

No.: 44/2015/TT-BCT

Hà Nội, 09 December 2015

CIRCULAR

on

Project development, Avoided Cost Tariff and Standardized Power Purchase Agreement for biomass power projects

Pursuant to the Electricity Law No. 28/2004/QH11 dated 03 December 2004 and the Law on Amendment of and Supplement to some Articles of Electricity Law dated 20 November 2012;

Pursuant to the Government's Decree No. 95/2012/NĐ-CP dated 12 November 2012 prescribing the functions, tasks, powers and organizational structure of the Ministry of Industry and Trade (MoIT);

Pursuant to the Prime Minister's Decision No. 24/2014/QĐ-TTg dated 24 March 2014 on the support mechanism for development of biomass power projects in Vietnam;

In response to the request made by the General Director of the General Directorate of Energy (GDE),

The Minister of Industry and Trade hereby promulgates the Circular on project development, Avoided Cost Tariff and Standardized Power Purchase Agreement for biomass power projects.

Chapter I

GENERAL PROVISIONS

Article 1. Scope of Regulation

This Circular stipulates the development of biomass power projects, Avoided Cost Tariff applicable to biomass power projects and Standardized Power Purchase Agreement for biomass power projects (hereinafter referred to as the SPPA)

Article 2. Subjects of Application

This Circular shall be applicable to the following subjects:

1. Investors of biomass power projects;
2. Entities that manage and operate biomass power facilities;
3. Power purchaser;

4. Organizations that develop biomass power projects for the purpose of power trading;
5. Other relevant organizations/individuals.

Chapter II

DEVELOPMENT OF BIOMASS POWER PROJECTS

Article 3. Incorporation of biomass power projects into the biomass energy development and utilization plan

1. The biomass power project investor shall, in accordance with legal regulations on works construction investment, prepare the biomass power project proposal and send it to the People's Committee of the province or centrally-run city (hereinafter referred to as PPC) where the project is located. On the basis of the project proposal, the PPC shall prepare the dossier requesting for project incorporation into the biomass energy development and utilization plan (hereinafter referred to as the dossier requesting for project incorporation into the plan) in accordance with provisions as prescribed in Article 4 of this Circular and then send to MoIT.

2. Within 05 (five) working days from the receipt of the dossier, the MoIT (GDE) shall be required to issue the written request for additional information if the dossier is not complete and/or valid.

3. The GDE shall be responsible for appraising the dossier requesting for project incorporation into the plan within 30 (thirty) working days from the receipt of the complete set of valid documentation. If required, the GDE shall be allowed to engage appraisal/review consultant(s) for appraisal purposes. On the basis of the appraisal results, the GDE shall report to the Minister of Industry and Trade for consideration/approval or for submission for the Prime Minister's approval.

Article 4. Dossier requesting for project incorporation into the biomass energy development and utilization plan

The dossier requesting for project incorporation into the biomass energy development and utilization plan shall consist of:

1. Submission letter by the PPC Chairperson requesting for project incorporation into the biomass energy development and utilization plan.

2. Basic information on the investor: legal status documentation, business registration, key personnel, project implementation experience and financial/technical capabilities, including a list of completed projects (including industrial and power projects if any).

3. Information on the proposed biomass power project
 - a) Type of biomass to be used and potential supply;

b) Necessity of project investment, advantages and constraints, and practices for the exploitation and utilization of national resources (if any);

c) Project description: location, scale and project construction area, and project's works categories; items of industry-based and local construction planning;

d) Preliminary implementation solutions, including: technical plans, technology and capacity; technical infrastructure connection option(s); equipment installation option(s); implementation progress and project management method; general option(s) for resettlement compensation and technical infrastructure support plan (if any); cost plan(s) and option(s);

dd) Environmental impact assessment, fire prevention and firefighting solutions, and requirements for security and national defense;

e) Total project investment volume; potential capital mobilization, capital sources and progress-based financing capacity; analysis and assessment of the project's financial-economic and social efficiencies.

