

## **2. Documents submitted to the DNA of Vietnam together with PDD**

- 2.1 Official letter to DNA from Forest Development Fund  
*(the letter was signed on 15<sup>th</sup> June 2008 but actually submitted to DNA on 1<sup>st</sup> September 2008)*
- 2.2 Official letter to DNA from Hoa Binh province People's Committee
- 2.3 Official letter to DNA from Cao Phong district People's Committee
- 2.4 Official letter to DNA from MARD
- 2.5 Official letter to DNA from VFU
- 2.6 Official letter to DNA from RCFEE
- 2.7 Confirmation of registration document on environment protection commitment (by Cao Phong district PC)
- 2.8 Environment protection commitment of Cao Phong reforestation project
- 2.9 Minutes of meeting on environmental impact assessment of Cao Phong reforestation project

**PEOPLE'S COMMITTEE  
OF HOA BINH PROVINCE  
Forest Development Fund**

**SOCIALIST REPUBLIC OF VIETNAM**  
*Independence- Freedom- Happiness*

*No: 03 CV-QPTR*  
*Ref: Request for approval of CDM-  
reforestation proposal*

*Hoa Binh, 15 June 2008*

**To: Ministry of Natural Resources and Environment (Through  
Hydrometeorology and Climate Change Department)**

Within the scope of the project "**Study on capacity development for AR-CDM promotion in Socialist Republic of Vietnam**" of the Ministry of Agriculture and Rural Development - Vietnam Forestry University (VFU), Research Center of Forestry Ecology and Environment (RCFEE) – Forest Science Institute of Vietnam and JICA have made Project Design Document (PDD) for the small-scale AR-CDM project in Cao Phong district, Hoa Binh province, named "**Cao Phong reforestation project**".

As an institution of receiving and carrying out the project, Hoa Binh Forest Development Fund would like to submit the Project Design Document to Ministry of Agriculture and Rural Development and respectfully propose *Hydrometeorology Department, Ministry of Natural Resources and Environment* to consider and approve **Cao Phong reforestation project** as a CDM reforestation project so that the Forest Development Fund will be able to go ahead with next steps.

*Thank you very much for your co-operation.*

**Cc:**

- *As stated above*
- *Archive:FDF*

**DIRECTOR**  
**(Signed and sealed)**

**Vũ Đình Việt**

**PEOPLE'S COMMITTEE OF HOA  
BINH PROVINCE**

**SOCIALIST REPUBLIC OF VIET NAM**  
*Independence- Freedom- Happiness*

No:1367/UBND-NLN

Hoa Binh, 12 August 2008

Ref: Request for approval CDM small scale  
Cao Phong reforestation proposal

**To: Ministry of Natural Resources and Environment**

According to Circular No 10/2006/TT-BTNMT dated on 12, December, 2006 of Ministry of Natural Resources and Environment referred to instruction of CDM project development within the framework of Kyoto Protocol.

Based on the natural and socioeconomic condition in Cao Phong district, especially in the 2 communes Xuan Phong and Bac Phong, Hoa Binh province will submit the proposal of "**Cao Phong reforestation project**", of which the main contents are as following:

**1. Title of a small scale AR\_CDM proposed project:** Cao Phong reforestation project

**2. Description of the proposed project**

**2.1. Background**

The proposed project was formulated through a "Study on Capacity Development for AR-CDM Promotion in Vietnam", a capacity building project funded by the Japan International Cooperation Agency (JICA) and implemented in cooperation with the Vietnam Forestry University (VFU), Research Center for Forest Ecology and Environment (RCFEE), and Department of Forestry under the Ministry of Agriculture and Rural Development (MARD).

The proposed project is located in the rural mountainous area of northwest Vietnam. Most of the forest in the project area was cleared for the expansion of agriculture before 1980 following the national policy of the time. Due to the intensive crop cultivation, the land on the slopes became degraded and was then abandoned and developed a cover of grass and shrubs. The land use rights for the project area were allocated to individual households in the locality as "production forest land" as determined by the local authority. The production forest land has not been sufficiently used for forestry mainly due to a lack of financial resources to initiate reforestation activities. Local people have used the project area for extensive grazing of livestock and occasional slash and burn cultivation for additional income.

**2.2. Objectives of the project.**

- (a) To rehabilitate degraded land and improve land productivity and environmental condition through reforestation.
- (b) To reduce the carbon dioxide in the atmosphere by sequestration of carbon in forest carbon pools
- (c) To increase the income of the local people by timber production and sale of carbon credits.

**2.3. Project activities:**

- (a) Plantations of *Acacia mangium* and *Acacia auriculiformis* for wood production on a 15-year rotation.
- (b) Technical assistance to the local people for forest establishment and management practices.
- (c) Monitoring and management of the project implementation for ten years.

The proposed project will establish a total of 365.26 ha of plantations and remove 41,029 tCO<sub>2</sub> during the project period. Tree species tolerant of degraded land were selected based on a study conducted by JICA, VFU and RCREE. The thinned and harvested wood and carbon credits to be obtained will be sold and the profits shared between the project management body and the farmers. In addition, a fodder production plan will be implemented to supply high quality feed for domestic animals as well as to reduce grazing pressure in the planned area. The fodder plan will also be effective to minimize the project's leakage and is expected to increase the income of the local people by improving the nutritional condition of their cattle and buffalo.

#### **2.4. Contribution to sustainable development**

The project activity will contribute not only to environmental protection but also socio-economic improvement in the rural area including capacity development of local people for resource management.

3. **The project implementation agency: Forest Development Fund** (established in accordance with Decision No 731/QD-UBND dated on 02 April 2008 of Hoa Binh People committee)
4. **Investor:** Hon Da Vietnam Company (Hon Da Vietnam Co.; LTD)
5. **Total of investment:** 3.5 billion VND
6. **The details of the sites are shown below.**

<b>Commune</b>	<b>Site No.</b>	<b>Village</b>	<b>Area (ha)</b>
Xuan Phong	Site-1	Lu cu	23.50
	Site-2	Nhoi	73.50
	Site-3	Can	106.63
	<b>Sub-total</b>		<b>203.63</b>
Bac Phong	Site-4	Bac Son	71.66
	Site-5	Ma	89.97
	<b>Sub-total</b>		<b>161.63</b>
<b>TOTAL</b>			<b>365.26</b>

7. **Tentative of timing to implement the project:** from 2009.

People's Committee of Hoa Binh province respectfully requests the Ministry of Natural Resource and Environment to consider and approve *Cao Phong reforestation project* as a CDM forestation project.

**Cc :**

- *As stated above*
- *MARD*
- *Chair man and vice chair men of PPC*
- *DARD, DPI, DST*
- *Cao Phong People's Committee*
- *State Treasury of Hoa Binh*
- *Head and Vice head of office of HB PPC*
- *For: VP*

**VICE CHAIRMAN  
(Signed and sealed)**

**Bui Ngoc Dam**

**CAO PHONG PEOPLE'S  
COMMITTEE**

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**SOCIALIST REPUBLIC OF VIET NAM**  
*Independence- Freedom- Happiness*

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No: 353 CV/UBND  
Ref: Request for approval CDM  
reforestation proposal

Cao Phong, 04 July 2008

**To: Ministry of Natural Resources and Environment (Through  
Hydrometeorology and Climate Change Department)**

As acceptance of Ministry of Agricultural & Rural Development and local authorities of Hoa Binh province, Vietnam Forestry University (VFU), Research Center of Forestry Ecology and Environment (RCFEE) – Forest Science Institute of Vietnam (FSIV) and JICA have made Project Design Document (PDD) for the small-scale AR-CDM project in Cao Phong district, Hoa Binh province, named “***Cao Phong reforestation project***”.

People's Committee of Cao Phong district, Hoa Binh province has recognized that this is a feasible project which can help locality well-protect environment and contribute to Hoa Binh's sustainable social and economic development.

Cao Phong People's Committee respectfully request the Ministry of Natural Resources and Environment to consider and approve ***Cao Phong reforestation project*** as a CDM forestation project, and create favorable conditions to soon carry out the project in the locality.

Thank you very much for your cooperation.

**VICE CHAIRMAN  
(Signed and sealed)**

**Cc :**

- *As stated above*
- *FDF*
- *For archives*

**Vũ Đình Việt**

**MINISTRY OF AGRICULTURE  
AND RURAL DEVELOPMENT**

**SOCIALIST REPUBLIC OF VIETNAM**  
*Independence- Freedom- Happiness*

No: 1710/BNN-LN

Ref: *Request for approval CDM  
reforestation proposal*

*Hanoi, 18 June 2008*

**To: Ministry of Natural Resources and Environment**

With the support of Japan International Co-operation Agency (JICA), Ministry of Agriculture and Rural Development (MARD) has conducted the institution concerned to build up the Project Design Document for Clean Development Mechanism (CDM) reforestation project in Cao Phong district, Hoa Binh province.

The Departments under Ministry of Agriculture and Rural Development have given comments in order to accomplish this document. Ministry of Agriculture and Rural Development would like to request Ministry of Natural Resources and Environment, the National focal point organization on Convention of Climate Change and Kyoto Protocol to consider and approve this project proposal as CDM reforestation project accordingly to procedure.

Thank you very much for your cooperation.

Cc:

- As stated above
- Department of International Co-operation
- VFU, FSIV
- For archive, Forestry Department

**VICE MINISTER**

**( signed , sealed)**

**Hứa Đức Nhị**

**MINISTRY OF AGRICULTURE  
AND RURAL DEVELOPMENT  
Vietnam Forestry University**

**SOCIALIST REPUBLIC OF VIETNAM  
*Independence- Freedom- Happiness***

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No: 209/CV-DHLN-QLKH&QHQT  
Ref: Request for approval CDM  
reforestation proposal

*Ha Tay, 7 July ,2008*

***To: Ministry of Natural Resources and the Environment ( Through Department of  
Hydrograph Meteorology and Climate Changes)***

Within the scope of the project “***Study on capacity development for AR-CDM promotion in Socialist Republic of Vietnam***” of Ministry of Agricultural and Rural Development - Vietnam Forestry University (VFU), Research Center of Forestry Ecology and Environment (RCFEE)- Forest Science Institute of Vietnam (FSIV) and JICA have made Project Design Document (PDD) for *the small-scale AR-CDM project in Cao Phong district, Hoa Binh province, named "Cao Phong reforestation project"*.

