biomass survey with high quality that are required for REDD+, the support for the sustainable agricultural technique, improvement of irrigation facilities, and finally transferring the ownership of the project to local entity after the capacity building. Regarding the transferring the ownership of activities, the scheme could be developed beyond the existing framework of JICA and could include the partnership with private sectors such as financial industries. Since Cambodian government is preparing the REDD+ readiness based on REDD+ Roadmap, the support to host country should also consider and follow the REDD+ Roadmap.

(12) Future plan and issue:

Though this FS study will conclude after the submission of final report in March, the following points were raised by FA in order to materialize the REDD+ project in the Prey Long Area as the next step;

- Conduct the forest conservation activities
- Community Engagement
- Identify the reason for causing illegal settlement
- Conduct the forest management
- Search for financial plan
- Draft PDD: Since Cambodia already has validated VCS project, VCS's 'Jurisdictional Nested Approach' would be considered. However, Cambodian government also showed concern for the time and cost required by VCS for its validation and verification processes. If there is rigorous, reliable and internationally applicable method can be applied in order to conduct the REDD+ urgently, Cambodian government would like to know it for consideration.
- Plot survey: Since this year's study only applies the plot data from literature, Cambodian government thinks it is important to conduct the plot survey in order to conduct REDD+.

It is important to create the detailed framework for BOCM by considering the flexibility according to the national circumstances of developing countries as decided at UNFCCC. In

order to do so, it is ideal above points to be discussed between Cambodian government.

As an additional consideration, the establishment of Protected Forest in the Prey Long Area is now at the final phases. The Cambodian government had been very proactive for initiating REDD+ project especially in the Prey Long Area throughout the period of feasibility study. Meanwhile, the designing of BOCM needs through discussion reflecting the interest of both countries at the adequate timing. The proactive discussion by Japanese government would be very important for the future process. For the implementation, since the Prey Long Area is large with many stakeholders, strengthening the network would become very important factor. Since REDD+ requires diverse players and components, it can't be successful without cooperation of entities in various areas including government and NGOs for community development, economic and educational field. The experience and lessons learnt from the workshop conducted by this study is very important to pave the way for REDD+ implementation in the area. Regarding technical side, the biomass data collection within the Prey Long Area and the land classification after deforestation and its carbon stock, and the ELC remained as the issue to be surveyed further. Also, the part of Provinces within the Prey Long Area issues the annual logging concessions, and the decrease of the forest carbon stocks from those areas was identified as an issue to be researched further. These issues need to be resolved one by one in order to create credible and internally recognized way to estimate emission reduction amount aiming at the higher quality project.

5. Co-benefits survey result

It is recommended to apply either CCBS or REDD+ SES to the project to avoid the negative effect and to bring benefit to local communities by developing REDD+ project in the Prey Long Area.

If the Prey Long Area is effectively conserved and wildlife in the area can be revived to the level of other protected area within Cambodia, the importance of protecting the Prey Long Area would be dramatically increase both at national and international level. In addition, the protection of the Prey Long Area would restore the very rare lowland ever green forest and also would contribute to conserve the ecosystems with globally recognized endangered species. In summary, the protection of the Prey Long Area could be a great example for Cambodian government to contribute to the goal established by CBD by utilizing the REDD+ scheme. Since Japan had been a chair of CBD and also took leadership for CBD-COP10, it is very meaningful for Japan to contribute to REDD+ project that can contribute to the biodiversity conservation. It would also add various potential for characterize Japan's way to support the REDD, and have a great potential to draw the result of biodiversity conservation based on the support.

6. Survey for the contribution to sustainable development

The forest in the Prey Long Area is important watershed to sustain the fishery and agriculture activities in Cambodia and in Vietnam, and also is the source of Non Timber Forest Product such as Resin which local communities are depending on their lives. Since many of the Protected Area in Cambodia is located at the hilly and mountainous area, the conservation of lowland evergreen forest such as the Play Long has been delayed and its protection is now at the highest priority. In addition, there are many indigenous communities living in the Prey Long Area. With their cultural background to depend their lives on the forest, those communities are protesting against the forest loss due to ELCs. Based on these reasons, FA is preparing to declare the Prey Long Area as the Protected Forest by utilizing REDD+ scheme to contribute to create the benefit forest dependent local communities. The REDD+ project in the Prey Long Area is expected highly as the way to sustain the lives of local communities in the surrounding area. In addition, Cambodian government regards the

REDD as the most prioritized strategy within National Forest Program (2010-2029). Cambodian government aims to maintain the 60% of the forest rate by 2015 by enhancing the forest law enforcement and as well as by strengthening the governance structure. As a conclusion, the implementation of REDD+ in the Prey Long Area would definitely contribute to the most prioritized strategy of Host County.