FY 2015 Feasibility Study
for the Joint Crediting Mechanism for Reduced Emissions from Deforestation
and forest Degradation-Plus in Developing Countries

(Feasibility Study on the REDD+ Project with minimizing forest disturbances by
enhanced diversity and competitiveness of wood products including wood chips)

Final Report

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Kanematsu Corporation
Japan NUS
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Abbreviations

CDM  Clean Development Mechanism
JCM  Joint Crediting Mechanism
REDD+ Reducing Emissions from Deforestation and Forest Degradation
COP  Conference of the Parties (to the UNFCCC)
MDF  Medium Density Fiberboard
JICA Japan International Cooperation Agency
UN-REDD United Nations REDD Programme
PRAP Provincial REDD+ Action Plan
MRV Measurement, Reporting and Verification
SNV Stichting Nederlandse Vrijwilligers
VCS Verified Carbon Standard
MARD Ministry of Agriculture and Rural Development
MONRE Ministry of Natural Resources and Environment
FIPI Forest Inventory and Planning Institute
UNFCCC United Nations Framework Convention on Climate Change
BUR Biennial Update Report
INDC Intended Nationally Determined Contributions
BaU Business as Usual
GHG Greenhouse Gas
DMHCC Department of Meteorology, Hydrology and Climate Change
NIR National GHG Inventory Report
LULUCF Land Use, Land Use Change, and Forestry
NFS National Forest Strategy
NFI National Forest Inventory
R-PIN Readiness Project Identification Note
VNFOREST Vietnam Administration of Forestry
VRO Vietnam REDD+ Office
NRAP National REDD+ Action Program
REL Reference Emission Level
RL Reference Level
FREL Forest Reference Emission Level
FRL Forest Reference Level
EF Emission Factor
PPC Provincial People’s Committee
DARD Department of Agriculture and Rural Development
GIS Geographic Information System
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODA</td>
<td>Official Development Assistance</td>
</tr>
<tr>
<td>GCF</td>
<td>Green Climate Fund</td>
</tr>
<tr>
<td>BMU</td>
<td>Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety</td>
</tr>
<tr>
<td>FSC</td>
<td>Forest Stewardship Council</td>
</tr>
<tr>
<td>PFES</td>
<td>Policy on Payment for Forest Environmental Services</td>
</tr>
</tbody>
</table>
1. **Outline of the Survey**

1.1 **Purpose of the survey**

Japan has excellent technologies and products that could contribute to the reduction in GHG emissions outside Japan, for tackling the climate change issue. However, “Clean Development Mechanism (CDM),” which institutionally supports the distribution such technologies and products in developing countries under the framework of the United Nations, still has not supported a sufficient amount of Japanese superior low-carbon technologies, such as energy-saving, new energy, and highly efficient coal-fired thermal power technologies. In addition, it is difficult for small to medium-sized developing countries to utilize such technologies, because of cumbersome procedures, complex screening processes, etc. Accordingly, the situation is insufficient for Japan to contribute to developing countries with its low-carbon technologies and products.

In this circumstance, the Japanese government is developing a system for complementing CDM called “Joint Crediting Mechanism (JCM),” which quantifies the contribution of Japan to the reduction and absorption of GHG emissions through the distribution of GHG reducing technologies, products, systems, services, infrastructure, etc. in developing countries and other environmental measures, and then utilizes it for attaining the goal of reducing GHG emissions of Japan.

Japan has already signed bilateral agreements regarding JCM with Asian and African countries, etc. and started concrete projects with some of these countries. JCM is expected to produce some good results.

On the other hand, “Reducing Emissions from Deforestation and Forest Degradation in Developing Countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries” (REDD+) was described as a means for increasing the CO2 absorption amount in the Paris Agreement adopted at the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21), increasing its importance. The signatory countries of JCM have keen interests in REDD+, and it is expected that a JCM project related to REDD+ would lead the world.

The purpose of this study is to visualize the possibility of the contribution of Japanese enterprises in the field of REDD+, by discussing the possibility of concrete cooperation in projects related to REDD+ and adoptable methodologies for reducing emissions, and researching how to develop financial and other environments for implementing the projects, in Vietnam, which signed the bilateral documents regarding JCM in July 2013.

1.2 **Content of the Study**

Kanematsu, the primary coordinator of this study, mediates the import of wooden chips from Thuy Son in Ca Mau, Vietnam, and supplies materials to a Japanese manufacturer of wood materials (medium density fiberboards [MDFs]). Thuy Son is a local enterprise established in 1994, which has plantation with

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an area of about 1,000 ha and procures chips in Ca Mau. Its recent performance is favorable. The company
plans to expand the area of the land for producing wood chips to 29,000 ha by 2023 in the afforested land
owned by U Minh Ha Forest Company, a government-owned forestry company (Figure 1-1). Thuy Son
only manages the plantation based on U Minh Ha Forest Company’s direction.

However, a part of the target area is peatland including natural forests. Accordingly, if this area is
cultivated as re-afforested land for producing lumber, peat will be exposed to air and decomposed, and the
carbon accumulated underground will be emitted to the atmosphere.

In the original proposal, it was planned to abate the GHG emission derived from peat from the
managed area through cultivation, by setting the area for production at 5,000 ha, rather than 29,000 ha.
The conservation of peat would inhibit the emission of carbon, prevent the oxidation of acid sulfate soil
existing deep under the ground, and avoid the negative effects on ecosystems, including surrounding soil,
water, and melaleucas for producing lumber. Therefore, the conservation of peat would be consistent
with the protection of natural forests and their biodiversity, which is included in the safeguard list
written in Cancun Agreements adopted in 2011, and contribute to the preservation of natural forest and ecosystem services.

However, when the team (Kanematsu / JANUS) interviewed local and JICA staff about the situation of REDD+ in Vietnam in this study, it was found that the Vietnamese government designed and implemented a national REDD+ program and project-based REDD+ activities do not match the governmental policy. It was also revealed that the REDD+ scheme designed by the Vietnamese government does not include the peat contribution. Accordingly, the team partially changed the study plan, and suggested that the reduction in emissions due to peat should be included in the Provincial REDD+ Action Plan (PRAP) produced by the Vietnamese government and the provincial government of Ca Mau, which is one of 6 pilot provinces, in cooperation with UN-REDD, to develop the foundation for implementing a concrete project.

In detail, the following items were studied and discussed for developing the foundation for establishing the first JCM-REDD+ project in Vietnam.

(1) Overview of current status and policies on REDD+, Climate Change and market of the proposed project in Vietnam and Ca Mau Province

The team studied the climate change situations in Vietnam and Ca Mau, and examined the support systems for implementing the REDD+ project. In addition, the team checked whether there are incentives for Thuy Son in local measures. Furthermore, the team summarized items related to securing project execution that do not just solely rely on the credits of REDD+.

- Literature review
- Interviews with related international and local entities

Possible interviewees: UN-REDD, Ministry of Agriculture and Rural Development (MARD), Ministry of Natural Resources and Environment (MONRE), Ca Mau provincial government, JICA, etc.

(2) Discussions on the business potential of the project, necessary finance

The project proposed through this study (hereinafter called “this project”) is aimed at securing the profitability by selling and exporting wood pellets and briquettes, rather than depending solely on the income from credits. The team estimated cost for conducting the business. We also discussed necessary finance based on the estimates for continuing the project in the following fiscal year, while considering the utilization of the subsidies of the Ministry of the Environment and JICA as well as international institutions in the longer term.

- Understanding the situation of the Daviwood project
- Cost estimation for investment judgment
- Discussion of necessary finance for the next steps
(3) MRV methodology and calculation of emission reduction

① Peat existence, depth and other related information

This project area is located in southern Mekong Delta where there are many peatlands, but the data on distribution and depth of the peat are limited. On the other hand, according to the survey conducted by Stichting Nederlandse Vrijwilligers (SNV) in the nearby U Minh Ha National Park in 2010, the peat layer in the national park is 0.4 to 1.2 m thick. This indicates the high possibility of peat existence in the project area. The original purpose of this study was to estimate the accumulation of carbon stocks and potential for carbon emission reductions by conducting field survey on the existence of peat, measuring its depth, etc.. However, it became necessary to reflect the study results to the PRAP so that peat component will be included in the PRAP in Ca Mau, before discussing the feasibility of each project. Therefore, the study on peat in this study was conducted through literature review and interviews. By using the knowledge obtained through this study, the team communicated with stakeholders including UN-REDD, officials in Ca Mau, to add the peat components to the PRAP of Ca Mau, in the light of implementation of the project in future. In addition, the team collected basic data for producing the MRV methodology.