As an institution of implementing project, Vietnam Forestry University respectfully proposes Ministry of Natural Resources and Environment to consider and approve ***Cao Phong reforestation project*** as a CDM reforestation project, create favourable conditions to soon carry out the project and contribute to the Kyoto Protocol implementation of Vietnamese Government as well as locality's sustainable development.

Thank you very much for your co-operation.

***Cc:***

*-As above*

*-Archive: SM & ICD*

**VICE RECTOR  
(Signed and sealed)**

**Pham Xuan Hoan**

**FOREST SCIENCE INSTITUTE OF VIETNAM**  
**Research Center of Forestry Ecology and Environment**

**SOCIALIST REPUBLIC OF VIET NAM**  
**Independence- Freedom- Happiness**

No: 39 / TTST

Ref: Consider and approve the putting forward of  
CDM forestation project

Hanoi, 04 July 2008

**To: Ministry of Natural Resources and Environment (Throug Hydrometeorology and Climate Change Department)**

Within the scope of the project “**Study on capacity development for AR-CDM promotion in Socialist Republic of Vietnam**” of Ministry of Agricultural and Rural Development - Vietnam Forestry University (VFU), Research Center of Forestry Ecology and Environment (RCFEE)- Forest Science Institute of Vietnam (FSIV) and JICA have made Project Design Document (PDD) for *the small-scale AR-CDM project in Cao Phong district, Hoa Binh province, named "Cao Phong reforestation project"*.

As an institution of implementing project, Forest Science Institute of Vietnam respectfully proposes Ministry of Natural Resources and Environment to consider and approve **Cao Phong reforestation project** as a CDM reforestation project, create favorable conditions to soon carry out the project and contribute to the Kyoto Protocol implementation of Vietnamese Government as well as locality's sustainable development.

Thank you very much for your co-operation.

Cc:

- As stated above

- For archives

**DIRECTOR**  
**(Signed and sealed)**

**Vũ Tấn Phương**



**CAO PHONG PEOPLE'S  
COMMITTEE**

**SOCIALIST REPUBLIC OF VIET NAM**  
*Independence- Freedom- Happiness*

*No: 203/UBND*

*Cao Phong, 06, June 2008*

*Ref: Request for approval of CDM-  
reforestation proposal in Cao Phong  
district, Hoa Binh province*

**CONFIRMATION OF REGISTRATION DOCUMENT ON  
ENVIRONMENT PROTECTION COMMITMENT  
of Cao Phong reforestation project**

**Cao Phong People's Committee confirms:**

**Article 1:** Forest Development Fund submitted registration Document on May 22 2008 on environment protection commitment of Cao Phong reforestation project.

**Article 2.** The project sponsor is responsible for exactly and fully implementing all the contents stated in the environment protection commitment.

**Article 3.** The commitment of protecting environment of the project is legal Document based on which Governmental authorities will monitor and inspect the implementation of the project in terms of environment protection.

**Article 4.** This commitment takes effect since the date of registration.

Cc:

- *Project manager*
- *Bac Phong and Xuân Phong People's  
Committee*
- *For: VP TNMT*

**CHAIRMAN  
(Signed and sealed)**

**Bùi Văn Bương**

**PEOPLE'S COMMITTEE  
OF HOA BINH PROVINCE  
Forest Development Fund**

**SOCIALIST REPUBLIC OF VIETNAM**  
*Independence- Freedom- Happiness*

*Cao Phong, 22 May 2008*

**ENVIRONMENT PROTECTION COMMITMENT  
of Cao Phong Reforestation Project**

(According to Circular No 08/2006/TT-BTNMT dated on 08, September, 2006 of Ministry of Natural Resources and Environment instructed evaluating strategic environment, environment impacts and committed to protect environment)

**I. GENERAL INFORMATION**

**1.1. Project's name: Cao Phong Reforestation Project**

**1.2. Project owner institution:** Forest Development Fund (FDF)

**1.3. Address:** Forest Development Fund, Agricultural extension station 2,  
Cao phong town, Cao Phong district, Hoa Binh province

**1.4. Leader:** Vu Dinh Viet

**1.5. Contact:**

Tel:+84-(0)218-844344; Fax:+84-(0)218-845278;

E-mail: fund.fdf@gmail.com

**II. LOCATION OF PROJECT IMPLEMENTATION**

The project is carried out in area of 365 ha of grass-plot land and in Xuan Phong and Bac Phong commune, Cao Phong district, Hoa Binh province.

Project location is far 100 km from Hanoi in the West, including 5 specific locations in 2 communes of Cao Phong district with area and geographical position as following:

<b>Commune</b>	<b>Location</b>	<b>Hamlet</b>	<b>Area (ha)</b>	<b>Longitude</b>	<b>Latitude</b>
<i>Xuan Phong</i>	HT-1	Lu cu	23,50	105.372710	20.710430
	HT-2	Nhoi	73,50	105.383120	20.717510
	HT-3	Can	106,63	105.366663	20.682899
	<b>Sub-total</b>		<b>203,63</b>		
<i>Bac Phong</i>	HT-4	Bac Son	71,66	105.326063	20.753762
	HT-5	Ma	89,97	105.306517	20.760068
	<b>Sub-total</b>		<b>161,63</b>		
<b>Total</b>			<b>365,26</b>		

***The project targets:***

- (a) Recover the degraded land, improve land's productivity and environment conditions through forestation.
- (b) Reduce CO<sub>2</sub> in biosphere by absorbing carbon into the carbon in forest.
- (c) Increase income for local people by producing timber and selling carbon credit

**III. PRODUCTION AND TRADING SCALE**

To achieve the proposed targets, project will carry out activities as follow:

- (a) Deforest with *Acacia mangium* and *Acacia auriculiformis* to produce timber with trading circle of 15 years
- (b) Support technique to help local people plant and manage forest
- (c) Monitor and manage project implementation in 10 years

Project's scale is the hill side area of 365 ha of Xuan Phong and Bac Phong commune, Cao Phong district, Hoa Binh province. The forestation density as design is 1600 species/ha. The instruments of forestation progress include: paring knife, landrail, showel, frame. The instruments of tending progress include: knife to prune, showel and logging knife and dices to collect and transport timber after logging.

**IV. DEMAND OF USED MATERIAL AND FUEL**

The materials used in forestation progress include: NPK (0.1kg/species), seedling acacia (584000 species).

The materials used in tendance, protection, exploitation progress include: not cutting down trees and forest fire warning signs.

**V. ENVIRONMENT IMPACTS**

**5.1. Potential wastes**

**5.1.1. Exhaust fumes:** none

**5.1.2. Waste water:** none

**5.1.3. Solid waste:** none

**5.1.4. Other wastes:** after planting 584,000 seedling packs will be fully collected

**5.2. Other impacts**

The preparation land and forestation have been carried out in the winter when it is little rainy and has low intensity so hardly causes erosion. Because the prepared land for forestation was grass-plot, and low standard plant, the project does not effect to biodiversity change.

Forest tending, protecting progress do not use noxious chemical based on regulation of Law on environment protection, not damage to biodiversity, land, water and air in the region.

## **VI. METHOD OF MINIMIZING NEGATIVE IMPACTS**

### **6.1. Waste treating**

The seed-pack will be collected and treated by environment protection regulations.

### **6.2. Minimum other impacts**

The project applies digging holes methods; clearing and piling up in the progress of preparation forestation land to minimum the erosion and reduce impact on the current surface in the region. The pruning and logging will be carried out in the winter in order to reduce impacts to the land show in the winter

Forest protection progress will carry out preventing forest fire by propagandizing and educating to improve public's knowledge in protecting forest, organize patrol team to soon find out forest fire especially in the dry season, prepare method. In addition, prevention of forest fire is from inside the design of planted forest.

## **VII. IMPLEMENTATION COMMITMENT**

Commit to implement waste treating method, minimum other impacts in commitment, reach current environment standards; commit to implement other environment protection method based on current Vietnamese law.

**Project owner**

(Signed and sealed)

Vu Dinh Viet

**SOCIALIST REPUBLIC OF VIET NAM**  
**Independent - Freedom - Happiness**

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**MINUTES OF MEETING**

on

*Reference on opinions of local people on environmental impacts of Afforestation and Reforestation Project under Clean Development Mechanism (AR-CDM)*

*In Cao Phong District, Hoa Binh Province (Cao Phong Reforestation project)*

On May 02, 2008 at Cao Phong district people's committee, Hoa Binh Province, representatives of Forest Development Fund (FDF) had a meeting with representatives of Xuan Phong and Bac Phong communes to discuss impacts of AR-CDM Project to local environment.

Participants of the meeting:

**A. Representatives of villagers and communes**

***I. Xuan Phong commune***

***1. Representative of People's committee***

Mr. Bui Ngoc Chiu, Position: Vice chairman of People's committee

***2. Representatives of the villages, which are in the project site***

(1) Mr.: Bui Thanh Yem, Position: Leader of Nhoi 1 village

(2) Mr.: Bui Van Kien, Position: Leader of Can village

(3) Mr.: Bui Xay Dung, Position: Leader of Nhoi 2 village

3. Representatives of households (list of participants attached)

***II. Bac Phong commune***

***1. Representative of People's committee***

Mr. Trieu Minh Thong, Position: Chairman of People's committee

***2. Representatives of the villages, which are in the project site***

(1) Mr.: Nguyen Van Cang, Position: party committee secretary of Bac Son village

(2) Mr.: Bui van Toi, Position: Leader of Ma village

3. Representatives of households (list of participants attached)

## **B. Representatives of the investor- Forest Development Fund (FDF)**

(1) Mr. Vu Dinh Viet , Position: FDF's Director, Vice chairman of the Cao Phong district people's committee

(2) Mr. Bui Quang Huy, Position: FDF's Vice-director, Chief of Agriculture and Forestry Extension Station, Cao Phong District.