4. Opinions of the regional Electric Power Corporation or power transmission entity (if connected to the power transmission system) on the dossier requesting for project incorporation into the plan.

Article 5. Grid-connected biomass power investment projects

1. The investor shall only be allowed to prepare a biomass power project which is incorporated in the approved biomass energy development and utilization plan and power development plan. Contents of this biomass power project shall be in accordance with the current regulations on the management of construction works investment and provisions as prescribed in Clause 3 of this Article.

2. For a biomass power project that is divided into different investment phases, the investor shall be required to prepare a separate investment project for each phase. If the difference between the expected date of project operation and the date prescribed in the biomass energy development and utilization plan is longer than 6 (six) months, the investor shall be responsible for reporting to the PPC and GDE-MoIT.

3. Contents of a biomass power investment project shall be in accordance with the legal regulations on the management of construction works investment, with the following additional items:

a) Impact assessment of option(s) for the connection of a biomass power project to the regional power system;

b) Cost/technical plan(s) and option(s) for dismantlement and management of biomass power plant equipment upon the project completion.

Article 6. Requirements for environmental protection

The investment and development activities of biomass power projects must comply with the Environment Protection Law and other relevant legal normative documents.

Article 7. Support to off-grid biomass power projects

1. Principles for considering the support to off-grid biomass power projects

- a) Socio-economic and environmental benefits shall be guaranteed;
- b) The project has been invested and put into operation;
- c) Main inputs for calculating the electricity price and support unit price for biomass power projects shall be considered on the basis of following principles:

- If a project's installed capacity is larger than the regional grid's actual capacity, its actual power generated in the previous year and planned production of subsequent years shall form the basis for determining the support unit price. For other projects, the power production shall be determined by the actual power generated or planned production as described in the approved investment project, whichever is greater;

- Total project investment shall be the total investment volume as indicated in the approved investment project;

- Depreciation expenses shall follow current legal regulations.

2. Sequence of requesting for electricity price support applicable to off-grid biomass power projects

a) The off-grid biomass power project investor shall prepare the electricity price support dossier and send it to GDE, either directly or by post. The investor shall be required to send 10 (ten) hard copies of the dossier and 01 (one) CD/DVD/USB containing electronic file(s) of the dossier and supporting documentation;

b) Within 30 (thirty) working days from the receipt of the complete set of valid documentation, the GDE shall be responsible for appraising the dossier and reporting to the Minister of Industry and Trade for submission for the Prime Minister's consideration/approval. If required, the GDE shall be allowed to engage appraisal/review consultant(s) for appraisal purposes.

Within 05 (five) working days from the receipt of the dossier, the GDE shall be required to issue the written request for additional information if the dossier is not complete and/or valid.

3. The dossier requesting for electricity price support to an off-grid biomass power project shall consist of:

- a) A letter requesting for electricity price support to the off-grid biomass power project;
- b) Description of investment project, including the information on the investor, electricity price option(s), key contents of the necessity and assessment of support benefits;
- c) Operational and business plans;
- d) Cost/technical plan(s) and option(s) for dismantlement and management of biomass power plant equipment upon the project completion;
- dd) Opinions of the PPC on the contents of the dossier requesting for electricity price support.

Chapter III
AVOIDED COST TARIFF AND STANDARDIZED POWER
PURCHASE AGREEMENT FOR GRID-CONNECTED BIOMASS
POWER PROJECTS

Article 8. Sequence of preparing, approving and promulgating the Avoided Cost Tariff (ACT) applicable to biomass power projects

1. Prior to 31 October every year, the Electricity System and Market Operator shall be responsible for taking lead and coordinating with the Purchaser, Seller and other power plants in updating the database and calculating, for the next year, the avoided costs of the national power system (hereinafter referred to as avoided costs, as prescribed in the Prime Minister's Decision No. 24/2014/QĐ-TTg dated 24 March 2014 on the support mechanism for development of biomass power projects in Vietnam) in accordance with the method as described in Appendix II of this Circular, and submitting to the ERAV.