・ Assembling information on the existence and depth of peat (refer to the surveys on the existence and thickness of the peat layer and survey methods in existing literature especially surveys conducted by SNV in 2010 and 2014)

・ Meetings and coordination with stakeholders for establishment of the PRAP

② Discussion on the MRV methodology in peatland

Regarding the MRV methodology in peatland, there are already established methodologies such as the Verified Carbon Standard (VCS), the JCM-REDD+ project in Indonesia, etc. For the MRV methodology of REDD+ in Vietnam, its concept, the method for calculating biomass on the ground, etc. have been summarized somewhat in the UN-REDD projects, but there have been no concrete cases of project-based methodology in peatland. The team discussed the MRV methodology based on the concepts of existing methodologies, such as VCS, so that the MRV methodology unique to peatland in the project area is to be discussed in the coming fiscal year or later.

・ Scrutinizing existing methodologies by checking literatures

・ Discussion on potential for emission reductions in this project

(4) Safeguard program and other related impacts

In this REDD+ project, Thuy Son will be able to earn some revenue from the manufacturing of new pellets and briquettes in the above mentioned Daviwood project, without relying solely on credits from REDD+. With this, it would be possible to support small-sized farmers. We also discussed other related impacts regarding safeguard.

・ Understanding the Daviwood project

・ Study on policies of Ca Mau with literature, interview, etc.

・ Discussion on related impacts
1.3 Study team

The study team and relations with other stakeholders in this study is as shown in Figure 1-2.

Figure 1-2 Study team and other stakeholders
2. Overview of current status and policies on REDD+, Climate Change and market of the proposed project in Vietnam and Ca Mau Province

In this section, results on literature review and hearing of stakeholders in the related policies fields are presented. The team conducted hearings with UN-REDD, JICA, FIPI and other related stakeholders.

2.1 Climate change policies in Vietnam

2.1.1 Policies on GHG emission reduction and adaptation


Vietnam submitted Intended Nationally Determined Contributions (INDC) to UNFCCC prior to COP21 in December 2015. In the document, Vietnam articulates its emission reductions target which is to reduce GHG emissions by 8% compare to Business as Usual from 2012 to 2030. It also states emission reduction can be increased up to 25% with international support.

Vietnam is providing following policies to achieve these goals.

- Law on Environment (6/2014)
- Resolution No. 24-NQ/TW on “Pro-actively responding to climate change, enhancing natural resource management and environmental protection” (6/2013)
- National Climate Change Strategy (12/2011)
- National Green Growth Strategy (9/2012)
- Decision 1775/QĐ-TTg on “Management of GHG emissions; management of carbon credit trading activities to the world market” (11/2012)
- National Target Programme to Respond to Climate Change (2008, 2012)
- Action plans at the national, ministerial, sectoral and local levels on climate change response and disaster risk prevention and reduction

Actions to be taken are shown as follows:

1. Strengthen the leading role of the State in responding to climate change
2. Improve effectiveness and efficiency of energy use; reducing energy consumption
3. Change the fuel structure in industry and transportation

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2 Intended Nationally Determined Contribution of Viet Nam
http://www4.unfccc.int/submissions/INDC/Published%20Documents/Viet%20Nam/1/VIETNAM'S%20INDC.pdf

4. Promote effective exploitation and increase the proportion of new and renewable energy sources in energy production and consumption

5. Reduce GHG emissions through the development of sustainable agriculture; improve effectiveness and competitiveness of agricultural production

6. **Manage and develop sustainable forest, enhance carbon sequestration and environmental services; conservation of biodiversity associated with livelihood development and income generation for communities and forest-dependent people**

7. Waste management

8. Communication and awareness raising

9. Enhance international cooperation

REDD+ is included in “6” and the status and evaluation is to be conducted when National Communications and Biennial Update Report are updated.

### 2.1.2 GHG emissions

MONRE is responsible for climate change policies and Department of Meteorology, Hydrology and Climate Change takes charge in organizing National GHG Inventory Report (NIR).

NIR for 2005 and 2010 has been submitted in 2013 and 2014 respectively with support by JICA. GHG emissions in 2005 and 2010 are 175,471 Gg CO$_2$e and 246,831 Gg CO$_2$e; emissions in 2010 is 1.4 times more than those in 2005 (Figure 2-1, Table 2-1).

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4 National GHG Inventory Report 2010 of Vietnam
Table 2-1 Total GHG emission/removal by gas in 2005, and 2010 (Unit: GgCO2)

<table>
<thead>
<tr>
<th></th>
<th>CO2</th>
<th>CH4</th>
<th>N2O</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
<td>2010</td>
<td>2005</td>
<td>2010</td>
</tr>
<tr>
<td>Energy</td>
<td>78,770</td>
<td>124,799</td>
<td>249</td>
<td>413</td>
</tr>
<tr>
<td>Industrial Processes</td>
<td>10,807</td>
<td>21,172</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0</td>
<td>28,538</td>
<td>30,446</td>
</tr>
<tr>
<td>LULUCF</td>
<td>-24,498</td>
<td>-20,348</td>
<td>119</td>
<td>117</td>
</tr>
<tr>
<td>Waste</td>
<td>8</td>
<td>65</td>
<td>1,695</td>
<td>1,838</td>
</tr>
<tr>
<td>Total with LULUCF</td>
<td>65,087</td>
<td>125,689</td>
<td>30,601</td>
<td>32,814</td>
</tr>
<tr>
<td>Total without LULUCF</td>
<td>89,585</td>
<td>146,037</td>
<td>30,482</td>
<td>32,696</td>
</tr>
</tbody>
</table>

Emissions from peat is included in the category of “Wetlands” in the NIR. Emissions from peat is 903.71 GgCO2e, which only accounts for less than 1% of the total emissions (Table 2-2). However, this calculation is only an extrapolation of estimation based on data collected in U Minh Ha and U Minh Thuong National Parks. Thus, one of the challenges in the future NIR is to collect sufficient data for more precise calculation.
Table 2-2 The result of GHG inventory in wetland sector (Unit: GgCO₂)

<table>
<thead>
<tr>
<th>Greenhouse gas source and sink categories</th>
<th>2005</th>
<th>2010</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CO₂</td>
<td>CH₄</td>
<td>N₂O</td>
<td>合計</td>
<td>CO₂</td>
<td>CH₄</td>
</tr>
<tr>
<td>D. Wetlands</td>
<td>1,247.59</td>
<td>1.57</td>
<td>0.02</td>
<td>1,285.46</td>
<td>889.23</td>
<td>0.56</td>
</tr>
<tr>
<td>1. Wetlands Remaining Wetlands</td>
<td>561.03</td>
<td>0.005</td>
<td>562.46</td>
<td>561.03</td>
<td>0.005</td>
<td>562.46</td>
</tr>
<tr>
<td>2. Land Converted to</td>
<td>686.57</td>
<td>1.57</td>
<td>0.01</td>
<td>723.00</td>
<td>335.56</td>
<td>0.68</td>
</tr>
</tbody>
</table>

2.2 Policies on forests and REDD+

2.2.1 Policies on forests⁵⁶

Forest cover in Vietnam decreased approximately 23% (from 43% to 20%) from 1943 to 1993. Accordingly, the government set a program called 5 Million Hectare Reforestation Programme (program 661). In addition, some other policies and laws, such as National Forest Strategy (2006-2020) and Forest Protection and Development Law, accelerated its recovery and as of 2010, it recovered up to close to 42%. Among them, natural forest accounts for 10.29 million ha, while planted forest comprises 3.51 million ha. In Vietnam, forests are divided into 3 categories, which are protected forest (4.7 million ha), special-use forest (including U Minh Ha National Park) (2.1 million ha) and production forest (6.2 million ha). Areas for planted forest are increasing. However, production for commodities to export such as coffee, cashews and/or peppers have increased drastically, which eventually is becoming a cause of forest decease. Moreover, in Vietnam, National Forest Inventory has been developed every 5 years based on satellite image analysis.