Participants in the meeting were listened presentation of Mr. Bui Quang Huy, FDF's Vice-director, representative of the project investor concerning to all contents of AR-CDM Project and its impacts to environment at 5 study sites in Xuan Phong and Bac Phong communes.

After discussion and question representatives of local authorities, local people, communes, participants of the meeting agreed with the following conclusions:

### **1. Positive impacts**

- Soil conditions of all selected sites in Xuan Phong and Bac Phong communes were degraded in different levels and in fact, all study sites were fallowed due to impossible cultivation. Together with implementation of this project, forest cover ratio will be restored, micro climate will be created, overland water flow will be reduced, water amount infiltrated into soil will be increased which result in improving amount and quality of water table; reducing erosion, surface run-off, land slide and flood.

- *Acacia mangium* and *Acacia auriculiformis* stands can improve soil fertility by increasing soil organic matter and by fixing nitrogen in their roots beside economic and social values.

- Forest trees have ability to absorb Carbonic and release Oxygen in the photosynthesis process. They result in reduction of green house gas in atmosphere and improvement in air condition at the study areas.

- Leaves of forest trees, with ability to keep dust in their surfaces, can reduce amount of dust in the air, keep environment of study areas clean.

### **2. Negative impact (if yes) and solutions**

AR-CDM study has no significant negative environmental impact except impact of forest fire. However, on the one hand, two-selected *Acacia* species are evergreen species, in Vietnam there is no forest fire happened in these planted forest types until now. On the other hand, proposed plan to protect forest from fire was prepared in the Project's planting technique design. Lastly, the risk of forest fire will be minimized through awareness raising

among the local peoples, organizing a forest fire control force at the village level before implemented project.

### 3. Conclusion

- All participants at the meeting agree to support for AR-CDM project plant as presented on the report.

- Project has positive impacts to local environment including soil, water and atmosphere as well as positive impacts to social aspects. It will create stable works; contribute to an increase in the income; increase their's awareness of forest protection and development, environmental protection and contribute to poverty alleviation in Cao Phong.

XUAN PHONG  
COMMUNE PEOPLE'S  
COMMITTEE  
Vice chairman  
(signed and stamped)

FOREST DEVELOPMENT  
FUND  
**VICE DIRECTOR**  
(signed and stamped)

MEETING'S  
SECRETARY  
(signed)

**Bui Ngoc Chiu**  
  
BAC PHONG COMMUNE  
PEOPLE'S COMMITTEE  
**Chairman**  
(signed and stamped)

**Bui Quang Huy**  
  
NHOI 2 VILLAGE  
(signed)

**Bui Van Hai**  
  
NHOI 1 VILLAGE  
(signed)

**Bui Ngoc Chiu**

**Bui Xay Dung**

**Bui Thanh Yem**

CAN VILLAGE  
(signed)

MA VILLAGE  
(signed)

BAC SON VILLAGE  
(signed)

**Bui Van Kien**

**Bui Van Toi**

**Nguyen Van Canh**

**LIST OF HOUSEHOLDS PARTICIPATED IN THE MEETING ON  
ENVIRONMENTAL IMPACTS OF AR-CDM PROJECT**

***(Cao Phong Reforestation project)***

*(Attachment of minute of meeting at Cao Phong DPC, May 02 2008)*

<b>No</b>	<b>Full name</b>	<b>Commune</b>	<b>Village</b>	<b>Signature (signed)</b>
1	Nguyen Van Cang	Bac Phong	Bac Son	
2	Nguyen Van Canh	Bac Phong	Bac Son	
3	Bui Van Thanh	Bac Phong	Bac Son	
4	Nguyen Van Ha	Bac Phong	Bac Son	
5	Nguyen Van Phich	Bac Phong	Bac Son	
6	Bui Thanh Yem	Xuan Phong	Nhoi 1	
7	Bui Van Dai	Xuan Phong	Nhoi 1	
8	Bui Van Dang	Xuan Phong	Nhoi 1	
9	Bui Van Sang	Xuan Phong	Nhoi 1	
10	Bui Van Ai	Xuan Phong	Nhoi 1	

FOREST DEVELOPMENT FUND

**VICE DIRECTOR**

(signed and stamped)

**Bui Quang Huy**

MEETING'S SECRETARY

(signed)

**Bui Van Hai**



### **3. Documents submitted to the UNFCCC secretariat together with the Validation Report**

- 3.1 Modality of Communication
- 3.2 Declaration letter of FDF
- 3.3 Approval letter of Vietnam DNA

7 October 2008

## Modalities of Communication

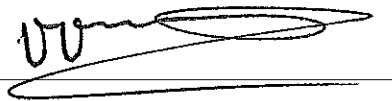
For the communication with the CDM Executive Board and the UNFCCC secretariat, the project participant of "Cao Phong Reforestation Project," the Socialist Republic of Vietnam declares that:

**1. Title of the CDM project activities:** Cao Phong Reforestation Project

**2. Project participant**

Official name: Forest Development Fund (FDF)  
Representative: Mr. Vu Dinh Viet  
Phone number: +84-(0)2183-844344  
Fax number: +84-(0)2183-845278  
Email: fund.fdf@gmail.com  
Address: Extension station of Agriculture, Area 2, Cao Phong town, Cao Phong district, Hoa Binh province, Vietnam

Specimen signature: \_\_\_\_\_



**3. Nomination of focal point:**


The project participant nominates Mr. Phung Van Khoa of FDF as the focal point for:

- (a) Communication with the UNFCCC secretariat and the CDM EB on any matter for registration and/or issuance purposes.
- (b) Authority to instruct the UNFCCC secretariat and communicate with the CDM EB on allocation/forwarding of CERs.
- (c) Authority to request the addition of project participants and/or to communicate any voluntary withdrawal, and to update contact details of project participant (including changes in the name, legal status, address, etc.).

### **Focal point**

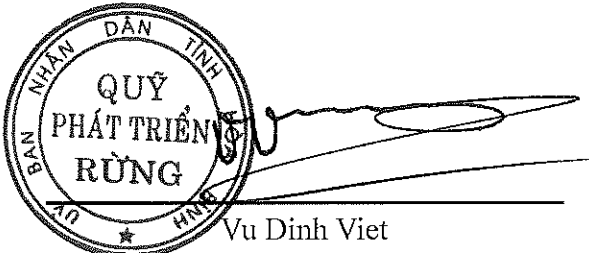
Name: Mr. Phung Van Khoa  
Telephone: +84-(0)433-721-331, +84-914-635-052 (mobile)  
Fax: +84-(0)433-840-540  
Email: [khoaduongfuvcsu@gmail.com](mailto:khoaduongfuvcsu@gmail.com), [khoaduongfuv@yahoo.com](mailto:khoaduongfuv@yahoo.com)

Address: Department of Environmental Management, Forest Resources and Environmental Management Faculty, Forestry University of Vietnam, Xuan Mai, Chuong My, Hanoi, Vietnam

Specimen signature: \_\_\_\_\_ 

#### 4. Statement of agreement

This statement will be valid until a superseding statement is submitted to the CDM Executive Board and the UNFCCC secretariat by the designated focal point in section 3.



Vu Dinh Viet

Director

Forest Development Fund

**PEOPLE'S COMMITTEE  
OF HOA BINH PROVINCE  
Forest Development Fund**

**SOCIALIST REPUBLIC OF VIETNAM**  
*Independence- Freedom- Happiness*

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No: \_\_\_\_\_  
*Ref: Declaration for the project  
implementation by low income community*

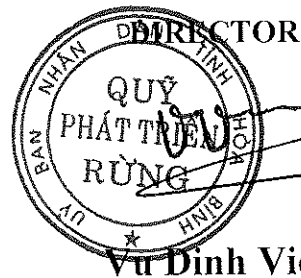
*Hoa Binh, 4<sup>th</sup> November 2008*

**To: JACO CDM Ltd., Tokyo, Japan**

**DECLARATION**

We, Forest Development Fund of Hoa Binh province, declare that the local people who will implement the Cao Phong reforestation project located in Xuan Phong and Bac Phong communes, Cao Phong district, Hoa Binh province are low income communities. It is also recognized in Decision No. 301/2006/QD-UBND dated 27<sup>th</sup> November 2006 of the Committee for Nationalities on recognition of three ethnic minority and mountainous regions according to their development levels and Decree No. 108/2006/ND-CP dated 22 September 2006 of the Government providing guidelines for implementation of several articles of Law on Investment.

*Cc:*  
*- Archive:FDF*

  
**Vũ Đình Việt**



**MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT OF VIET NAM**

**VIET NAM NATIONAL STEERING COMMITTEE FOR UNFCCC AND KYOTO PROTOCOL**

**DEPARTMENT OF METEOROLOGY, HYDROLOGY AND CLIMATE CHANGE**

**8 Phao Dai Lang street - Dong Da - Ha Noi - Viet Nam**

**Tel: (84 4) 37759384/37759385 - Fax: (84 4) 37759382 - Email: [vnccoffice@fpt.vn](mailto:vnccoffice@fpt.vn)**

Ref: 39/2008/DMHCC-BCD

Hanoi, 20 November 2008

**To: Project Participants and Designated Operational Entity**

***Subject: Viet Nam DNA's Letter of Approval for the Cao Phong Reforestation Project***

Sir/Madam

Regarding the Cao Phong Reforestation Project developed by Forest Development Fund, the Designated National Authority (DNA) of Viet Nam under the Ministry of Natural Resources and Environment (MONRE) of Viet Nam is authorized to issue a Letter of Approval for this CDM project activity in Viet Nam and would like to confirm that:

1. The Government of Viet Nam has ratified the Kyoto Protocol on 25 September 2002;
2. This is approval of voluntary participation in the proposed CDM project activity;
3. The above - mentioned project activity contributes to sustainable development in Viet Nam.

