The 6ᵗʰ Bi-annual Progress Report

October 2017 – December 2020 (Updated)

ITTO PD 737/14 Rev. 2 (I)

"Developing Supply Capacity of Wood-Based Biomass Energy through Improved Enabling Conditions and Efficient Utilization of Degraded Forest Lands involving Local Communities in North Sumatra Province of Indonesia"

Directorate of Production Forest Business Management (UHP), Directorate General of Sustainable Management of Production Forests (PHPL)

Starting Date:
October 2017

Duration:
48 Months

Project Cost:
ITTO US$ 487,100.00
GoI US$ 197,150.00

Jakarta, January 2021

Updated The 6th Bi-annual Progress Report

October 2017 – December 2020

Project number	:	**PD 737/14 Rev.2 (I)**
Project title	:	**Developing Supply Capacity of Wood-Based Biomass Energy through Improved Enabling Conditions and Efficient Utilization of Degraded Forest Lands involving Local Communities in North Sumatra Province of Indonesia**
Host Government	:	**Government of Indonesia**
Executing Agency	:	**Directorate General of Sustainable Management of Production Forests (PHPL)**
Collaborating Agency	:	**Indonesian Sawmill & Woodworking Association (ISWA)**
Project Management Unit	:	**Established pursuant to the MoU signed by PHPL and ISWA on 18 September 2017**
Starting date	:	**1 October 2017**
Project duration	:	**48 months**

Total project costs
- **ITTO** : **USD 589,863**
- **GOI** : **USD 197,150**
- **Total** : **USD 787,013**

YPO 3 Project Costs
- **ITTO** : **USD 102,880**
- **GoI** : **USD 40,990**
- **Total** : **USD 143,870**

Submitted to ITTO	:	**January 2021**

Project Management Unit

Project Coordinator   : **Jimmy Chandra**

Project Secretary   : **Richma Wahyuni**

Field Supervisor   : **Dedy Agape Sitanggang**

Technician   : **Edi Setiarahman**

Management Advisor   : **Dr Hiras Sidabutar**

Supervising body   : **Directorate of Forest Production Business Management (UHP, DG PHPL)**

- **Head of Sub Directorate RKUPHT**
- **Head of Sub Division of Legal and Technical Cooperation**
- **Head of Regional Office of Production Forest Development (Medan)**
- **Head of Section of Technical Cooperation, Secretariat Directorate General PHPL**
- **Head of Section of Financial and Administration, Secretariat Directorate General PHPL**

Partners:

- **Forestry Agency of North Sumatera**
- **Simalungun FMU**
- **Humbang Hasundutan FMU**
- **Padang Sidempuan FMU**

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1. **Description of the work implemented since the inception**

   This progress report covers the period of operation from 1 October 2017 to 31 December 2020; the activities implemented during this period are outlined below:

1.1. <u>Output 1: Development of sustainable supply of energy wood initiated</u>

   Out of 5 activities defined under the Output, the activities that have been implemented are:
   i. Activity 1.1 (completed)
       To identify suitable lands for development of energy forests in South-eastern of North Sumatra province covering 13 districts (Kabupaten). This activity was implemented with the assistance of a competent national consultant, Dr Aswandi of Aek Nauli Forestry Research Institute, and had been successfully completed. A satisfactory technical report has been submitted by the Consultant to the PMU.

   ii. Activity 1.2 (completed)
       To identify suitable lands on 3 FMUs for energy forest development; the FMUs identified were KPH Unit XII Simalungun district, KPH Unit XVII Humbang – Hasundutan district and KPH Unit X Padang Sidempuan of Tapanuli Selatan district.

       The same as Activity 1.1, this activity was implemented with the assistance of a competent national consultant, Dr Aswandi, and had been completed. A technical report of the activity had been submitted by the Consultant.

   iii. Activity 1.3 (on-going)
       To establish energy forest models for purpose of demonstration and training (3 sites, 3 species, 33 ha in total). Establishment of demo plots for energy forest at 3 sites using kaliandra, gamal, and lamtoro species had been completed as outlined below noting that growth monitoring is on-going:

       a. At Simalungun FMU
          - The total land area planted was 9 Ha, the land was earlier occupied by Panribuan village community
          - Planting of Kaliandra, gamal and lamtoro, each 3 Ha in size, was completed by end of April 2018
          - The growth monitoring conducted in early April 2020 indicated that kaliandra grew better than gamal and lamtoro.