Table 2-3 Forest cover change and future plan⁶

| 過去の推移 |  |  |  |  |  |  |  |
|----------| |  |  |  |  |  |  |
| 43% | 27.2% | 32% | 37% | 38% | 38% | 38.7% | 38.1% | 39.5% | 42-43% | 44-45% | 47% |

2.2.2 Policies on REDD+ in Vietnam and Ca Mau and its relation with UN-REDD

Vietnam is one of the UN-REDDD’s partner countries, which also is one of the first countries to receive Readiness Project Identification Note (R-PIN) under the World Bank’s Forest Carbon

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Partnership Facility (FCPF). REDD+ in Vietnam has been supported by UN-REDD since 2008. The country has been taking phased approach for its policy making. During phase-1, national policy and institutional organization was implemented (Figure 2-2). Vietnam Administration of Forestry (VNFOREST) in MARD takes charge in implementing the plans. Institutional arrangement of REDD+ in Vietnam is shown in Figure 2-2.

![Institutional arrangement for the REDD+ implementation in Vietnam](image)

In Vietnam, REDD+ is considered to play a significant role in on achieving emission reduction target. In June 2012, National REDD+ Action Program (NRAP) was approved by the prime minister and it completed the phase-1. During phase-2, 6 pilot provinces including Ca Mau was decided and in each province, policies on sub-national level have been organized, which includes development of Provincial REDD+ Action Program (PRAP). JICA supported Dien Bien Province to develop PRAP from 2010 to 2015.

2.2.3 Forest Reference Emission Level / Forest Reference Level (FREL /FRL)

Vietnam submitted its first Forest Reference Emission Level / Forest Reference Level (FREL /FRL) to UNFCCC in January 2016. Definition of forest in Vietnam is as follows (Circular No. 34/2009/TT-BNNPTNT). In the report, forest is categorized into 12 categories (Table 2-4).

An area is identified as a forest when it meets the following 3 criteria:

1. An ecosystem of which the major component is perennial timber trees, bamboos and palms of all

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7 Viet Nam’s Submission on Reference Levels for REDD+ Results Based Payments under the UNFCCC Ministry of Agriculture and Rural Development Vietnam [http://redd.unfccc.int/files/2016_submission_frel_viet_nam.pdf]
kinds of a minimum height of 5 meters (except new forest plantations and some species of coastal submerged forest species), and capable of providing timber and non-timber forest products and other direct and indirect values such as biodiversity conservation, environmental and landscape protection.

New forest plantations of timber trees and newly regenerated forests of forest plantations are identified as forests if they reach the average height of over 1.5 meters for slow-growing species, and over 3.0 meters for fast-growing species and a density of at least 1,000 trees per hectare.

Agricultural and aqua-cultural ecosystems with scattered perennial trees, bamboos or palms etc. will not be regarded as forests.

2. Having a minimum tree cover of 10% for trees which constitute the major component of the forest.

3. Having a minimum plot area of 0.5 hectares or forest tree strips of at least 20 meters in width and of at least 3 tree lines.

<table>
<thead>
<tr>
<th>番号</th>
<th>森林タイプ</th>
<th>森林/非森林</th>
<th>備考</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Evergreen broadleaf - rich forest</td>
<td>Forest</td>
<td>Average timber stock &gt; 200 m³/ha</td>
</tr>
<tr>
<td>2</td>
<td>Evergreen broadleaf - medium forest</td>
<td>Forest</td>
<td>Average timber stock 100-200 m³/ha</td>
</tr>
<tr>
<td>3</td>
<td>Evergreen broadleaf - poor forest</td>
<td>Forest</td>
<td>Average timber stock &lt; 100 m³/ha</td>
</tr>
<tr>
<td>4</td>
<td>Evergreen broadleaf – regrowth forest</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Deciduous forest</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bamboo forest</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Mixed timber and bamboo forest</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Coniferous forest</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Mixed broadleaf and coniferous forest</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Mangrove forest</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Limestone forest</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Plantation</td>
<td>Forest</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Limestone without trees</td>
<td>Non forest</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Other bare land (grass land, shrub land, land with scattered trees)</td>
<td>Non forest</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Water body</td>
<td>Non forest</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Residential area</td>
<td>Non forest</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Other land</td>
<td>Non forest</td>
<td></td>
</tr>
</tbody>
</table>

In the report, carbon pool categories included in the FREL/FRL are identified. Vietnam decided to
only include above and below ground biomass and excluding dead wood, litter and soil organic carbon. Reasons for not including these items are lack of information, lack of concrete methodology for calculation and small contribution to the total emission.

Vietnam suggest its FREL/FRL as follows (Table 2-5, Figure 2-3).

<table>
<thead>
<tr>
<th>FREL/FRL</th>
<th>Emissions / Removals (tCO$_2$e/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average emission (FREL)</td>
<td>+88,211,131</td>
</tr>
<tr>
<td>Average removal with adjustment (FRL)</td>
<td>-70,866,660</td>
</tr>
<tr>
<td>Average removal without adjustment</td>
<td>-85,273,607</td>
</tr>
</tbody>
</table>

![Figure 2-3 Suggested FREL/FRL (MtCO$_2$e/yr)](image)

Carbon stocks of peat, which is the key component of this study, is not included in the FREL/FRL of Vietnam. However, the same report states that when measurement of dead wood, litter and/or soil organic carbon are included in the NFI and method for more precise calculation are developed, FREL/FRL may be improved accordingly.

### 2.3 Forest in Ca Mau and project area

Ca Mau Province is the southernmost part of Vietnam and it accounts for 12.97% of Mekong Delta. Due to its low altitude, Ca Mau is one of the most sensitive areas for impact of climate change. Twenty percent of the province (103,723ha) is covered by forest and two main forests are mangrove forests along the coast and *Melaleuca* and *Acacia* forest in northwest of the province. U Minh districts including U Minh Ha National Park accounts for 37% of the total forest cover in the province. However,

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because of the peat existence and characteristics of acid sulfate soil provide poor environment for agriculture. Accordingly, people in the area mainly rely on forestry for their livelihood (Figure 2-4)\(^9\). In 2002, there was a forest fire which burned more than 4,000ha and it dehydrated peat and damaged agricultural land. Subsequently, JICA conducted a program for recovering burned forest with Provincial People’s Committee and Department of Agriculture and Rural Development from 2008 to 2011.

The project areas are 1,000 ha of plantation owned by Thuy Son and approximately 28,000ha of forest owned by U Minh Ha Forest Company. Currently, *Melaleuca, Acacia* and *Eucalyptus* plantation is being executed (Figure 2-5, Figure 2-6, Figure 2-7). The plantation areas are managed with GIS software (Figure 2-8).

---

Figure 2-6 Thuy Son owned area (main transportation is by boat)

Figure 2-7 Transportation by boat
Figure 2-8 Map by using GIS
3. Discussions on the business potential of the project, necessary finance

3.1 Necessary finance

In the original proposal, it was aimed to develop a self-financed project through expansion of existing Thuy Son’s business. However, the ongoing program in Vietnam supported by UN-REDD does not align with project-based approach. Therefore, in this section, potential for necessary finance was evaluated instead of estimating cost for project development.

Ongoing activities including development of PRAP in Ca Mau are supported by UN-REDD funding. It is assumed that UN-REDD will be one of the largest contributors for the phase-3. Hence, the team investigated budget related items in the currently available PRAP in phase-2, and how they can be utilized and adjusted for the future project. Also, other available funding was scrutinized.

Total budget for the phase-3 is estimated and it is approximately 6,859 million YEN. Among those, national contribution is 3,680 million YEN, ODA is 575 million YEN, private financing is 2,518 million YEN and bank loan is 85 million YEN (Table 2-1)\(^{10}\). Those related to the proposed project are listed in item 4 (Sustainable Forest Management in U Minh Ha Co.) and item 5 (Development of community forest development on peatland) (Table 2-1).

<table>
<thead>
<tr>
<th>Table 3-1 Planned budget for PRAP Phase-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>4-1</td>
</tr>
<tr>
<td>4-2</td>
</tr>
<tr>
<td>4-3</td>
</tr>
<tr>
<td>4-4</td>
</tr>
<tr>
<td>4-5</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>5-1</td>
</tr>
<tr>
<td>5-2</td>
</tr>
<tr>
<td>5-3</td>
</tr>
<tr>
<td>5-4</td>
</tr>
</tbody>
</table>

(Unit: Million Yen)

3.2 Concept for future finance

Once PRAP is approved, the provincial government needs to find funding from different entities

\(^{10}\) It only shows cost requirements and does not secure funding.
including International organization, national government and/or private sectors. After the funding is secured, it is expected that the government is to outsource some components of the PRAP. When the proposed items go under the tendering processes, Thuy Son, U Minh Ha Forest Company and the team will prepare for the bid.