Yours sincerely,



**Nguyen Khac Hieu**

Deputy Director General,

Viet Nam National Steering Committee for UNFCCC and Kyoto Protocol  
Department of Meteorology, Hydrology and Climate Change, MONRE  
DNA of Viet Nam

#### **4. Revised calculation of the net anthropogenic GHG removals by sink**

## GROWTH TABLE OF ACACIA MANGIUM IN CAO PHONG - HOA BINH

**Planting density: 1600 trees/ha**

Productivity class: III

Roration period: 15 years

Project year	T	Bộ phận nuôi dưỡng (Remain part)						Bộ phận tía thưa (Thinning part)		
		density	height	DBF	volume	volume	annual increase	annual increase	density thinned	volume thinned
		N1	H (m)	D (cm)	V(m3/tree)	M (m3/ha)	Zm (m3/ha/yr)	ΔM (m3/ha/yr)	Nc (c/ha)	Mc (m3/ha)
Year 3	2	1600	4.3	4.8	0.0	8.4		4.2		
Year 4	3	1600	6.6	6.6	0.0	22.1	13.7	7.4		
Year 5	4	1600	8.3	8.0	0.0	39.4	17.3	9.9		
Year 6	5	1600	9.8	9.2	0.0	58.5	19.1	11.7		
Year 7	6	1600	11.0	10.2	0.0	78.3	19.8	13.0		
Year 8	7	1600	12.0	11.1	0.1	98.2	19.9	14.0		
Year 9	8	800	12.9	11.8	0.1	59.0	-39.3	7.4	800	49.1
Year 10	9	800	13.7	12.5	0.1	68.6	9.7	7.6		
Year 11	10	800	14.3	13.1	0.1	78.0	9.4	7.8		
Year 12	11	800	14.9	13.7	0.1	87.2	9.1	7.9		
Year 13	12	800	15.5	14.2	0.1	96.0	8.8	8.0		
Year 14	13	800	16.0	14.7	0.1	104.6	8.5	8.0		
Year 15	14	800	16.4	15.1	0.1	112.8	8.3	8.1		
Year 16	15	800	16.8	15.5	0.2	120.8	8.0	8.1		
Year 17	16	800	17.2	15.9	0.2	128.5	7.7	8.0		
Year 18	17	800	17.5	16.2	0.2	136.0	7.5	8.0		
Year 19	18	800	17.9	16.6	0.2	143.2	7.2	8.0		

of which

$$H = 30 e^{-2.9389/T^{0.6}}$$

$$D = 39.8 e^{-2.7835/T^{0.4}}$$

$$V = 0.000088 * D^{1.47077} * H^{1.21099}$$

$$M = N1 * V$$

$$Zm = M(t) - M(t-1)$$

$$\Delta M = Ma/T$$

$$Mc = M(t-1) * Kv$$

*Kv is thinning coefficient by volume*

$$Kv = 0.5$$

## GROWTH TABLE OF ACACIA AURICULIFORMIS IN CAO PHONG - HOA BINH

Planting density: 2000 trees/ha

Productivity class: III

Roration period: 15 years

A	Bộ phận nuôi dưỡng (Main part)								Bộ phận tỉa thưa (Thinning part)			Total		
	stand density	Height		average height	DBH	Basal area	Height factor		volume	target density	density thinned	volume		volume
	trees/ha	m		m	cm	cm <sup>2</sup>	m		m <sup>3</sup> /ha	tree/ha	tree/ha	m <sup>3</sup> /ha		m <sup>3</sup> /ha
	N1	Hg	Ln(Ho)	Ho	Dg	G	HF	LnM	M1	N2	Nc	Mc	LnM	M2
3	2000	4.1	1.5	4.6	4.1	1.7	3.7	1.8	6.0				1.8	6.0
4	2000	5.7	1.9	6.4	5.9	3.5	4.2	2.7	14.6				2.7	14.6
5	2000	7.1	2.1	8.0	7.5	5.6	4.7	3.3	26.3				3.3	26.3
6	2000	8.3	2.2	9.4	8.9	7.8	5.1	3.7	40.0				3.7	40.0
7	2000	9.3	2.4	10.5	10.0	9.9	5.5	4.0	54.2				4.0	54.2
8	2000	10.2	2.4	11.5	13.1	10.6	5.8	4.1	61.4	1585	415	8.1	4.2	69.5
9	1585	11.4	2.6	12.9	14.7	13.4	6.2	4.4	82.7	1585			4.4	82.7
10	1585	12.1	2.6	13.7	15.6	15.1	6.4	4.6	97.0	1585			4.6	97.0
11	1585	12.8	2.7	14.5	16.5	16.9	6.7	4.7	112.8	1585			4.7	112.8
12	1585	13.4	2.7	15.2	23.1	15.0	6.9	4.6	103.3	1067	518	24.2	4.8	127.5
13	1067	13.9	2.8	15.8	24.0	16.2	7.1	4.7	113.9	1067			4.7	113.9
14	1067	14.4	2.8	16.4	24.8	17.3	7.2	4.8	125.3	1067			4.8	125.3
15	1067	14.8	2.8	16.8	25.5	18.3	7.4	4.9	134.8	1067			4.9	134.8

of which

$$\ln H_o = 0,0892 + 1,0144 * \ln H_g$$

$$\ln M = -6,26021 + 2,64127 \ln H_o + 0,5319 \ln N$$

$$HF = 2,271 + 0,3031 H_o$$

$$G = M/HF$$

$$D_g = \sqrt{(4/3,14) * (G/N)}$$

$$M_c = M_2 - M_1$$





## **5. List of documents submitted to DOE to answer their clarifications requested**

- 5.1 List of documents
- 5.2 Draft contract between FDF and local people
- 5.3 Draft SOP (Standard Operational Procedures)
- 5.4 Explanations on conservativeness and uncertainty
- 5.5 English translation of reference documents regarding growth table of *Acacia mangium* and *Acacia auriculiformis*

## List of documents submitted to the validation team as evidences

	Documents	Clarifications Nos. in the validation report
1.	Interim Report (2) of JICA Study (March 2008)	CL1, CL1a, CL5, CL6, CL7, CL8, CL10
2.	(a) Decree No. 108/2006/ND-CP dated 22 September 2006 providing guidelines for implementation of a number of articles of Law on Investment (b) Decision No.393/2005/QD-UBND dated 29 August 2005 by the Committee for Nationalities promulgating criteria for classifying ethnic minority and mountainous areas according to their development level (c) Decision No.301/2006/QD-UBND dated 27 November 2006 by the Committee for Nationalities recognizing three ethnic minority and mountainous regions according to their development levels <i>(above documents indicate the development level of the communes and district where the project area are located)</i>	CL2 (2)
3.	MARD Decision No.38/2005/QD-BNN dated 6 July 2005 regarding Technical and Economic Norms (TEN) of forest plantation, Natural forest assisted regeneration and forest protection	CL3
4.	Evidences of the nutrient contents of fertilizer “NPK-S Lam Thao” <i>(the fertilizer bag indicating nutrient contents was shown to the validation team)</i>	CL4
5.	(a) A sample copy of land use certificate issued to the land owners in the project area (b) Land Law (2004)	CL5, CL11
6.	Draft contract between FDF and the project participants (local people) #	CL5
7.	A copy of a document showing the criteria to assess soil fertility	CL8
8.	Announcement No.195/2005/TB-VPCP dated 18 October 2005 by the Office of the Government regarding conclusions of the standing Deputy Prime Minister Nguyen Tan Dung in a review workshop on the implementation of the 5 Million (M) Hectares Reforestation Program and forest protection <i>(this paper shows the general assessment of the performance of 5MHRP)</i>	CL9 (2)
9.	Draft SOP (Standard Operational Procedures) of the project #	CL15, CL16, CL17, CL18, and CL20 (3)
10.	(a) Report on result of research: Formulation of growth table and production of Acacia Mangium forest for logging business in Northeast area, MARD and Forestry College No.1, Quang Ninh province 2001-2002 # (b) Established Growth Table for Acacia Auriculiformis, MARD and Vietnam Forestry University, 1996 # (c) Report on results of research: Resource value of main forest species, collect and develop some new valuable species which meet the demand of market and export, Forest Science Institute of Vietnam, 1995 <i>(above (a) and (b) provides equations to develop the growth tables of acacia mangium and acacia auriculiformis and (c) provides wood</i>	CL20

	<b>Documents</b>	<b>Clarifications Nos. in the validation report</b>
	<i>density of the two species)</i>	
11.	(a) Explanation on conservativeness in GHG removal calculation # (b) Explanation on uncertainty in GHG removal calculation # (c) Explanation on conservativeness in Baseline Estimation #	CL21 CL22 CL23
12.	Decree No.80/2006/ND-CP (09/08/2006) detailing and guiding the implementation of a number of articles of the Law on Environmental Protection <i>(the decree indicates that implementation of EIA is not required for reforestation projects under 1000ha in scale)</i>	CL26
13.	Decree No 79/2003/ND-CP dated on 07 July 2003 promulgated regulation of Democratic Implementation at the commune level <i>(the decree indicates that stakeholder participation is required at commune level in Vietnam)</i>	CL27

#: The documents of 6, 9, 10 and 11 are attached hereinafter.

**SOCIALIST REPUBLIC OF VIET NAM**

**Independence – Freedom - Happiness**

**CONTRACT FOR PARTICIPATION IN CAO PHONG  
REFORESTATION PROJECT (AR-CDM PROJECT)**

**CAO PHONG DISTRICT, HOA BINH PROVINCE**

No...../ .....

*Date .... Month ..... Year .....*

- Pursuant to Civil Law of the Socialist Republic of Vietnam No 33/2005/QH11 dated 14 June 2005 of the National Assembly;
- Pursuant to the plan of Cao Phong Reforestation Project (AR-CDM project) in Cao Phong district, Hoa Binh province approved by local authorities on date.....month.....year.....; and
- Pursuant to Memorandum of Agreement with Honda Vietnam signed on 20<sup>th</sup> April 2008.

This contract is made and signed on the date.....month.....year .....at CPC office of commune....., Cao Phong district, Hoa Binh province between:

**Side A:**

- Name of office: Forest Development Fund
- Address: Extension station, Ward 2, Cao Phong town, Cao Phong district, Hoa Binh province.
- Tel: (84) 0218 844 344
- Fax: (84) 0218 845 278

Representative Mr/Ms..... Title : Director/Vice director

**And**

**Side B:**

- Name of household: .....
- Address: .....
- Tel:.....
- Representative Mr/Ms:..... Tile : Householder.