       b. At humbang Hasundutan FMU
          - The total land area planted was 12 Ha; the land was previously occupied by Parlilitan village community
          - Planting of kaliandra, gamal and lamtoro, each 4 Ha in extent, was completed by end of June 2018
          - The growth monitoring carried out in early April 2020 indicated that kaliandra grew best compared to gamal and lamtoro. Monitoring data indicated that the species grew very poorly after one year old; causes of the problem is currently under investigation by competent expert.

c. At Padang Sidempuan FMU,
   - The total land area planted was 12 Ha; the land was controlled by the FMU, not under occupation by local community
   - Planting of kaliandra, gamal and lamtoro, each 4 Ha in size, was completed by end of May 2018
   - The monitoring of growth carried out in mid-March 2020 indicated that kaliandra grew better than the other two species.

Summary of growth development at one year and two years of age is exhibited in Table 1

Demplot	Parameter	Gamal		Kaliandra		Lamtoro	
		1 Yr	2 Yr	1 Yr	2 Yr	1 Yr	2 Yr
Simalungun	Height (cm)	50-57	229-260	36-55	208-303	28-32	NA
	Diameter (Cm)	1.6-23	5.3-6.1	0.4-0.5	2.9-4.1	0.3-0.4	NA
	Survival (%)	75-78	71-75	72-82	60-79	66-69	NA
Humbang Hasundutan	Height (cm)	48-59	NA	23-27	NA	23-25	NA
	Diameter (Cm)	2.1-2.2	NA	0.3-0.4	NA	0.3-0.3	NA
	Survival (%)	72-78	NA	71-73	NA	69-71	NA
Tapanuli Selatan	Height (cm)	45-52	171-206	51-109	195-301	24-28	NA
	Diameter (Cm)	2-3	4.6-5.2	0.4-2.1	3.1-4.0	0.3-0.3	NA
	Survival (%)	70-76	68-72	73-74	68-72	68-72	NA

iv. Activity 1.4:
To estimate potential supply of planted energy forests. This activity has not commenced yet; it is scheduled to start in March 2021.

v. Activity 1.5:
To assess long-term supply potential of energy wood from non-forest sources. The activity has been fully executed and the technical report is now ready with the PMU.

1.2. Output 2: Skilfull manpower for development of wood-based biomass energy available

Out of 5 activities defined under the Output, 4 activities have been implemented as summarized below:
i. Activity 2.1: To conduct dialogue with local communities on benefits of energy forest development in Years 1 and 2 (completed).
   • Dialogue with the communities at 49 villages in 13 Districts had been completed. The activity was implemented with the assistance of the University of Simalungun since June 2018 (YPO 1) till January 2019 (YPO 2)
   • A Technical report on the activity is now available with the project.

ii. Activity 2.2: To train local communities on technical skills for energy forest development covering planting, tree nursing, planting and harvesting techniques (completed)

The activity has been fully implemented including the training on bee honey production, the 5th training module of the activity. Results of the activity are outlined below:

   • The subjects covered in the training were:

a. Techniques for nursery development and for the production of planting materials (Module 1) for the three target species, namely: gamal, kaliandra and lamtoro
b. Techniques for land preparation and for planting of planting materials (Module 2)
c. Techniques for plantation maintenance covering replacement of died seedlings, weeding, and fertilizing (Module 3)
d. Techniques for harvesting (Module 4) of trees of different ages and density of plantation.
e. Techniques for producing bee honey (Module 5) covering bee raising, honey harvesting and marketing

- Participants of the training were 205 in total, originating from 12 districts surrounding the plantation demplots, noting that: participants of Module 1, 2, 3 and 4, each 34 people, are the same persons, while participants of Module 5 were 35 people. It is to be noted also, that the training on harvesting techniques was implemented only at two demplots as harvesting at Humbang Hasundutan demplot is not feasible due to the fact that all 3 species were failing to grow and develop.
- The time schedule for execution of the training modules (1,2 and 3) was:
  ✓ 25-27 September 2019 at Simalungun demplot, 34 trainees
  ✓ 02-04 October 2019 at Padang Sidempuan demplot with 34 trainees
  ✓ 12-14 November 2019 at Humbang Hasundutan demplot, 34 trainees.
- The training on harvesting techniques (Module 4) was executed as follows:
  ✓ 26-28 November 2019 at Simalungun demplot, 34 trainees
  ✓ 04-06 December 2019 at Padang Sidempuan demplot, 34 trainees
- The training on bee honey production (Module 5) was carried out on 06 – 09 July 2020 (excluding preparation) in Pematangsiantar with 35 participants originating from 11 different districts.