For example, when implementing item 4-5 “Seeking market for certified wood products”, certificate such as FSC may need to be acquired. This activity is expected to involve 1.1 million YEN from ODA and 1.1 million YEN from private sector. When private companies make decisions, least requirements for decision making are as follows.

1. Identification of production processes including plantation areas, management, processing etc. and estimation of cost.
2. Research on market price with FSC and estimation of potential benefit.

If the benefit can cover the investment of 1.1 million YEN within acceptable time frame, it may worth investing in the phase-3. It still is uncertain how the tendering proceeds, but the team and the relevant stakeholders need to assess its benefit for each component once information is available.

3.3 Relations with JCM

Provincial government is expecting overseas funding including JCM. However, crediting mechanism for the REDD+ in Vietnam is still under discussion. Therefore, when using funding sources outside of UN-REDD funding such as JCM, framework for crediting system among stakeholders may need to be carefully designed.

3.4 Green Climate Fund (GCF) as possible future fund

All the stakeholders especially the province and the Japanese companies require sustainable funding when implementing the project. There are several funding available, but here the team examined Green Climate Funding (GCF) as a possible future fund.

GCF is a funding mechanism under the UNFCCC which invests in in low-emission, climate-resilient development through mitigation and adaptation projects and programmes in developing countries. The fund has 1.02 billion USD and Japanese contribution is 1.5 billion USD. GCF is a unique funding which tries to harmonize its funding project with private funding.

The project in the PRAP proposes both mitigation through land-use in the peatland, and adaptation through enhanced ecosystem services by protecting peat and increased income opportunities for the farmers. It also encompasses prevention of fires, which also can be considered as an adaptation component. Therefore, GCF can be a suitable funding for the project. The proposed project seems to be streamlined with GCF’s initial criteria for assessing program.

① Paradigm shift potential: potential for CO₂ emissions reduction can have large impact and the lessons learnt from this project may be applied elsewhere.
② **Sustainable development potential:** The project provides co-benefit including environmental, social and economic benefit. It may also provide gender concerned impact.

③ **Needs of the recipient:** In the PRAP, micro-financing for the local farmers is planned and this covers needs of the recipient.

④ **Country ownership:** Although peat is currently not included in the FREL/FRL, this project empowers the province and its ability for implementing REDD+ projects.

⑤ **Efficiency and effectiveness:** UN-REDD with evaluation processes provide funding concurrently, which means the project effectiveness is to be cross-checked by them as well. The project also may bring a standard for multi-funding practices.

When examined in a comprehensive manner, it may be worthwhile to examine possibilities for utilizing GCF funding from the initial phase of the project. It needs to be discussed with the Provincial government when PRAP is fixed.
4. MRV methodology and calculation of emission reduction

4.1 Peat existence, depth and other related information

Although the project area for this study is located in one of the most peat abundant area in the southern end of Mekong Delta, information on peat existence and depth is limited. Whilst, some research (including one by SNV) has been conducted in two nearby national parks, namely U Minh Ha and Ramseur designated U Minh Thuong National Park (Kiên Giang Province). In the original plan of this study, the team was to collect information that contributes to the further development of MRV methodology by executing a field survey to check peat existence and depth. However, as the study progressed, it became clear that the project-based approach is not applicable to the current REDD+ programs in Vietnam and furthermore, the peat was not included in the PRAP, which is the underpinning program for the Ca Mau REDD+. Hence, the team consulted with the METI and decided to focus more on establishing policy basis that enables future peat-related project. The team conducted research on peat existence and depth based on literature review and hearing survey instead of field survey. Based on the acquired data, the team consulted with UN-REDD.

4.1.1 Peat existence and depth of peat in the project site

Peat emission is not covered in currently FREL/FRL submitted by the Vietnam government to UNFCCC. The reasons for the exclusion are its limited areas and small potential for contribution to the emission/reduction. However, an article referred in the NIR shows that Ca Mau holds 20,137ha of peat which accounts for more than 70% of the whole peat areas (Table 4-1). This constitutes approximately 3.8% of the province’s land, hence when thanking into account the size of its land, its emission may not be negligible.
Table 4-1 Areas of peat in Vietnam (cited from NIR)  

<table>
<thead>
<tr>
<th>Province</th>
<th>Peat Area (ha)</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hòa Bình</td>
<td>18</td>
<td>0.1%</td>
</tr>
<tr>
<td>Hà Nội</td>
<td>612</td>
<td>2.2%</td>
</tr>
<tr>
<td>Quảng Ngãi</td>
<td>66</td>
<td>0.2%</td>
</tr>
<tr>
<td>Gia Lai</td>
<td>52</td>
<td>0.2%</td>
</tr>
<tr>
<td>Đắk Lắk</td>
<td>414</td>
<td>1.5%</td>
</tr>
<tr>
<td>Lâm Đồng</td>
<td>289</td>
<td>1.0%</td>
</tr>
<tr>
<td>Bình Phước</td>
<td>20</td>
<td>0.1%</td>
</tr>
<tr>
<td>Đồng Nai</td>
<td>184</td>
<td>0.7%</td>
</tr>
<tr>
<td>Long An</td>
<td>240</td>
<td>0.9%</td>
</tr>
<tr>
<td>Đồng Tháp</td>
<td>317</td>
<td>1.1%</td>
</tr>
<tr>
<td>Kiên Giang</td>
<td>5,475</td>
<td>19.7%</td>
</tr>
<tr>
<td>Cà Mau</td>
<td>20,167</td>
<td>72.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>27,853</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Although no information was found on the past field survey on peat in the project site, some research has been conducted in U Minh Ha and U Minh Thuong National Parks (Figure 4-1, Table 4-2). The literature cited also in NIR states that there is an area of peat soil in U Minh Hạ National Park which is used for forestry (Table 4-2). Forestry is the most common land use type for Ca Mau Province.

A study conducted by SNV showed peat existence with depth between 0.4-1.2m in the U Minh Ha National Park\(^\text{12}\). The survey was conducted by Dr. Le Phat Quoi (National University at HCM City) and he further investigated the area in 2014.

---


\(^{12}\) Quoi L. P(2010) Inventory of Peatlands in U Minh Ha Region, Ca Mau Province, Viet Nam. SNV.
According to Dr. Quoi, there are no records on peat survey in the project site. However, he suggested that since the area is surrounded by peat rich areas, it is highly likely that peat exists in the project site.

4.1.2 GHG emissions form peat

Vu Tan Phuong et al. (2011)\textsuperscript{15} have compiled 33 years of data (1976 – 2009) on the GHG emissions

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|c|c|}
\hline
Peatland use type & Area (ha) & \multicolumn{2}{c|}{Share} \\
& & Kiên Giang & Cà Mau & \hline
Conserved peatlands & 2,707 & 2,600 & 5,307 & 23.2\% \\
Agriculture production & 0 & 205 & 205 & 0.9\% \\
Forestry production & 400 & 3,027 & 3,427 & 15.0\% \\
Peatland exploitation & 237 & 0 & 237 & 1.0\% \\
Un-used peatland & 13,456 & 202 & 13,658 & 59.8\% \\
Total & 16,800 & 6,034 & 22,834 & 100.0\% \\
\hline
\end{tabular}
\caption{Area of peatland and land type in Kiên Giang and Cà Mau\textsuperscript{14}}
\end{table}

\textsuperscript{13} Quoi L. P (2014) Peatland and vegetation biodiversity assessment in U Minh Ha National Park Ca Mau Province, SNV

\textsuperscript{14} Vu.T.P. et al.(2011) Table 6, Report on potential for emission reduction through peatland management in Vietnam

\textsuperscript{15} Phuong et al. (2011) REPORT ON POTENTIAL FOR EMISSION REDUCTION THROUGH PEATLAND MANAGEMENT IN VIETNAM, World Agroforestry Centre, RCFEE
from peat lands, primarily in U Minh Ha National Park and U Minh Thuong National Park. This report was cited in NIR and used as the basis for calculating the emissions in Vietnam. In the report, GHG emissions from the oxidation of peats have been calculated using data collected in the past 33 years. For example, the emissions by *Melaleuca* planted areas in Cà Mau Province have been estimated to be 96,410 tCO$_2$/year (Table 4-3). The comparison of annual values indicates that CO$_2$ emissions from the plantation are more than when the fire broke out in U Minh Thuong National Park (79,197 tCO$_2$/year) in 2002. This indicates importance of sustainable forest management.