Both sides agreed to sign this contract with following provisions:

**Article 1 Content of contract**

To implement the Cao Phong Reforestation Project (AR-CDM project) in Cao Phong district, Hoa Binh province as planned.

## **Article 2 Obligations and Rights of Side A (Forest Development Fund: FDF):**

### Obligations:

- To provide materials, financial incentive and technical assistance to the project participants as stipulated in Annex (project design).
- To be responsible for supervising all stages of project implementation according to the project design and current regulations of forest sector and local governments.
- To be responsible for implementing the required processes of an AR-CDM project including project monitoring, verification by DOE, and transaction of carbon credit if the project will be registered as an AR-CDM activities by UNFCCC.
- To report Honda Vietnam and other institutions concerned the annual progress of the project implementation.

### Rights:

- Side A shall receive the following benefits from the project activities in order to maintain the activities of the Fund:
  - + 25% of the selling value of chip wood and round wood from thinning and harvesting.
  - + 50% of the selling value of carbon credit generated from the project.

## **Article 3 Obligations and Rights of Side B (households participating in the Project)**

### Obligations:

- To have the certificate of the use rights of the land in the project area and no conflict on the land use with others.
- To plant and replant trees in the land of Side B, conduct tending, pruning, thinning and harvesting of the plantations, and to transport thinned or harvested timber to designated selling places, as stipulated in Annex and/or following the instructions by Side A.
- To protect the plantation from damages caused by grazing, forest fire, pests and diseases, human disturbance, etc.
- To report side A when the plantation in the land of Side B is damaged by natural disaster, forest fire, grazing, pests/diseases, etc.
- To cooperate to the activities of Side A with regard to the project.

### Rights:

- To receive seedlings, fertilizes, financial incentives and technical supports from Side A for forest planting, protection and management as stipulated in Annex (Project design).
- To give opinions to Side A for improvement in the effectiveness of the project implementation and of the plantation quality.

- To receive following benefits from the project:
  - + 100% of firewood taken in accordance with the instruction of Side A.
  - + 75% of the selling value of chip wood and round wood from thinning and harvesting.
  - + 50% of the selling value of carbon credit generated from the project.

#### **Article 4 Modification of the contract**

Any changes or modifications of this contract shall be made only by mutual agreement in writing between the parties hereto. The changes or modification shall be effective upon signing of revised contract or memorandum of understanding.

#### **Article 5 Termination of the contract**

Side A may terminate the contract if Side B fails to remedy a failure in the performance of his obligations or to comply with any instructions given by Side A. Side B shall compensate Side A for the damages caused by the contract termination by paying the value of materials and financial incentives given by Side A plus 25% of the value of plantations at the time of contract termination.

Side B may terminate the contract if Side A fails to provide Side B the materials and financial incentives stipulated in Annex (Project Design) without any reasonable explanations. Side A shall compensate Side B for the damages caused by the contract termination by paying the value of materials and financial incentives not provided.

#### **Article 6 Settlement of disputes**

Both parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this contract or the interpretation thereof. In case both parties can not resolve the disputes, it will be settled in accordance with the regulations of Vietnam.

#### **Article 7 Effective of contract.**

This contract is effective from the date of signing by the both parties and shall be in full force, unless terminated earlier pursuant to Article 5 hereof, until the completion of the planned project activities including sharing of project benefits stipulated in Annex.

**IN WITNESS WHEREOF**, the Parties have hereto affixed their signatures below and caused the contract in 6 original copies; one each for Side A, Side B, PPC of Hoa Binh province, the leader of village or group of households, Protection office of Cao Phong district, and DPC of Cao Phong.

**Representative of Side A**

**Representative of Side B**

\_\_\_\_\_  
Name/ position

\_\_\_\_\_  
Name

**Witness( or certification )**

**Representative of CPC**

**Leader of village or group of households**

\_\_\_\_\_  
Name/ position

\_\_\_\_\_  
Name/ position

**Representative of Forest protection  
office of Cao Phong district**

**DPC of Cao Phong district.**

\_\_\_\_\_  
Name/ position

\_\_\_\_\_  
Name/ position



## Project Design

### 1. Project area:

Commune	Site No.	Village	Area (ha)	
			#1	#2
Xuan Phong	Site-1	Lu cu	23.50	20.68
	Site-2	Nhoi	73.50	64.68
	Site-3	Can	106.63	93.83
	<b>Sub-total</b>		<b>203.63</b>	<b>179.19</b>
Bac Phong	Site-4	Bac Son	71.66	57.33
	Site-5	Ma	89.97	71.98
	<b>Sub-total</b>		<b>161.63</b>	<b>129.30</b>
<b>TOTAL</b>			<b>365.26</b>	<b>308.50</b>

#1: Gross area (the area within the project boundary)

#2: Net area = the planted area adjusted based on the actual and design density of trees

### 2. Tree species used: Acacia mangium (in all sites) and

Acacia auriculformis (in a part of site 2)

3. **Planting density:** Acacia mangium: 1,600 trees/ha (2.5m x 2.5m)  
 Acacia auriculformis: 2,000 trees/ha (2.0m x 2.5m)

### 4. Schedule of the Project Implementation

Site preparation:	Before planting in 2008 and 2009
Planting:	May – July 2009 and May – July 2010
Tending:	Manual weeding, replanting, soil scarification around the seedlings, top dressing of fertilizer
Thinning:	Acacia mangium: at 8 <sup>th</sup> years (50%) Acacia auriculformis: 8 <sup>th</sup> years (21%) and 12 <sup>th</sup> years (33%)
Pruning:	Will be conducted periodically according to the growth of the trees and the condition of the plantation.
Harvesting:	2024 and 2025 (end of the Project)

*More detail schedule of project activities will be given by FDF.*

5. Support from FDF (Side A) to the project participant (Side B)

Seedlings: 1,600 seedling/ha for Acacia mangium  
 2,000 seedlings/ha for Acacia auriculformis

Fertilizer: 160kg/ha x 2 times for Acacia mangium  
 200kg/ha x 2 times for Acacia auriculformis

Financial incentive:

	Financial incentive (VND/ha)			
	F4D3L4	F3D4L4	F4D5L2	F4D3L2
1 <sup>st</sup> year (site preparation, planting, tending & protection)	1,720,000	1,600,000	1,720,000	1,890,000
2 <sup>nd</sup> year (tending & protection)	600,000	600,000	880,000	680,000
3 <sup>rd</sup> year (tending & protection)	450,000	450,000	790,000	450,000
4 <sup>th</sup> year (tending & protection)	270,000	270,000	450,000	270,000
Total	3,040,000	2,920,000	3,840,000	3,290,000

Note: Financial incentive will be provided annually after checking the performance of each year.

Technical support: as necessary

# Standard Operating Procedure (draft)

## 1. Monitoring Plan

Monitoring of baseline net GHG removals by sinks is not necessary according to the applied methodology AR-AMS0001 version 04.1 (paragraph 36). The items to be monitored are in Table 1 of the applied methodology.

### 1.1 Monitoring of forest establishment

#### (1) Location of the project boundary and strata

Location of the area where the project activity has been implemented will be measured in the field using GPS and checked and recorded by GIS. It will be conducted every 5 years before verification.

The stratification for the ex ante actual green house gas removals estimation should be carried out to improve the accuracy and precision of the biomass estimates. The methodology requests the target precision level of  $\pm 10\%$  of the mean at a 95% confidence level for the stratification approach (paragraph 38). This target can be achieved not only by stratification but by the combination of the stratification and number and size of permanent sample plot. The project area will be stratified into 3 strata according to the project planting plan by tree species and age classes as shown in Table 1.

**Table 1 Stratification for the ex ante Actual GHG removals estimation**

Strata	Species	year of planting
Stratum 1	<i>A. mangium</i>	year 0
Stratum 2	<i>A. mangium</i>	year 1
Stratum 3	<i>A. auriculiformis</i>	year 1

The planted area will be visited by forest experts at least once every year for checking the condition and quality of the plantation. If the area with underperformance is identified, a new stratum or substratum will be additionally created.

#### (2) Size of planted area

The size of the area where the project activity has been implemented for each stratum will also be measured in the field using GPS and checked and recorded by GIS. It will be conducted every 5 years before verification. The planted area will be visited by forest experts at least once every year for checking the condition and quality of the plantation.

### **(3) Size and location of permanent sample plot**

The size of the permanent sample plot is at least 20m x 20m. The number of the permanent sample plot of each stratum to estimate the project biomass stocks at target precision of level of  $\pm 10\%$  of the mean at a 95% confidence level will be determined according to the references such as “Calculation of the number of sample plots for measurements within A/R CDM project activities (the methodological tool)”, “Sourcebook for Land Use, Land-Use Change and Forestry Projects<sup>1</sup>” and “Dieu Tra Rung (Forest Inventory)<sup>2</sup>”. If necessary, pre-monitoring will be conducted to obtain the parameter necessary for the calculation with the tool such as standard deviation of the diameter at breast height of trees for each stratum before the first monitoring. The location of permanent sample plot will be selected randomly in each stratum by the GIS and determined using GPS in the field.

## **1.2 Monitoring of Carbon stock**

The monitoring of the carbon stock in above and below ground biomass pools will be conducted according to the applied methodology.

### **(1) Above ground biomass**

To estimate the above ground biomass the diameter at breast height (1.3m, DBH) and the height (H) of all trees in the permanent sample plots will be measured every 5 years before the verification. At the same time, the mortality will be checked. The locally or nationally developed allometric equations for each planted species will be used to estimate the above ground biomass. If the allometric equations are not available, the equations included in appendix C to the applied methodology will be used (from Step 1 to Step 3 (i) in paragraph 42 in the applied methodology).

### **(2) Below ground biomass**

Carbon stock in the below ground biomass will be estimated from the above ground biomass using the equation (28) in the applied methodology.

$$PB(t) i = \exp(-1.085 + 0.9256 * \ln E(t) i) * 0.5 \quad (28)$$

Where:

$PB(t) i$  = carbon stocks in below-ground biomass at time  $t$  achieved by the project activity during the monitoring interval

$E(t) i$  = estimate of above-ground biomass at time  $t$  achieved by the project activity ( $t$  d.m./ha)

0.5 = carbon fraction of dry matter ( $t$  C/t d.m.)