2. Prior to 30 November every year, ERAV shall be responsible for taking lead and coordinating with the GDE in appraising input parameters and calculation results of the annual avoided costs as prepared by the Electricity System and Market Operator, and submitting for the consideration/approval by the Minister of Industry and Trade. If needed, ERAV may consult relevant organizations/individuals during the appraisal process.

3. Prior to 20 December every year, GDE shall be responsible for:

a) Reviewing and submitting for the consideration/promulgation by the Minister of Industry and Trade of the ACT (i.e. determining k1 and k2 as described in Appendix I) applicable to biomass power projects. This ACT should be at reasonable level, which is to encourage the biomass-based power production and at the same time ensure the relevance to the country's socio-economic conditions in each stage;

b) Giving notifications, no later than 02 (two) days from the issuance of ACT applicable to power projects, on the next year's ACT on the GDE's and MoIT's websites.

5. If the ACT applicable to biomass power projects is not announced yet, the preceding year's ACT shall be applied until the new ACT applicable to biomass power projects is made available. The cost difference as caused by the application of old and new ACT shall be refunded during the first payment when the new ACT is applied.

Article 9. Application of ACT to biomass power projects

The ACT shall be applicable to biomass power projects except for the following cases:

1. CHP projects
2. Bagasse-based extraction-condensing power generation projects for sugar mills.

Article 10. Application of Standardized Power Purchase Agreement (SPPA) to biomass power projects

1. The use of SPPA for biomass power projects shall be mandatory in the power purchase/sale between the grid-connected biomass power projects and the Purchaser.

2. The contents of SPPA applicable to grid-connected biomass power projects are prescribed in the Appendix III to this Circular.

3. The Seller and the Purchaser may include additional items into the SPPA in order to clarify responsibilities and powers of the parties, but no changes to the fundamental content of the SPPA shall be allowed.

Chapter IV IMPLEMENTATION ARRANGEMENTS

Article 11. Responsibilities of state management agencies

1. GDE shall be responsible for:
a) Disseminating, guiding and inspecting the implementation of this Circular;

b) Upon the request made by a party or parties, providing the Purchaser and Seller with support to address possible SPPA-related problems that may arise.

2. ERAV shall be responsible for providing the Electricity System and Market Operator with directions/guidance on calculating the Avoided Costs in accordance with the provisions as stipulated in the Appendix II to this Circular.

3. The PPC shall be responsible for monitoring, supervising and inspecting the development of local biomass power projects in accordance with

the approved biomass energy development and utilization plan and provisions as prescribed in this Circular.

Article 12. Responsibilities of related organizations/individuals

1. EVN shall be responsible for fully calculating electricity purchase cost for biomass power projects and incorporating input parameters into the EVN's scenario of annual electricity selling price, which shall be submitted and approved by competent state agency(ies).

2. The Seller (i.e. power generation entity) shall be responsible for:

a) Negotiating and signing PPA with the Purchaser in accordance with the SPPA and Avoided Cost Tariff;

b) Installing power meters in compliance with current regulations in order to measure the power quantity used for payment purpose;

c) Selling all power generated at the plant's bus bar to the Purchaser when the Avoided Cost Tariff is applied;

d) Sending 01 (one) copy of the signed PPA to GDE no later than 30 days from the signature date.

e) Complying with MoIT-promulgated regulations on power system operation, power transmission and power distribution.

3. The Purchaser shall be responsible for:

a) Negotiating and signing PPA with the Seller in accordance with the SPPA and Avoided Cost Tariff if Seller fulfills all conditions as prescribed in Article 5 of this Circular and other relevant legal provisions;

b) Complying with MoIT-promulgated regulations on power system operation, power transmission and power distribution.

4. The Electricity System and Market Operator shall be responsible for calculating, on yearly basis, the Avoided Cost Tariff and submit to ERAV.