Table 4-3 Emission estimation caused by peat oxidation

<table>
<thead>
<tr>
<th>Land use types</th>
<th>Emission (tCO$_2$/ha/yr)</th>
<th>Total emission (CO$_2$/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ca Mau province</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U Minh Ha NP</td>
<td>27.3</td>
<td>70,980</td>
</tr>
<tr>
<td>Agriculture production</td>
<td>36.4</td>
<td>7,462</td>
</tr>
<tr>
<td><em>Melaleuca</em> plantation</td>
<td>31.8</td>
<td>96,410</td>
</tr>
<tr>
<td>Un-used peatland</td>
<td>38.6</td>
<td>7,812</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td></td>
<td><strong>182,664</strong></td>
</tr>
<tr>
<td><strong>Kien Giang province</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U Minh Thuong NP</td>
<td>40.95</td>
<td>118,796</td>
</tr>
<tr>
<td>Before fire (2002)</td>
<td>13.65</td>
<td>39,599</td>
</tr>
<tr>
<td>Big fire in 2002</td>
<td>27.3</td>
<td>79,197</td>
</tr>
<tr>
<td>After regulating groundwater table</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Peatland exploitation</td>
<td>27.3</td>
<td>7,058</td>
</tr>
<tr>
<td><em>Melaleuca</em> plantation</td>
<td>22.8</td>
<td>9,100</td>
</tr>
<tr>
<td>Un-used peatland</td>
<td>25.0</td>
<td>311,288</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td></td>
<td><strong>446,692</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>629,356</strong></td>
</tr>
</tbody>
</table>

Moreover, change in ground water is a cause of GHG emissions and emissions from different land use type are shown in Table 4-4. Ground water lowering during dry seasons can emit approximately 629,356tCO$_2$/yr, according to the preliminary calculation. Extrapolating this number to the whole country is the emission from wetlands in the NIR. According to the data, CO$_2$ emissions due to change in water levels in Ca Mau Province are the highest in areas where forestry is conducted.
Table 4-4 Estimated peat soil CO2 emissions in Kiên Giang and Ca Mau (Cited from NIR)

<table>
<thead>
<tr>
<th>Peatland use type</th>
<th>Land Use</th>
<th>Emission due to change in ground water (tCO2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Kiên Giang</td>
</tr>
<tr>
<td>Conserved peatlands</td>
<td>Wetland</td>
<td>118,796</td>
</tr>
<tr>
<td>Agriculture production</td>
<td>Cropland</td>
<td>-</td>
</tr>
<tr>
<td>Forestry production</td>
<td>Forest land</td>
<td>9,100</td>
</tr>
<tr>
<td>Peatland exploitation</td>
<td>Wetlands</td>
<td>7,508</td>
</tr>
<tr>
<td>Un-used peatland</td>
<td>Wetlands</td>
<td>311,288</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>446,692</td>
</tr>
</tbody>
</table>

4.1.3 Survey method for peat

The survey on peat by Dr. Quoi was as described below. This is the same method conducted by Dr. Quoi. The survey was conducted within an area of 8,286 ha in U Minh Ha National Park.

(1) Satellite imagery analysis

Dr. Quoi and his team conducted a survey in 2014 with support from SNV in the U Minh Ha National park and the team used LandsatTM8 (2014) for understanding vegetation roughly in the study area (Figure 4-2).

(2) Field survey

Based on results of the imagery analysis and rough vegetation sketches, 522 field survey plots for surveying vegetation, peat, etc. are set (Figure 4-2). Normally it is difficult to understand peat distribution only from satellite imageries, but Dr. Quoi and his has been accumulating data on vegetation and the existence of peat in Mekong Delta over the years so that their predictions are reliable when locating peat layers with satellite images.

In the field survey, soil boring was conducted with an auger with a diameter of 5 cm and a length of 2 m, and some samples are used for analysis of the carbon contents.

(3) Distribution map

Distribution map that shows the depth of peat is to be made by using the data acquired from (1) and (2) (Figure 4-3).
Analysis of carbon contents enables the team to acquire information needed for calculating carbon stocks and potential GHG emission / reduction. If the same methodology is to be applied in the project area (approximately 29,000ha), approximately 550 sample plots are needed to understand distribution of peat (coarse samples of 1km × 1km, detail samples of 300m × 300m).
4.2 MRV methodology for peat

4.2.1 Current status of MRV methodology for peat

Although, several MRV methodologies in peatland have been developed and used in VCS and JCM-REDD+ in Indonesia, it is too early of an occasion to consider project specific methodology in Vietnam. Therefore, the team summarized the concept of current available MRV methodology that can be adopted when project-based REDD+ becomes appropriate, by researching existing methodologies.

The amount of the reduction in GHG emissions in the REDD+ project is calculated from the difference between the emissions from assumed activities and the value in the baseline scenario. For the emission of carbon in peatland, there are some representative methodologies registered in VCS, such as VM0004 (Methodology for Conservation Projects that Avoid Planned Land Use Conversion in Peat Swamp Forests) and VM0007 (REDD+ Methodology Framework). In Indonesia, several methodologies have been discussed; an MRV methodology was produced based on VM0004 in the REDD+ project of JCM. To measure carbon emissions precisely, the MRV methodology based on the combination of satellite images with remote sensing and field surveys has been commonly adopted.

VCS has enumerated the following requirements for the methodology\(^\text{16}\).

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligibility</td>
<td>As of the start of the project, the area has been 100% filled with forest at least over the past 10 years.</td>
</tr>
<tr>
<td>Date of the start of the project</td>
<td>Date on which the activities for reducing GHG emissions began. In the case where it began on Mar. 8, 2008 or later, the certification report shall be finished within 5 years.</td>
</tr>
<tr>
<td>Credit period</td>
<td>20 to 100 years (there are some exceptions.) The baseline will be reset every ten years.</td>
</tr>
<tr>
<td>Project period</td>
<td>Period in which the project will be continued. At least 30 years</td>
</tr>
<tr>
<td>Un-sustainability risk</td>
<td>Risk of GHG emissions exceeding the baseline after credits become effective. Evaluation with internal, external, and natural risks. Collection of risk buffers.</td>
</tr>
</tbody>
</table>

\(^{16}\) Reference materials for the lecture about H24 application of REDD R&D Center (Chapter 7: Regarding the VCS Methodology) [https://www.ffpri.affrc.go.jp/redd-rdc/ja/reference/03/201301_applied1_chap07.pdf](https://www.ffpri.affrc.go.jp/redd-rdc/ja/reference/03/201301_applied1_chap07.pdf)
A major difference between VM0004 and VM0007 is its applicability. VM0004 is applicable for preventing land use change on undrained tropical peat swamp forests in Southeast Asia, while VM0007 comprises with modules and tools which can be applied to planned / unplanned, deforestation / degradation, and / or status of baseline. Some parts in the project area have already been cultivated and drained, hence when considering MRV methodology for this project, it seems appropriate to consider it based on VM0007.

4.2.2 Emission reduction potential for the project

The team presented emission reduction potential of the project to UN-REDD and other PRAP related personnel.

The team set a hypothetical condition where 30cm of peat layer is equally distributed in the area. Our proposal was to protect areas with deeper peat (e.g. 30cm) and to conduct plantation activities on shallower peat areas (refer detail in 4.3). The team used carbon content of 44.06%\(^{17}\) for calculation. Based on this hypothesis, carbon stocks in the area can be calculated as 30,318,788 tCO\(_2\)e.

If the 900 ha (3%) and 300 ha (1%) of the total area (approximately 30,000ha) is to be protected, avoided emission can be calculated as 909,563 tCO\(_2\)e and 303,187 tCO\(_2\)e respectively.

If 3% of the area (900 ha) is conserved, the emissions will be reduced by 909,563 tCO\(_2\)e. If 1% of the area (300 ha) is conserved, the emissions will be reduced by 303,187 tCO\(_2\)e.

According to the estimation by Phuong, et al.\(^{15}\), the GHG emissions from the melaleuca forest during the dry season is 31.8 tCO\(_2\)/ha/yr, and the emissions from U Minh Ha National Park is 27.3 tCO\(_2\)/ha/yr. If an area for conserving peat is secured in this project, it will be possible to reduce emissions by 4.5 tCO\(_2\)/yr. If the entire area of 29,000 ha is preserved, emissions will be reduced by 130,500 tCO\(_2\)/yr, and if half of the area, that is, 14,500ha is preserved, emissions will be reduced by 65,250 tCO\(_2\)/yr in this project.