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<sup>1</sup> Pearson T., Walker S. and Brown S. (2005) “Sourcebook for Land Use, Land-Use Change and Forestry Projects” ([http://www.winrock.org/ecosystems/files/Winrock-BioCarbon\\_Fund\\_Sourcebook-compressed.pdf](http://www.winrock.org/ecosystems/files/Winrock-BioCarbon_Fund_Sourcebook-compressed.pdf))

<sup>2</sup> Vu Tien Hinh & Pham Ngoc Giao (1997) Dieu Tra Rung (Forest Inventory) This is a standard text book used in the VFU.

### **1.3 Monitoring of Project emission**

The amount of fertilizers used in the project will be monitored. The amount and the name of fertilizer will be recorded every time the fertilizer is applied. The significance of N<sub>2</sub>O emission from the fertilization will be assessed by “*A/R Methodological tool: Estimation of direct nitrous oxide emission from nitrogen fertilization*” in accordance with the methodology (paragraph 47 in the applied methodology).

### **1.4 Monitoring of Leakage**

The items to be monitored are in Table 2 of the applied methodology. In accordance with the paragraph 48 of the applied methodology, each of the following indicators should be monitored during the first crediting period:

- (a) Area under cropland within the project boundary displaced due to the project activity;
- (b) Number of domesticated grazing animals within the project boundary displaced due to the project activity;
- (c) For domesticated roaming animals, the time-average number of domesticated grazing animals per hectare within the project boundary displaced due to the project activity.

As (a) and (c) were identified in the baseline activities, those two indicators will be monitored in the proposed project activity. The data for the ex post leakage estimation would be treated as follows:

#### **(1) Displacement of cropland**

It was agreed with land use right holders to terminate their cultivation inside the project boundary before the project starts. Afterward it would be difficult for them to start new cultivation outside of the project boundary because most of the land in the communes has been allocated to households. Nevertheless, in the proposed project, the cropland existed in the project area before the project starts (= in the baseline) was all considered as leakage and the cropland area was measured in on-site assessment before the project starts (=7.07 ha in PDD).

It is conservative to apply the area of cropland estimated in ex ante estimation for the ex-post leakage calculation and the monitoring of displaced cropland area is not necessary. The termination of the cultivation inside of the project boundary should be confirmed in more than 30 % of the project area at the monitoring and the cropland area existed in the baseline survey (=7.07 ha) should be used for the leakage calculation.

Termination of all the cultivation activity inside the project boundary will be confirmed at the time of monitoring.

## **(2) Displacement of domesticated grazing animals**

There was no domesticated (settled) grazing animal within the project boundary before the starting of the project. Therefore this type of displacement would not be necessary to monitor.

## **(3) Displacement of domesticated roaming animals**

The number of domesticated roaming animals within the project boundary was estimated before the start of the project in ex ante leakage estimation and it was assumed all such animals would be displaced. As we would take an optional measure to minimize the displacement of roaming animals (support for high-yield fodder production), this number would be considered as potential maximum number of animals to be displaced.

Therefore it would not be necessary to monitor the number of the displaced domesticated roaming animal and it is conservative to apply the time-average number of animals estimated in ex ante estimation (range 0.12 to 0.35 in PDD). However, it will be confirmed that the all the grazing activity is terminated inside of the project area at the monitoring.

Finally the leakage would be estimated following the paragraph 49 of the applied methodology.

## **2. Fire Control**

The Forest Development Fund, in coordination with the district and commune people's committee concerned, will facilitate organizing forest fire prevention and suppression teams in each village concerned to prevent forest fire and minimize the damage of the plantation from forest fire. The teams will be composed of the representatives of households participating in the project and trained annually. For standard measures of forest fire control in Vietnam, *Chapter 18: "Fire Management" of Forest Sector Manual developed by MARD*<sup>3</sup> shall be referred to.

In case of outbreak of forest fire, pest, disease and other events which would affect to the GHG removals, the damaged area and its location should be recorded. If the significant underperformance in the damaged area is identified, the stratification should be reconsidered at the following monitoring period for the verification.

## **3. Quality Control (QC) and Quality Assurance (QA) Procedure**

All data will be kept for two years after the end of the last crediting period in form of papers and electronic files. The provisions for quality assurance (QA) and quality control (QC) will be applied. For the sake of data quality, following QA and QC measures in the "IPCC Good Practice Guidance

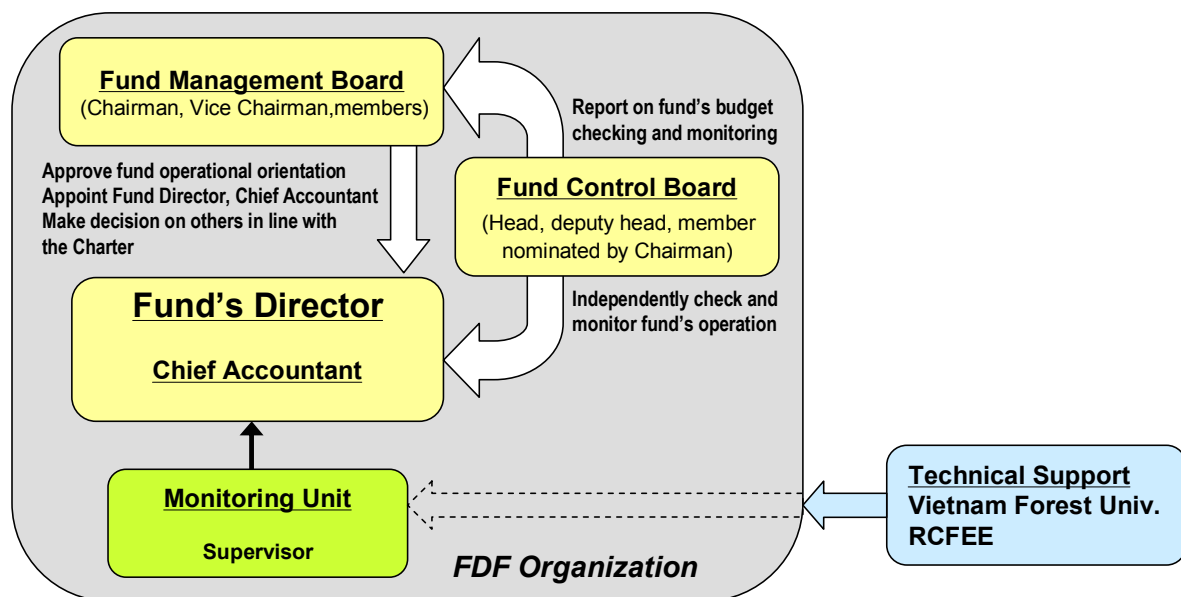
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<sup>3</sup> [http://www.vietnamforestry.org.vn/list\\_news.aspx?ncid=36](http://www.vietnamforestry.org.vn/list_news.aspx?ncid=36)

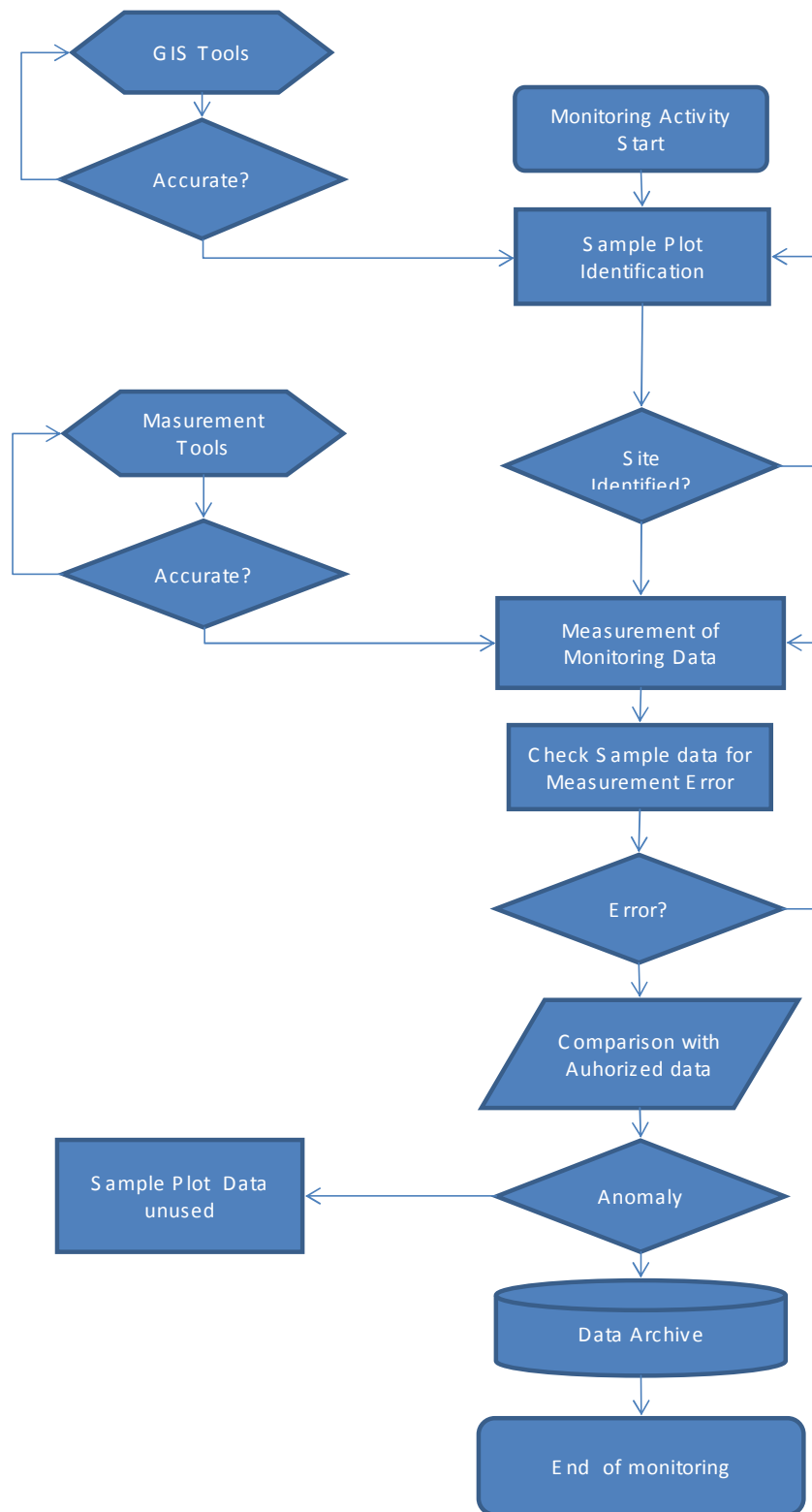
for LULUCF” should be implemented.