Article 13. Provision for transition

For PPAs that have been signed before the effective date of this Circular, both parties shall be responsible for reaching agreement and signing on the amendment Appendix in accordance with provisions as stipulated in this Circular.

Article 14. Enforcement

1. This Circular shall take effect from 25 January 2016.

2. Any difficulties/constraints that may arise during the implementation process shall be reported to the MoIT for consideration and suitable amendment/addition./.

Recipients:

ON BEHALF OF

- Prime Minister, Deputy Prime Ministers;
- Office of Party's General Secretary;
- Office of Central Steering Committee on Anti-Corruption
- Ministries, Ministerial-level agencies;
- Department for Checking Legal Normative Document (Ministry of Justice)
- People's Committees of provinces and centrally- run cities;
- DoITs;
- EVN;
- Official Gazette;
- Government's website;
- MoIT's website; GDE's website;
- For filing: Clerical section, GDE, Legal section.

**MINISTER
VICE-MINISTER**

Hoàng Quốc Vượng

GIZ TRANSLATION FOR REFERENCE ONLY

APPENDIX I
AVOIDED COST TARIFF APPLICABLE TO GRID-CONNECTED
BIOMASS POWER PROJECTS
(Attached herewith the Circular No. 44/2015/TT-BCT dated 09 December 2015
by the Minister of Industry and Trade)

Table 1. Avoided Cost Tariff (ACT)

	Tariff components	Cost (dong/ kWh)	Equivalent to (US\$ Cent/kWh)
A.	Avoided power costs		
A.1.	Avoided power generation costs		
A.2.	Avoided transmission loss costs		
A.2.1	North		
A.2.2	Central		
A.2.3	South		
B.	Avoided power generation capacity costs		
C.	Avoided carbon tax costs *		
D.	Benefits to local employment *		
	Total (P)		
P _{MB}	North = $k_1*(A.1+A.2.1)+k_2*B+C+D$		
P _{MT}	Central = $k_1*(A.1+A.2.2)+k_2*B+C+D$		
P _{MN}	South = $k_1*(A.1+A.2.3)+k_2*B+C+D$		

Notes:

- * To be applicable when relevant legal regulations are made available.
- k_1, k_2 : Adjusted coefficient with the value of ≤ 1 , as reviewed by GDE and submitted to the Minister of Industry and Trade on annual basis.
- The ACT does not include VAT. The Purchaser shall be liable to pay this tax for the Seller in accordance with current regulations.

APPENDIX II
METHOD OF CALCULATING THE AVOIDED COSTS OF THE
NATIONAL POWER SYSTEM

*(Attached herewith the Circular No. 44/2015/TT-BCT dated 09 December 2015
by the Minister of Industry and Trade)*

1. Avoided power generation costs and avoided power generation capacity costs

The avoided power generation costs and avoided power generation capacity costs are calculated on the basis of the method of a simulation-based imported coal-fired thermal power plant. Accordingly, the Purchaser shall be able to avoid the construction of a simulation-based imported coal-fired thermal power plant by purchasing electricity from biomass power plant(s). In this case, the fixed and variable costs of the simulation-based power plant shall be considered as avoided capacity costs and avoided electric power costs respectively.

Following are several key parameters of the simulation-based imported coal-fired thermal power plant:

Parameters	Symbol	Unit	Value	Remarks
Installed capacity	P	MW	600	
Project lifetime	n	year	30	
Specific investment cost	SDT	USD/kW	1,700	To be adjusted annually
Average operation hours	T	Hours/year	7,000	To be adjusted annually
O&M cost	$C_{O\&M}$	%	3	
Coal price	C_{coal}	USD/ton	100	To be adjusted annually
Coal lower heating value	LHV	Kcal/kg	5377	Formosa Factory's imported coal as source of reference
Coal devaluation coefficient	k_{coal}	%	2%	This is used when the fuel price for tariff calculation purpose is based on the mean fuel price of the system's imported coal-fired thermal power plants within the year when data is taken. As the year when data is collected runs from 1 st July in year N-2 to 30 th June in year N-1 and the issued ACT is applicable to year N, it is needed to have a fuel devaluation coefficient that enables an estimation of the fuel price for year N. If the fuel price is based on the market price, this fuel devaluation coefficient shall not be needed.