4.3 Proposal for the Ca Mau PRAP

When the team found out that the project-based approach does not align with the current direction with Vietnam REDD+ policies, the team decided to change direction to provide basis for future peat-REDD+ project. Based on the acquired data and information, the team suggested inclusion of peat-REDD+ concept in the PRAP through 3 main activities.

PRAP was drafted by FIPI (a group of consultants who is responsible for finalizing the PRAP) during UN-REDD program phase 2 at the end of December 2015. It was based on various field surveys including workshops with local stakeholders. When the team met with UN-REDD Hanoi, it was in the phase for finalizing the PRAP and the last consultation meeting with stakeholders was to be gathered. After the consultation meeting, opinions were merged into the current plan and it is expected to be submitted to the Provincial People’s Committee (PPC) at the end of March 2016. Once it is approved by

\(^{17}\) Data from Dr. Quoi et al. (2014)
the PPC, it is official and the Provincial Government will seek for funding for each component based on estimated cost. UN-REDD’s role during this phase is to support its processes.

The team suggested following activities based on consultation with UN-REDD, JICA and other stakeholders and main concept was accepted by UN-REDD and FIPI. Presentation used is attached in the annex.

(1) **Reducing emission from peatland through sustainable forest management**

This item is to be achieved through the following steps.

1. Understand peat distribution
2. Protect areas with deeper peat (i.g. 30cm)
3. Execute production activities through forestry in shallower peat areas

(2) **Fire prevention program and capacity building of the local community**

Fire prevention is to be achieved by implementing community-based fire prevention program similar to one by JICA in Indonesia.

(3) **Expanding income opportunities for local communities (i.e. farmers)**

Income opportunities are to be created through safeguard programs including expanding commodity (Daviwood project) for the international market, agro-forestry and other non-wood forest products with certification

PRAP consists of the following six items and the suggested plan was to be scrutinized and adjusted by FIPI. The last consultation meeting before its finalization was held on 29th Jan. 2016 and Thuy Son attended the meeting.

1. Protecting Ca Mau national park and ecosystem and buffer zone
2. Enhancing the quality of the coastal forest in western coastal Ca Mau province
3. Development of integrated farming systems and sustainable forest aquaculture in the eastern coast of Ca Mau province
4. **Sustainable Forest Management in U Minh Ha Company Ltd.**
5. **Promotion of forestry in peatland by citizens**
6. Strengthening collaboration between sectors to implement REDD+ in Ca Mau province

When this report is being written, the PRAP is still under the review by the Provincial government. Therefore, it is still unknown how the proposal was incorporated in the finalized PRAP. Based on the information acquired from stakeholders, it is certain that peat conservation through sustainable forest management is included in the PRAP and will be implemented in phase-3. Other items such as fire prevention program and increased opportunities for diverse commodities with certification are also highly likely to be included.
5. Safeguard program and other related impacts

5.1 Safeguard program in Vietnam

National safeguard program is being discussed in the phase-2 of the UN-REDD program with support from BMU and SNV.

This project is to be executed with Thuy Son in the area where partially owned by U Minh Ha Forest Company. Thuy Son’s business already supports farmers through its plantation management but the company is implementing a project called Daviwood project, which expands income opportunities for the local communities. These existing schemes enable the REDD+ to be partially self-financed and it is highly likely that the project does not have to rely solely on credits from REDD+.

5.2 Overview of Ca Mau province

Ca Mau consists of 9 districts and is one of the most low-income areas in Vietnam with population of 1.22 million people. GDP of the province increased by 13.5% from 2006 to 2010 on average and primary and secondary industry is increasing. GDP per capita is approximately 1,030USD in 2009 and 1,100USD in 2010. Population of the U Minh District, where the project area is located, is approximately 103,000.

The Mekong Delta region has the largest number of people under poverty in 8 regions in the area. It is the third low-income region followed by Northern Mountain area and Central Highlands. U Minh District of Ca Mau Province has a large forest in the inland area where landless farmers were encouraged to settle in the early 1990s. The residents in the forest are mostly living on forestry now. There are several forestry management companies in U Minh District. This project’s local partners are Thuy Son and publicly owned U Minh Ha Forest Company. U Minh Ha Forest Company already has a working relationship with Thuy Son and also plays an important role in the PRAP. The overview of each company is as follows.

5.2.1 Thuy Son

Thuy Son was established in 1994 and its business is to produce wood chips from plantation and export them to Japan, China, Korea, EU and some other countries. The company owns two processing facilities and there are 165 employees including 50 part-time employees. Among them, 40% is women. Moreover, the company employs 240 farmers for forest management. Thuy Son acquired ISO9001 in 2008 and FSC Certificate in 2013.

5.2.2 U Minh Ha Forest Company

U Minh Ha Forest Company was formed with 5 government owned companies in 2007. Their sales are approximately 66.8 billion VND (Table 5-1). The company received excavators and processing facilities through JICA program. However, the sales of processed materials only accounts for 0.4%.

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19 VIETNAM TRADE PROMOTION AGENCY Website
Table 5-1 Financial status of U Minh Ha Forest Company

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>32,072</td>
<td>51,669</td>
<td>66,820</td>
</tr>
<tr>
<td>Cost</td>
<td>28,937</td>
<td>48,994</td>
<td>60,851</td>
</tr>
<tr>
<td>Profit</td>
<td>3,135</td>
<td>2,675</td>
<td>5,969</td>
</tr>
</tbody>
</table>

Unit: million VND

5.3 Daviwood Project

Thuy Son is constructing a briquettes and pellets processing facility in Can Tho with support from Danish government (Figure 5-1). Thuy Son established a company called “Dan Viet Investment” for its new project in December 2014. Briquettes and pellets are to be produced from barks, roots and some other residues that have not been used. (Figure 5-2) Phase-1 starting in 2016 will be expected to produce 80,000 ton of briquettes, which eventually creates job opportunities for 40 people directly and 660 people indirectly. During phase-2, the production will be expanded to 200,000 ton. The products will satisfy EU standard DIN51731.

Figure 5-1 Briquettes and pellet production facility under construction

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20 Daviwood project website [http://www.daviwood.com/](http://www.daviwood.com/)
5.4 Fire management program

Peat area is prone to fire and it is applicable for the project area. Taking precautions against forest fire is very important from the perspectives of a) securing safety of the residents in the neighborhood, b) preventing forest reduction and deterioration, and c) preventing CO₂ emission from peat caused by fire.

JICA implemented a project including fire management from 2008 to 2011 in U Minh District and as a result, fire monitoring towers and stations were established (Figure 5-3). The tower was equipped with a fire distinguishing pump, radio communication device and a boat. Although the direct causal relationships between the JICA Project and forest fire incidents are not identified, the number and scale of fire cases have been on a declining trend since 2011: 2 cases (1ha) in 2011, 2 cases (680 m²) in 2012, and 6 cases (15.9 ha) in 2013 (due to extremely dry weather in 2013, the number of cases increased). Based on these figures, it is assumed that JICA’s project is contributing to this improvement in some ways.

Despite its continuous effort, there still is threat to fire and not only infrastructure but also community engagement is necessary since some fires are ignited from fire misuse by the local people.
In the proposal for the PRAP, fire prevention program was included. It mainly focuses on community based monitoring and prevention program. An example of such a project is the one by JICA. JICA has been implementing fire prevention programs in Indonesia for nearly 20 years. The most recent project titled “Community Capacity Building Project for Fire Prevention” (2010 to 2015) has achieved certain outcomes by institutionalizing community-based fire prevention systems through information dissemination and awareness raising activities and patrolling program. Lessons from the experiences in Indonesia may be applicable to the Ca Mau project.

5.5 Safeguard program of this project

We examined how this project can address each safeguard measure of the Cancun Agreement.

(1) Ensuring consistency with national forest programs, etc./Establishing and strengthening governance

The laws and ordinances that are relevant to this project are the same as the ones listed for the project in Dien Bien Province (Table 5-2). The PRAP of Cà Mau Province is developed basically in compliance with the NRAP. Once it is approved by the people’s committee of Cà Mau Province, its implementation will be led by the provincial government. The approved PRAP will be disseminated through workshops, etc.