### 3.1 Monitoring Unit (Operational and management structure)

The Monitoring Unit and its supervisor will be nominated by the Forest Development Fund. The Monitoring Unit composed of well-trained members will conduct field survey and collect data from the permanent sample plot. The data will be processed and calculated in accordance with the applied methodology. The supervisor of the Monitoring Unit who is an expert in forestry will review the compiled data and complete the monitoring report for verification, then submit it to the director of the Forest Development Fund. The monitoring report will be reviewed by the director to improve the quality and then sent to the DOE for verification.



The operational and management structure for monitoring of the proposed project is indicated in Figure 1.



**Figure 1 Flow of QC/QA in the project activity**

**(1) Staff Training**

Monitoring activity should be carry out by the trained staff. Training on the monitoring activity should be given based on the text book “Vu Tien Hinh & Pham Ngoc Giao (1997) Dieu Tra Rung



(Forest Inventory)” to nominated staff from parties involving this project activity. After completion of the training, the name of the staff should be recorded in the staff training record. Persons who have attended the course of Forest Inventory in VFU would be listed in the staff training record without additional training.

The Monitoring Unit should be composed of the persons listed in the staff training record. Among trained staff, those who have forestry academic degree holders should be nominated and named as the supervisor of the Monitoring Unit. If a number of forestry degree holders are insufficient, the director of Forest Development Fund determines which academic degree can be substitutes for the forestry degree and names the individual personnel upon his responsibility. Name of the supervisors should be recorded on the list of supervisor with his/her academic degrees.

### **(2) Filed Measurement Activity**

Field measurement activity should be planned by the director of Forest Development Fund to collect appropriate data outlined in the sections B.8.1.1.1 and B.8.1.2.1 of the PDD. The field measurement activity should be conducted as per following procedures in “Vu Tien Hinh & Pham Ngoc Giao (1997) Dieu Tra Rung (Forest Inventory)”.

The data measured in the field should be randomly re-measured every 8-10 plots of the sample plot area and compared between measurement records to verify data. At the end of the field measurement, minimum 10% of data will be compared with the original data to identify any errors. Identified errors should be corrected and the correction should be recorded with its counter-measures.

### **(3) Verification of Data Entry and Analysis**

The data entry should be analyzed by supervisor who has not involved in field measurement. All the data entry should be in document format to avoid miscommunication. If there are any problem arises in monitoring plot data that cannot be resolved, the plot should not be used for the analysis.

### **(4) Data Archive**

Corrected data should be archived in paper and electronic format. Copies of all field data, data analysis results, GIS records copies of measuring and monitoring reports should all be stored in the office of Forest Development Fund and backup data should be stored in VFU. Each data and reports should have an identifiable specific reference number and stored in designated place. Supervisor should confirm the storage of the documents at the end of each monitoring session.

## **4. Internal Review of the Project Performance**

The operation (progress) and performance of the project activities should be monitored regularly by

the staff of monitoring unit in coordination with leaders of villages concerned to the project. The monitoring staff should compile the monitoring results and report it to supervisor of the unit, who should report it to the fund director. The fund director will call for an urgent meeting to the members of fund management board when important problems arise, in order to discuss and decide measures to resolve the problems.

The monitoring staff should also draft annual report which describes the progress and performance of the project activities including financial matters. The draft annual report will be reviewed by the fund director as well as fund management board members and then finalized. The annual report will be submitted to district and provincial authorities concerned and also sent to those who have provided technical and financial assistance to the project.

### CL18: Conservativeness in GHG removal calculation

Use of net planting area	Net planting area is used for GHG removal calculation. The net planting area is smaller than the project area measured by GIS and estimated based on the assumption that there are areas where seedling can not be planted due to existence of small valleys and partial outcrop of rocks within the project area. To estimate the net planting area, factors of 88% and 80% were applied to the area measured by GIS in Xuan Phong (sites 1, 2, and 3) and Bac Phong (sites 4 and 5), respectively. (refer to Section 5.5.1 of Interim Report (2))
SV (Stem Volume)	The equations on the lowest site index (Productivity class III: very poor land) were used for estimating SV for conservative estimation of GHG removal.
BEF (Biomass Expansion Factor)	BEF for broad leaf tree in <u>temperate zone</u> (1.4) in Table 3A.1.10 of “IPCC Good Practice Guidance for LULUCF (2005)” was used <u>although the project area is located in sub-tropical area</u> . IPCC GPG does not provide BEF for broad leaf in sub-tropical area but for that in tropical zone (3.4). The selection of lower BEF results in conservative estimation of GHG removal.
Leakage (cropland)	Although the farmers cultivating in the project area agreed to terminate and not to start new cultivation outside of the project boundary, we evaluated the leakage from the displacement of cropland. (refer to Section 5.7.4 of Interim Report (2))
Leakage (grazing)	The methodology assumes that biomass of the existing natural forest outside of the project area would be removed by the displacement of grazing by creating new grazing land by deforestation. It is not realistic to assume such situation for the Project (and thus evaluation of leakage is not necessary). However, the leakage from displacement of grazing was evaluated following the applied methodologies.

### Uncertainty in GHG removal calculation

Approved methodology for normal scale AR-CDM (e.g., AR-AM0001) requires assessment of uncertainty in Section 10. However, simplified methodology for small-scale AR-CDM (AR-AMS001) does not describe uncertainty assessment. We understand the assessment of uncertainty is not required for small-scale AR-CDM.

**CL19: Conservativeness in Baseline Estimation**

Calculation of baseline carbon stock - B(t)	For calculation of baseline carbon stock, we used root shoot ratio (R) of 1.58 for grass land and 2.83 for shrub mentioned in Table 3A.1.8 of IPCC GPG for LULUCF following the approved methodology. However, R computed using our field survey data (between 0.50 and 1.35) is smaller than the ratio mentioned in IPCC GPG for LULUCF. This indicates the baseline carbon stock calculated following the approved methodology produced higher B(t) than the one using the survey data. B(t) estimated following the methodology is a conservative estimation in this case.
B(t) (in deltaC <sub>BSL,t</sub> )	The baseline carbon stock is conservatively assumed to be constant although it would be decreasing as the land is degrading and under the constant pressure of human activities.

**MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT**

**Secondary Vocational School for Forestry No.I**

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**REPORT ON  
SCIENTIFIC RESEARCH**

**Name of study:**

**ESTABLISHMENT THE GROWTH AND PRODUCTIVITY TABLE OF  
ACACIA MANGIUM PLANTATION FOR MINE-TIMBER PURPOSE  
IN NORTHEAST REGION OF VIETNAM**

**Management organization: Ministry of Agriculture and Rural Development**

**Implemented organization: Secondary Vocational School for Forestry No.I**

**Manager: MSc. Khuc Dinh Thanh**

**Quang Ninh, 2001-2002**

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## INTRODUCTION

*Acacia mangium* is an average size and fast growing species. This species can early reach size for pulp paper, mine timber and other purposes.

*Acacia mangium* has wide ecological amplitude so that it was widely planted in many countries in the world. In Vietnam, this species has been imported and planted since 1981. From 1990 up to now, since planting activities to recover bare-land and hills developed rapidly, *Acacia mangium* has been selected as an important species to plant in North-East region of Vietnam. In other regions, 7-8 year-old plantations of this species harvested with production of 140 m<sup>3</sup>/ha.

At the meeting on selection of species for industrial plantation conducted by Ministry of Agriculture and Rural Development from 26-28/12/2001, Scientists from Forest Science Institute of Vietnam (FSIV) recommended to select *Acacia mangium* for the first priority group of planting trees for industrial plantation with short rotation from 7-10 years in North-East sub-region.

Until now, *Acacia mangium* was not only planted in most provinces in hole country but also widely planted in North-East region with large area, its plantation can result in height economic, social, environment values. However, studies/research about this species is still limited. Only some studies in provenance trials, planting techniques conducted, it is still lack of studies related to growth of this species to support scientific fundament for identifying business methods and establishing special-used tables for inventory activities and volume and production calculation.

Based on above problems, with the agreement of scientific committee of Ministry of Agriculture and Rural Development, we conducted study:

***"Establishment the growth and productivity table of Acacia mangium plantation for mine-timber purpose in North-East region of Vietnam"***



## EXPLANATION OF RELEVANT EQUATIONS AND TABLES

### 3-5. Method of studying growth rule of average-size trees

The main objective is description growth rules of diameter (DBH), height (H) and volume of average-size trees in the surveyed stands. It means that a description growth rule for all research objects depends on data of analytic trees.

Study will test two popular growth functions that some scientists are applying for some species in Vietnam as following:

Schumacher function: 
$$Y = me^{-b/T^c} \quad (3-15)$$

*In which:  $m, b, c$  are parameters*

*T is variable*

Gompertz function: 
$$Y = me^{-be^{-cT}} \quad (3-16)$$

*In which:  $m, b, c$  are parameters*

*T is variable*

Based on results of regression analyses, study will choose the most suitable function for establishment growth tables together with each productivity class.

### 4-1-1: Direct regression among volume and diameter, height

....

In this content, we used 5 functions to test regression among volume, diameter and height as following:

$$V = a + b_1 D^2 H \quad (4-3)$$

$$V = a + b_1 H + b_2 D^2 H \quad (4-4)$$

$$\log V = a + b_1 \log D \quad (4-5)$$

$$\log V = a + b_1 \log D + b_2 \log H \quad (4-6)$$

$$V = a + b_1 D + b_2 H + b_3 D^2 H \quad (4-7)$$

....