The number of trained farmers was 205 in total which met the indicator of achievement, i.e. 100 farmers, defined in the project document. A technical report on the implementation of the activity is now available with the PMU.

iii. Activity 2.3: To train local people on village cooperative management (completed)
The activity has been fully executed with 35 participants in total. The technical report is now available with the PMU.

iv. Activity 2.4: To conduct comparative studies on wood-based energy industry development for executives and managers (completed).
Under this activity, 3 studies have been conducted which are highlighted below:

a. The Vietnam study
- Conducted on 13-19 May 2019 with 17 participants in total comprising reps. of MoEF, Regional Government (Tapanuli Utara District), forestry industry associations and PMU of the project
- The study was considered successful; the participants gained first-hand information on various aspects of forest industry development especially on forest management and forest industry development policies

- The lesson learned from Vietnam were applicable to Indonesia's case
  b. The Ganzhou, China study
    - The study was conducted on 24-30 May 2019 with Mr. Jimmy Chandra, the Project Coordinator, as the sole participant
    - The primary activity of the study was to attend the 4th Global Conference on Rubber-wood Industry Development. Among the useful lessons learned from the Conference are outlined below:
      - ✓ China consumed some 6-7 MM3 of KD sawn rubber wood mainly by the furniture industries; wastes are used for producing black pellet in combination with wastes of other wood industries
      - ✓ China is pursuing a wood industry clustering strategy for wood industry development whereby wood wastes by different industries can be efficiently collected and utilized by needing industries
      - ✓ Another critical element of the clustering strategy is construction of "grand kiln-drying facilities", in this manner, individual-processors, particularly small-sized ones, do not have to invest in kiln-drying but can use the service of the "grand kiln-drying" on a rental basis
      - ✓ In addition, wood terminal development is also an essential part of the clustering strategy. A wood terminal buys timber from different sources, both domestic and overseas, and sells to consuming processors at competitive prices due to economies of scale
      - ✓ Efficient utilization of wood raw materials is also promoted through use of wood-ripping machines having high sawing precision thus minimize wastes.
  c. The Shanghai study
    - The study was a participation in the International Forum "Together towards Global Green Supply Chains: A forest products industry initiative" held in Shanghai, China, on 22-25 October 2019; the Project was represented by Mr. Istanto of the Executing Agency and Dr. Hiras Sidabutar of the PMU.
    - Among the important lessons learned from the Forum are highlighted below:
      - ✓ The global communities have shown a positive change in their attitude towards forest industries: from initially identified as "trouble maker" to an essential element of forest resource restoration and climate change negotiation process
      - ✓ Vietnam's export value of timber products had increased from USD 1,7M in 2013 to app. USD 11,4 M in 2019, using imported raw materials and log harvested from the 3 M hectares of plantation, due mainly to ability to formulate and implement the effective strategy and policies on timber industry development.

v. Activity 2.5
   To develop technical manuals on energy forest development for three tree species planted (on-going).
   - The objective of this activity is to develop technical manuals for growing gamal, kaliandra and lamtoro for distribution to stakeholders, notably farmers.

- The activity is under implementation with the assistance of a competent national consultant.

1.3. <u>Output 3: Investment in wood-based energy industry development promoted</u>

There are 6 activities under Output 3 and five of them have been implemented as summarized below:

i. <u>Activity 3.1:</u> To disseminate information on technology and market for wood-based energy through website and other means.
   - This activity has been continuously implemented since October 2017; and will go on till end of the project.

ii. <u>Activity 3.2:</u> To organize one national workshop on wood-based energy development in Medan (completed)
   - This Activity had been implemented under YPO 1 in the form of a One-day Workshop on "Initiation of new renewable energy (EBT) development in North Sumatera Province, on 4 December 2017 in Pematang Siantar.
   - The workshop was attended by 53 participants representing the primary stakeholders and had successfully achieved its planned objectives.
   - A separate technical report on the workshop is now available with the Project.

iii. <u>Activity 3.3:</u> To examine caloric properties of three energy wood species planted
   - The activity deals with examination of caloric value of gamal, kaliandra and lamtoro planted at 3 different sites.
   - The activity has not commenced yet; it is planned for execution under YPO 4 in collaboration with FORDA.