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### Table 5-2 Legal systems, etc. that are relevant to the project implementation

(Extracted from the safeguard examples for REDD+)

<table>
<thead>
<tr>
<th>Title</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Protection and Development Act</td>
<td>It stipulates the definition and classification of forests and function of each forest. Ownership and forest-use rights as well as the obligations, etc. of the forest owners are also stipulated.</td>
</tr>
<tr>
<td>Biodiversity Act</td>
<td>It stipulates the biodiversity conservation plan, national master plan, conservation and sustainable development and international collaboration of natural ecosystem, seeds, and genetic resources.</td>
</tr>
<tr>
<td>Environment Protection Act</td>
<td>It stipulates strategic environmental assessment, environmental impact assessment, conservation and use of natural protection areas, environmental protection by economic activities, environmental protection of urban areas and residential areas, and water resource protection, etc.</td>
</tr>
<tr>
<td>Land Act</td>
<td>It stipulates the use, rights and obligations of the users, and administrative procedures of each land classification.</td>
</tr>
<tr>
<td>Forest Protection Development Plan</td>
<td>It is a comprehensive forest protection and development plan.</td>
</tr>
<tr>
<td>Payment for Forest Environment Services (PFES)</td>
<td>It is a program to provide incentives to the forest owners to protect their forest and to provide ecological services.</td>
</tr>
<tr>
<td>National REDD+ Action Plan (NRAP)</td>
<td>It is a program to promote REDD+ at the national level. The target period is from 2011 to 2020.</td>
</tr>
<tr>
<td>Commune Agricultural Development Plan</td>
<td>It is a development plan at the commune level with a focus on livelihood improvement targeting various sectors such as forestry and agriculture. The target period is from 2011 to 2020.</td>
</tr>
<tr>
<td>Plan 388/KH-UBND</td>
<td>It is a plan to promote distribution of forest and segmentation of land by specifying the forest owners.</td>
</tr>
<tr>
<td>Poverty Reduction Program (30A)</td>
<td>It is a program to support funds and technologies to improve livelihood of local people.</td>
</tr>
</tbody>
</table>

**(2) Protection of rights of the indigenous and local people**

Forest management is conducted mainly by local farmers. Through the new Daviwood Project, the farmers will start collecting roots and branches that have not been used. This will provide more opportunities for increasing income of the farmers. Profit distribution need to be carefully framed for REDD+.  

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(3) **Stakeholder participation**

The PRAP is reflecting the views of the project's stakeholders. In the process of developing the PRAP, workshops have been conducted to involve government officials, UN-REDD officers, people from local forestry industry, and local people to reflect their opinions from the planning stage.

(4) **Biodiversity conservation**

When this project is implemented, areas that could have been cleared and/or changed into unified plantation in case of BaU will remain as forest, which will result in biodiversity conservation. Furthermore, conducting forest monitoring will enable us to check how diversity is maintained.

(5) **Measures against non-permanence**

This Project will reduce the inversion risk because the livelihood of the farmers is expected to improve as a result of this project. This project also has the system of distributing the profit from the usual business activities to the farmers, instead of solely relying on the credit of REDD+. This way the inversion risk can also be mitigated.

(6) **Measures against leakage**

Through forest monitoring, leakage can be reduced. Also, this project offers the system to secure income source from business activities. This means that the leakage can be avoided to some extent unless profit from leakage does not exceed the profit from business activities. The PRAP will be conducted by provincial unit. Therefore, leakage within the Province will be limited.
6. Conclusion

6.1 Outcome of this study

During this study, it was revealed that the current policies on REDD+ in Vietnam does not support project-based approach; Vietnam is taking phased approach where overarching policies are set from the national scale. Some pilot activities are implemented in 6 provinces including Ca Mau. Moreover, REDD+ activities with peat have not been included in its policies and once the PRAP is decided, adding an item in the PRAP was expected to be a difficult task.

This study hence changed its original plan from field survey of the peat to providing platform for implementing project-based approach on emission reductions from peat. The project team presented necessity to include emission reductions from peat in the PRAP, which was not included when this study started. The project team consulted with coordinators from UN-REDD, JICA, FIPI, peat experts (Dr. Quoi) and some others to develop intervention package of the PRAP.

As the whole country, emission from peat is considered to be not significant. However, in Ca Mau province, more than 70% of peat exists and its potential for emission reduction is high in the province. Therefore, it is worth proceeding its study in the phase-3 of UN-REDD Program.

The drafted PRAP still awaits its final approval from the Provincial People’s Committee, but it is almost certain that peat conservation through sustainable forest management, fire prevention program and provision of income generating system while securing safeguard program is to be included in the PRAP. This provides the platform for future peat related project.

6.2 Future prospects

The PRAP of Ca Mau Province is expected to be finalized and approved by the PPC in April and public consultation workshops are to be held. This concludes phase-2 of the UN-REDD program and initiates phase-3, which is the next step for implementation. However, this requires budget and Ca Mau Province has responsibility to collect sufficient budget from domestic agencies, overseas and/or international organizations. Once the budget is secured, each component of the PRAP is expected to be going under the tendering processes. It is important for the project team including Thuy Son to further support the PRAP phase-3.

Since the proposed FREL/FRL does not include soil organic contents including peat, it is unclear whether the proposed project is eligible for the government funding. However, with support from the Ca Mau province, U Minh Ha Forest Company, Thuy Son, the team may be able to find other sources for funding including JCM-REDD+ program, private companies (consortium of interested companies) and/or international fundings including GCF.
Appendix

Appendix 1: Proposal presented to UN-REDD
Appendix 2: Proposal presented to PRAP
“Revised Concept Paper”
Peat REDD+ for PRAP Ph-3

Demonstration REDD+ concept for conserving peatland in Ca Mau province.
Demonstration Area

Demonstration Area: Total 30,000 ha
1,000 ha: Thuy Son JSC
29,000 ha: U Minh Ha Forestry Co., Ltd.

Package name: Low-emission forestry on peatland

1. Reducing emission from peatland through sustainable forest management
2. Fire prevention program and capacity building of the local community
3. Increasing income opportunities through safeguard programs including expanding commodity (pellets briquettes etc.) for the international market, agro-forestry and other non-wood forest products.
Carbon emission reduction potential

• Hypothetical condition:
  Demonstration area: 30,000 ha
  Peat thickness: 0.3 m (assume the peat is distributed equally)
  C content: 44.06% (SNV 2014 performed by Dr. Quoi)
  Estimate of carbon stock: 30,318,788 tCO2

• Carbon emission reduction potential
  IF 3% (900ha) of peatland is protected: 909,563 tCO2/yr
  1% (300ha) of peatland is protected: 303,187 tCO2/yr

• FYI
  Previous study shows change in water table for dry season cause peat oxidation,
  For example, 0.6m of lowering cause 27.3 tCO2/ha/yr (Phuong et al. 2011)
  When the same level of change in water table occur in 30,000ha,
  the potential emission could be up to 819,000 tCO2/yr

Current Practice

Excavation of Drainage  Drainage  Baby Trees to be planted
Start Planting  One month later  Six months later
1. Sustainable forest management

- **Activity 1.1** Execute a survey for mapping peat existence;
- **Activity 1.2** Classify protected and production areas in consultation with the local community and determine management methodology;
- **Activity 1.3** Prepare management plan including evaluation of the plan and get an approval from the provincial People’s Committee.
- **Activity 1.4** Demonstration of the planned sustainable management practice.

Sustainable forest management (an example)

(a) Areas with 30cm of peat layer or more will be protected.
(b) Area with less than 30cm of peat layer will be used for plantation.
(c) Good practice will reduce CO2 emission and enhance better CO2 absorption.
Activity 1.1 Peat survey

**Step I:** Rough selection of potential peatland by satellite image.

**Step II:** Coarse mesh core sampling and carbon content analysis for confirmation of presence of peat.

**Step III:** Detailed mesh core sampling and carbon content analysis for identifying specific area including depth of peat.

Project Site: 30,000ha  
Estimated Core Sampling Points: 550 or more

Once the amount of peat is identified, carbon emission reduction will be calculated including carbon absorption by aboveground forest.

Demonstration area

Without REDD+ project

With REDD+ project
2. Fire prevention program and capacity building

- **Activity 2.1** Consult with the stakeholders to determine causes of forest fire;
- **Activity 2.2** Develop a fire prevention program based on the previous studies and outcomes of the activity 2.1;
- **Activity 2.3** Prepare guidance documents for the local communities;
- **Activity 2.4** Conduct workshops for the local communities.