Based on values of coefficient of correlations (r), equation (4-6) selected with values of all parameters as following:

$$\log V = -4.05294 + 1.47077 \log D + 1.21009 \log H \quad (r=0.9965) \quad (4-8)$$

Original function of 4-8 function is exponential function:  $V = K D^{b_1} H^{b_2}$

*In which:  $\log K = a$ . with  $a = -4.05294 \Rightarrow K = 0.000088$*

and 4-8 function changed to exponential function as following:

$$V_{cv} = 0.000088 D^{1.47077} H^{1.21009} \quad (4-10)$$

in which:  $V_{cv}$  means volume with bark

#### 4-2-2-2. Growth of height according to productivity class

....

According to Schumacher growth function established for *Acacia mangium* (4-41 function:  $H = 30 e^{-2.6206 T^{(-0.60)}}$ ), it could be changed to linear function as following:

$$\ln hg = \ln 30 - 2.6206 T^{-0.6} \quad (4-46)$$

$$Y = 3.4012 - 2.6206 X \quad (4-47)$$

Based on 4-47 function, we can use following function to identify  $b_i$  parameter with based age  $T_0 = 6$ :

$$b_i = (\ln hg_i - 3.4012) / 6^{-0.6} \quad (4-48)$$

Replacement of  $hg_i$  values bases on productivity classes of I, II, III, we have:

Productivity class III:  $b = (\ln 11 - 3.4012) / 6^{-0.6} = -2.9398$

$$h = 30 e^{-2.9398 / T^{0.6}} \quad (4-51)$$

#### 4-2-2-3: Growth of DBH according to productivity class

**Table 4-17:** Results of calculation parameters and statistical criteria when study describes DBH growth of *Acacia mangium* according to Schumacher function

Productivity class	m	b	c	r	$S_{Y/X}$	$\chi^2$	$\chi^2_{05}$
I	73.2	2.8981	0.30	0.978	0.005	0.22	16.9
II	54.5	2.9981	0.35	0.972	0.009	0.46	16.9
III	39.8	2.7835	0.40	0.978	0.006	0.32	16.9

#### 4-3-4-1: Identifying thinning coefficient

Results of calculation in 10 thinning plots in which thinning ratios vary from 30-40% mentioned in table 4-23:

**Table 4-23: Studying results relative stable of thinning coefficient ( $K_x$ )**

Plots of thinning design	Thinning ratio ( $n_c\%$ )	Basal area ( $m^2$ )			Volume ( $m^3$ )		
		$g_c$	$g_i$	$K_G$	$v_c$	$v_c$	$K_V$
Bac Son, Uong Bi dist.	41.8	0.00689	0.01394	0.4249	0.04125	0.10120	0.4076
Lan Thap, Uong Bi dist.	38.9	0.00689	0.01570	0.4388	0.03934	0.10487	0.3751
Cam Pha, Quang Ninh prov.	34.0	0.00604	0.01517	0.3982	0.03466	0.10324	0.3357
Hoang Bo, Quang Ninh prov.	30.0	0.00586	0.01554	0.3771	0.03203	0.10544	0.3038
Tien Yen, Quang Ninh prov.	37.2	0.00543	0.01105	0.4914	0.02999	0.07119	0.4212
Huu Lung, Lang Son prov.	31.4	0.00197	0.00478	0.4121	0.00837	0.02534	0.3303
Cot coi, Huu Lung dist.	36.3	0.00541	0.01109	0.4878	0.03172	0.07545	0.4204
Cot coi, Huu Lung dist.	35.2	0.00521	0.01261	0.4131	0.02991	0.08945	0.3344
Yen The, Bac Giang prov.	32.7	0.00556	0.01423	0.3907	0.03297	0.10510	0.3137
Yen The, Bac Giang prov.	33.3	0.00446	0.01144	0.3899	0.02450	0.07892	0.3104
<b>Statistical criteria</b>							
Average thinning coefficient: $K_x$				0.429			<b>0.355</b>
Standard error: $S_x$				0.014			0.015
Standard deviation: S				0.045			0.046
Coefficient of variance: V%				7.6			8.1
Accuracy: P%				2.4			2.5

Results in table 4-23 indicates that thinning coefficients ( $K_v$ ) vary from 31% to 40% and coefficient of variance (V %) is also very low variation ( $V\%=8.1$ ) with standard error of 1.5%.

This result shows relatively stable rule of  $K_x$  so that this study uses average values of  $K_G$  and  $K_V$  to calculate basal area and volume of thinning trees according to following function:

$$g_{tt} = 0.429 g_1 \quad (4-60)$$

$$V_{tt} = 0.355 v_1 \quad (4-61)$$

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**MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT**

**Vietnam Forestry University**

**REPORT ON  
SCIENTIFIC RESEARCH**

**Name of study:**

**ESTABLISHMENT THE GROWTH TABLE OF  
ACACIA AURICULIFORMIS A.CUNN**

**Management organization: Ministry of Agriculture and Rural Development**

**Implemented organization: Vietnam Forestry University (VFU)**

**Head of the study: Prof.Dr. Vu Tien Hinh - VFU**

**Collaborator: Dr. Nguyen Thi Bao Lam - VFU**

**Engineer. Nguyen Trong Binh - VFU**

**ThS. Hoang Van Duong - Hue University**

**- 1996-**

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## INTRODUCTION

*Acacia mangium*, one species of Mimosaceae family and Fabales order, commonly known as "Tram bong vang" in Vietnamese. This is medium-size, evergreen species, maximum height can reach 20m. Timber uses for pulp paper, flooring, fuel wood and other purposes. This species has also very important role to improve soil fertility and environment.

Preliminary surveys in some provinces showed that *Acacia auriculiformis* can widely adapt with climate, soil conditions from acid, alkaline, dry sandy and mountainous soil with widely climatic range. Hence, from 1980 up to now, *Acacia auriculiformis* plantation obtained high ratio comparing to the total plantation area in Vietnam. According to data of Forest Inventory and Planning Institute (1994), there is about 40% of *Acacia auriculiformis* plantation in 13 coastal provinces comparing to the total area of 125,800 ha plantation under PAM project. However, based on province data, main plantation area of *Acacia auriculiformis* is Dong Nai province (1,800 ha), Quang Nam - Da Nang province (3,800 ha), Thua Thien Hue province (8,000 ha), Quang Tri (2,000 ha), Hoa Binh, Vinh Phu.

*Acacia auriculiformis* was widely planted in large area. However, studies/research about this species is still limited. Most of them are studies in provenance trials, genetic selection. It is still lack of studies related to inventory, silviculture fields since they are very important scientific fundamentals for yield estimation and identifying suitable business methods not only for increment of economic value but also for improvement of protection function and environmental value.

For satisfying reality requirements, with the agreement of Ministry of Agriculture and Rural Development, we conducted study: ***Establishment the growth table of Acacia auriculiformis.***

## EXPLANATIONS OF RELEVANT EQUATIONS AND TABLES

### 4.2.3. Testing table of productivity classes

**Table of productivity classes of *Acacia auriculiformis* according to  $h_g$  (m)**

Age	Class I		Class II				Class III		
	RG	G	RG	G	RG	G	RG	G	RG
3	6.0	5.6	5.2	4.8	4.4	4.1	3.8	3.5	3.2
4	8.4	7.8	7.2	6.7	6.2	5.7	5.1	4.6	4.1
5	10.4	9.7	9.0	8.3	7.7	7.1	6.4	5.7	5.0
6	12.1	11.3	10.5	9.7	9.0	8.3	7.5	6.7	5.9
7	13.6	12.7	11.8	10.9	10.1	9.3	8.4	7.5	6.6
8	14.9	13.9	12.9	12.0	11.1	10.2	9.2	8.3	7.4
9	16.0	15.0	14.0	13.0	12.0	11.0	10.0	9.0	8.0
10	17.1	16.0	14.9	13.8	12.7	11.7	10.6	9.6	8.6
11	18.1	16.9	15.7	14.5	13.4	12.3	11.2	10.0	9.0
12	19.0	17.7	16.4	15.1	13.9	12.8	11.6	10.5	9.4

*Note:*  $G$  denotes total basal area/ha,  $h_g$  denotes height of tree with average basal area (see page 5)

*RG:* value in between two  $G$  values (dotted line in figure 1)

....

Based on survey data of 84 plots, study established following equation:

$$\text{Ln}h_0 = 0.0892 + 1.0144\text{Ln}h_g \quad (6)$$

*In which:*  $h_g$ : height of tree with average basal area.

$h_0$ : height of dominant layer.

This equation has coefficient of correlation value of 0.99.

### 4.3.1. Volume model

Volume is one of the most important parameter for estimation of stand production. The relationship among volume ( $M$ ) and  $h_0$ , density ( $N$ ) indicated in following equation:

$$\text{Ln}M = -6.26021 + 2.64127\text{Ln}h_0 + 0.5319\text{Ln}N \quad (12)$$

*Coefficient of correlation of this equation is 0.981*

#### 4.3.2. Model of total basal area

Total basal area can determine with two methods:

- Direct determination from  $G = f(h_0, N)$
- Indirect determination from volume (M) and height form (HF)

According to the first method, following equation established:

$$\text{Ln}G = - 4.06155 + 1.11074 \text{Ln}h_0 + 0.52505 \text{Ln}N \quad (13)$$

with:  $r = 0.94$

$$t_{a1} = 21.3; t_{a2} = 18.2; t_{05} = 2.0.$$

According to the second method, following equation established:

$$\text{HF} = 1.271 + 0.3031h_0 \quad (14)$$

With:  $r = 0.983$

Comparing r-values of two above equations, equation 14 is selected. It means that HF and  $h_0$  have very strong relationship in linear form.

#### 4.3.3. Model of average DBH

Average DBH used in growth table is average DBH of basal area. So that it is inferred from total basal area and density (N):

$$d_g = \sqrt{\frac{4}{\pi} \times \frac{G}{N}} \quad (17)$$

In which:  $d_g$ : average DBH of basal area.

$G$ : total basal area per one hectare.

$N$ : stand density.