iv. <u>Activity 3.4:</u> To conduct feasibility study on investment in commercial manufacturing of wood-based energy including electricity and wood pellets (completed)
   - This activity has been completed with the assistance of 4 (four) competent national experts led by Dr. Dede Hermawan;
   - Findings of the study had been presented to the workshop held on 2 September 2019 in Jakarta.
   - The workshop was attended by some 40 people representing government institutions, practitioners, decision makers and would-be investors
   - The feasibility study report is now available with the project

v. <u>Activity 3.5:</u> To review existing policy on wood-based biomass energy development in view of strengthening incentive for investment (completed)
   - The activity had been implemented and completed with the assistance of a national consultant, Dr Subarudi of Forestry R & D Agency;
   - A FGD on results of the review work was held on 28 January 2019 and attended by some thirty professionals;
   - A technical report on the implementation of the activity is now available for use by decision makers.

vi. Activity 3.6: To form and operate a consultation forum on renewable energy for enhancing communication and coordination between stakeholders (completed)

- The activity had been implemented and completed with the assistance of a national consultant.
- A technical report on the activity is now available with the PMU

2. Execution of the Workplans (YPO 1, YPO 2, YPO 3 and YPO 4)
2.1. The workplan reviewed

The workplan and progress in implementation of YPO 1, YPO 2, YPO 3 and YPO 4 are summarized in Table 2

Table 2. Review of workplan (YPO 1, YPO 2, YPO 3 and YPO 4) since Oct 2017 till Dec 2020

Output/Activity	YPO 1				YPO 2				YPO 3				YPO 4				Executor	Achievement (%)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
Output 1: Development of sustainable supply of energy wood initiated																		
Activity 1.1: To identify suitable lands (North Sumatera province)																	PMU,AN-FRI Expert	100
Activity 1.2: To identify Su & Av lands (3 FMUs)																	PMU,AN-FRI Expert	100
Activity 1.3: To establish demplots (3 sites) [1]																	PMU, Contractors	80
Activity 1.4: To estimate potential supply of planted energy forests																	PMU,AN-FRI	Nil
Activity 1.5: To estimate potential supply of non-forest sources																	PMU,AN-FRI	80
Output 2: Skilful manpower for development of energy forests available																		
Activity 2.1: To conduct dialogues (49 out of 50 villages)																	PMU, University	100
Activity 2.2: To train local people on energy forest development[2]																	PMU, Contractors	100
Activity 2.3: To train local people on village cooperative management																	PMU, Professionals	100
Activity 2.4: To conduct comparative studies																	PMU,EA	100
Activity 2.5: To develop technical manuals																	PMU,AN-FRI	50

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Output/Activity	YPO 1				YPO 2				YPO 3				YPO 4				Executor	Achievement (%)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
Output 3: Investment in wood-based energy industry promoted																		
Activity 3.1: To disseminate information																	PMU	75
Activity 3.2: To organize a regional workshop																	PMU	100
Activity 3.3: To examine caloric properties																	PMU, Bogor-FRI	Nil
Activity 3.4: To conduct a FS																	PMU, Experts	100
Activity 3.5: To review existing policy																	PMU, Bogor-FRI	100
Activity 3.6: To form a stakeholders forum																	PMU, Consultant	100

▥ Realized

▨ Planned

1) Demplots established, growth monitoring and maintenance on-going since October 2018, for every 4 months

AN-FRI : Aek Nauli Forest Research Institute
Su & Av : Suitable and available lands

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2.2. Progress in implementation of the activities

Progress in implementation of project activities from Oct 2017 till Dec 2020 is summarized in Table 3.

Table 3. Progress in implementation of the activities

Output/activity	Percentage Executed	Completion date		Remarks
		Originally planned	Realized/ Expected	
Output 1: Activity 1.1: To identify suitable lands (North Sumatera province)	100%	Sep 2018	Mar 2018	Completed in time
Activity 1.2: To identify Su & Av lands (3 FMUs)	100%	Sep 2018	Jun 2018	Completed in time
Activity 1.3 To establish energy forest models in Year 1 for purpose of demonstration and training (3 sites, 3 species, 36 Ha in total)	85%	Sep 2021	Sep 2021	Growth & yield monitoring on-going every 4 months since Oct. 2018
Activity 1.4 To estimate potential supply of planted energy forests	0%			Plan to commence in April 2021
Activity 1.5: To estimate potential supply of non-forest sources	100%	Jan 2019	Sep 2020	Late start due to pandemic Covid-19
Output 2: Activity 2.1 To conduct dialogues (49 out of 50 villages)	100%	Sep 2019	Mar 2019	Completed in time
Activity 2.2 To train local communities on technical skills for energy forest development covering planting, tree nursing and harvesting techniques (100 farmers leaders of 50 villages)	100%	Jun 2021	Sep 2020	Started earlier than schedule
Activity 2.3: To train local people on village cooperative management	100%	Sep 2020	Sep 2020	Late started due to pandemic Covid-19