JICA conducted a fire prevention program in Indonesia (210-2014) and the same practices may be applied to the area.

3. Safeguard programs

- **Activity 3.1** Conduct a market research on the wood-related products (pellets & briquettes) as well as non-wood forest products;
- **Activity 3.2** Implement a program for enhanced pellets and briquettes production;
- **Activity 3.3** Determine other commodities and develop its production plan in consultation with the local community;
- **Activity 3.4** Implement the agreed plan.

Safeguard program (an example)
(a) Tree bark and root will be collected by farmers for wood chip/briquette, then, incentives will be paid. (Thuy Son JSC has already started this project)
(b) Production of other commodities such as honey, agro-forestry, fish firm etc. to increase income opportunities
Cost for Demonstration

• Estimated Cost
  – Project Site: 30,000ha
  – Hypothetical Emission Reduction: 100,000 t-CO2/yr
    • Carbon Credits: US$ 5/t-CO2 x 100,000 t-CO2 = US$ 500,000 / yr
  – Duration: 2 years
  – Estimated Cost: US$1,000,000.

• Potential Source
  – Japanese Gov.
  – GCF
  – UN-REDD
Appendix 2 : Proposal presented to PRAP

**Tên cước gói:** tròng rừng phát thái thấp trên đất bùn  
**Package Name:** (Low-emission forestry on peatland)

<table>
<thead>
<tr>
<th>Mục tiêu cước gói: (objective of the package)</th>
</tr>
</thead>
</table>
| 1. Reducing emission from peatland through sustainable forest management and protection of peatland area with certain depth.  
2. Fire prevention by introducing more effective fire prevention program and capacity building of the local community  
3. Increasing income opportunities through safeguard programs including expanding commodity (pellets briquettes etc.) for the international market, agro-forestry and other non-wood forest products. |

**Xác định các nguyên nhân và rào cản:** (identify the causes and barriers)

Forests in U Minh Ha including the National Park are under threats of forest encroachment, conversion of forest land, and forest fires and reduced biodiversity. The area is mostly seasonal flooded on peat land. Therefore, conversion of the forest to other land use may cause mass emissions of greenhouse gas especially from the peat soil. The background of the causes is the lack of sustainable income sources for the local low income farmers, and lack of incentives and capacity building for protecting the forest.

**Địa bàn thực hiện:** (Geographical implementation and strategic solution)

U Minh Ha National Park and surrounding area including Khanh An and Khanh Lam commune (U Minh District); Northwest Khanh Binh and Tran Hoi Commune (Tran Van Thoi District).
Forest and surrounding area owned by U Minh Ha forest company including Khanh Thuan and Khanh Hoa commune (U Minh District)

**Nhóm đối tượng:** (Groups) Gói giải pháp 4 & 5 ( Package 4&5 )

Local community in the and around the U Minh Ha National Park and in the area owned by the U Minh Ha Forest company

**Các bên tham gia thực hiện:** (The parties to implement): U Minh Ha forest company  
U Minh Ha National Park; Commune People's Committee; Commune Women's Union and women associations of the village

**Tổng kinh phí cước gói:** (total funding package): funding for each unit area (details cost are presented in annex) 

US$1,000,000 (To be scrutinized)

<table>
<thead>
<tr>
<th>Kết quả đầu ra và các hoạt động (Outputs and activities)</th>
<th>Các chỉ số giám sát (The monitoring indicator)</th>
<th>Chiến lược thực hiện (Implementation Strategies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output 1. Approved</td>
<td>Objective 1. Reducing GHG</td>
<td>U Minh Ha National Park and the U</td>
</tr>
</tbody>
</table>
sustainable forest management plan and its implementation.

**Activity 1.1** Execute a survey for mapping peat existence;

**Activity 1.2** Classify protected and production areas in consultation with the local community and determine management methodology;

**Activity 1.3** Prepare management plan including evaluation of the plan and get an approval from the provincial People’s Committee;

**Activity 1.4** Demonstration of the planned sustainable management practice.

<table>
<thead>
<tr>
<th>Activity 1.1</th>
<th>Execute a survey for mapping peat existence;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Peat distribution map.</td>
<td></td>
</tr>
<tr>
<td>2. Documents for the sustainable management and its implementation plan.</td>
<td></td>
</tr>
<tr>
<td>3. Extrapolation of potential emission reduction from the demonstration activities.</td>
<td></td>
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</tbody>
</table>

**Result indicator 1:**

**Objective 1.** Preventing forest fire by local community engagement.

**Output 2.** Fire prevention program (including guidance document and workshops) and its execution by the community.

**Activity 2.1** Consult with the stakeholders to determine causes of forest fire;

**Activity 2.2** Develop a fire prevention program based on the previous studies and outcomes of the activity 2.1;

**Activity 2.3** Prepare guidance documents for the local communities;

**Activity 2.4** Conduct workshops for the local communities.

<table>
<thead>
<tr>
<th>Activity 2.1</th>
<th>Consult with the stakeholders to determine causes of forest fire;</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Number of workshops and its participants.</td>
<td></td>
</tr>
<tr>
<td>3. Reduced peatland fire.</td>
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</tbody>
</table>

**Result indicator 2:**

**Objective 2.** Preventing forest fire by local community engagement.

The result indicator 2:

<table>
<thead>
<tr>
<th>Result indicator 2:</th>
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</thead>
<tbody>
<tr>
<td>U Minh Ha forest company coordinate with consultant agencies (operators) and collect scientific background data from existing documents and by conducting field surveys. The information is regarding on the natural and socio-economic conditions of the areas including status of forest resources; peat distribution, land use planning, forest utilization plan and other related matters. Based on the acquired data, the operators designate protected areas and plan sustainable forest management methodology in consultation with the local stakeholders. An example of methodology is to protect areas with relatively deep peat soil (e.g. more than 30 cm) and use the other areas for sustainable production. When planning U Minh Ha National Park management strategy, PPMU coordinate closely with the Park authority and establish project management plan in collaboration with scientific bodies; Commune Women’s Union and the village associations. The management plan is to be submitted to the provincial People’s Committee for approval. The plan is to be demonstrated in a designated demonstration area. During the demonstration activities, machineries or any other facilities may be acquired or implemented as required.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 2. Preventing forest fire by local community engagement.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U Minh Ha National Park and the U Minh Ha forest company coordinate with consultant agencies (operators) and collect information in particular causes and drivers for the past forest fires from the existing documents and/or through consultation with the local stakeholders. The operator concurrently collect information on peat fire prevention programs especially in Indonesia for a reference. Based on the collected information, a guidance document is to be prepared including identification of hotspots, establishing hazard maps, establishment of local fire prevention groups, emergency and prevention training programs etc.. The guidance document is to be developed in consultation with the local stakeholders and a series of workshops.</td>
</tr>
</tbody>
</table>
### Output 3. Increased income opportunities for the local community through the safeguard program.

*Activity 3.1* Conduct a market research on the wood-related products (pellets & briquettes) as well as non-wood forest products;

*Activity 3.2* Implement a program for enhanced pellets and briquettes production with possible acquisition of applicable forest certification;

*Activity 3.3* Determine other commodities and develop its production plan in consultation with the local community (consider appropriate international certification if there is anything applicable);

*Activity 3.4* Implement the agreed plan.

### Objective 3. Increasing income opportunities for the local community.

**The result indicator 3.**

1. Market research document

2. Profit for wood products sales;

3. Increased rate of profits from determined items;

4. Percentage of increase annual income of households

### U Minh Ha National Park and the U Minh Ha forest company coordinate with consultant agencies (operators) and collect information on current socio-economic status of the local communities. The operators also conduct research regarding wood-related products inter alia demand for pellets and briquettes, and other non-wood forest products. Some reasons for focusing on pellets and briquettes are as follows: it enables the company and other stakeholders to utilize existing facilities; the demand for these items on the international and national market is expected to increase; and material collection (mainly roots, barks and branches) for pellets and briquettes create new job opportunities for low income farmers. Pellet and briquettes production is to be enhanced according to the conducted research on demand of the market. Whilst, demand for non-wood forest products (e.g. honey, fish shrimp etc.) is to be scrutinized and possible commodities for expanding income opportunities are to be determined. The process is to be consulted with the local stakeholders including Women's Union and women's associations in the communities. The agreed plan is to be implemented with the support by the local communities and any international forest and non-forest certification is to be acquired if applicable.