Activity 2.4: To conduct comparative studies	100%	Sep 2021	Sep 2021	Completed in time
Activity 2.5 To develop technical manuals on energy forest development for three tree species planted	50%	Mar 2021	Mar 2021	On-going
Output 3: Activity 3.1 To disseminate information on technology and market for wood-based energy through website and other means	80%	Sep 2021	Sep 2021	Routine, on-going
Activity 3.2: To organize a regional workshop	100%	Sep 2018	Sep 2018	Completed in time
Activity 3.3: To examine caloric properties of three energy wood species planted	0%	Sep 2021	Sep 2021	Not started yet
Activity 3.4: To conduct a study on feasibility of investment in commercial manufacturing of wood-based energy including electricity and wood pellets	100%	Sep 2019	Sep 2019	Completed in time
Activity 3.5 To review existing policy on wood-based biomass energy development in view of strengthening incentive for investment	100%	Mar 2019	Mar 2019	Completed in time
Activity 3.6 To form and operate a consultation forum on renewable energy for enhancing communication and coordination between stakeholders	100%	Sep 2019	Sep 2019	Completed in time

2.3. Inputs applied

The financial and cash flow statements as of 30 December 2020 appear as Annexes 3 and 4. The amount of funds with the project at 31 December 2020 was USD

370,864.47 (Annex 1) while the remaining funds of the project on that very date was USD 29,135.53 (Annex 2).

To assist in the implementation of activities, the experts/ consultants/ contractors that have been employed are as listed below:

Name	**Activity**	**Status of work**
• Dr Aswandi	Act. 1.1, 1.2 and 1.5	Completed/ on going
• Dr Subarudi	Acts. 3.5, 3.6	Completed
• Dr Dede Hermawan	Act 3.4	Completed
• 4 small local firms	Acts. 1.3, 2.2	Establishment of demplots and training on energy forest development, completed
• Univ. Simalungun	Act. 2.1	Completed
• Professional practitioners	Act. 2.2 (Module 5)	Completed

2.4. Achievement of outputs

- In total, out of 16 planned activities, 11 activities have been completed as of 31 December 2020, 3 activities are on-going (Act. 1.3, 2.5 and 3.1) and 2 activities have not started yet: Acts 1.4 and 3.3.
- None of the planned outputs has been delivered as defined indicators of individual outputs have not been met as detailed below:

i. Output 1
There are 5 activities planned for execution and status of implementation is as follows:
✓ 3 activities completed (Acts 1.1; 1.2; 1.5)
✓ 1 activity ongoing (Acts 1.3)
✓ 1 activity has not started yet (Act 1.4)

Conclusion: Output 1 has not been delivered

ii. Output 2
Under this output, 5 activities are planned for execution with status in implementation as follows:
- Activities 2.1; 2.2; 2.3 and 2.4 completed
- Activity 2.5 on-going

Conclusion: Output 2 has not been delivered

iii. Output 3
Under this output, 6 activities have been planned for implementation; status of implementation of individual activities is summarized below:
- Activity 3.1 is on-going till end of project
- Activities 3.2, 3.4, 3.5 and 3.6 completed
- Activity 3.3 has not started yet

Conclusion: Output 3 has not been delivered

As none of the outputs has been delivered, the specific objective has not been achieved. However, the project is progressing on track to timely achieve its defined specific objective.

3. Critical Analysis of Project Progress

Overall, project operations have been going on as planned and on track to achieve planned objectives in time. A few critical notes that deserve mentioning are:
- Weeding must be carried out on time; otherwise weeds may grow taller than the plants due mainly to the abundant sunshine, fertile soil and high rainfall;
- Performing growth monitoring and reporting is a big challenge due to the size as well as dispersed location of demplots and the size of samples used;
- Results of the dialogue with local communities of 49 villages in 13 Districts indicate that local communities are most interested in producing energy wood provided that market for wood energy is available thus developing a wood pellet industry appears to be a big challenge;

4. Conclusions
- The project operation is going on smoothly and on track to achieve its planned objective without any perceptible operational problems.
- Progress in implementation of the activities is:
  11 Activities already completed, 3 activities on-going and 2 activities not started yet.
- The project would be completed on schedule within the sanctioned budget of time and funds regardless of the pandemic Covid-19.

Responsible for the Report

Name: Jimmy Chandra   **Position held: Project Coordinator**

Date: January 2021