- The avoided power generation costs ($LCOE_v$) and avoided power generation capacity costs ($LCOE_F$) are determined by the levelized costs of electricity of an

imported coal-fired thermal power plant as replaced by a biomass power plant, and shall be defined by the following formula:

$$LCOE = LCOE_V + LCOE_F$$

Where:

LCOE : Levelized costs of electricity [USD/kWh];

LCOE_V : Avoided power generation costs [USD/kWh];

LCOE_F : Avoided capacity costs [USD/kWh].

- The avoided power generation costs (LCOE_V) are variable costs incurred by an imported coal-fired thermal power plant including fuel costs and variable O&M costs, and shall be determined by the following formula:

$$LCOE_V = \frac{\sum_{t=1}^n \frac{A_t}{(1+i)^t}}{\sum_{t=1}^n \frac{M_{t,el}}{(1+i)^t}}$$

Where:

LCOE_V : Avoided power generation costs [USD/kWh];

A_t : Total O&M including fuel costs in year t [USD] as defined in section a below;

M_{t,el} : Power production in year t [MWh] as defined in section b below;

i : Financial discount rate [%] as defined in section e below;

n : Economic lifetime of the thermal power plant, n = 30 years;

t : Year within the plant's economic lifetime [1, 2, ... n].

- The avoided power generation capacity costs (LCOE_F) are fixed costs incurred by an imported coal-fired thermal power plant including investment costs during the construction and dismantlement costs within the year after the final year of plant lifetime (n+1), and shall be determined by the following:

$$LCOE_F = \frac{I_0 + D}{\sum_{t=1}^n \frac{M_{t,el}}{(1+i)^t}}$$

Where:

LCOE_F : Avoided power generation capacity costs [USD/kWh];

I₀ : Total investment costs during the plant construction (USD) as defined in section c below;

D : Dismantlement costs [USD] as defined in section d below;

M_{t,el} : Power production in year t [MWh] as defined in section b below;

i : Financial discount rate [%] as defined in section g below;

n : Economic lifetime of the thermal power plant, n = 30 years;

t : Year within the plant's economic lifetime [1, 2, ... n].

Parameters for calculating the levelized costs of electricity of an imported coal-fired thermal power plant are as follows:

a) A_t : Total O&M and fuel costs in year t are determined by the following formula:

$$A_t = C_{t,O\&M} + C_{t,fuel}$$

Where:

+ $C_{t,O\&M}$: O&M costs in year t; the first year shall be equal to 3% of EPC costs; inflation rate shall be incorporated in the subsequent years; EPC costs are assumed to be equal to 80% of the plant's total initial investment (excluding insurance and debt interest during construction).

$$C_{t,O\&M} = 3\% \cdot 80\% \cdot I \cdot (1 + k_{ip})^{t-1}$$

I : Total initial investment (excluding insurance and debt interest during construction) [USD] as defined in section dd below;

k_{ip} : Inflation rate, $k_{ip} = 7\%$ /year;

n : Economic lifetime of the thermal power plant, n = 30 years;

t : Year within the plant's economic lifetime [1, 2, ... n].

+ $C_{t,fuel}$: Fuel costs in year t are determined by the following formula:

$$C_{t,fuel} = \frac{M_{t,sl}}{\eta_t \cdot LHV} \cdot C_{coal} \cdot k_{coal}$$

Where:

+ η_t : the plant's performance in year t. This performance is annually calculated on the basis of the gross performance as defined according to the Prime Minister's Decision No. 78/2013/QĐ-TTg dated 25 December 2013 on the promulgation of the list and roadmap of energy-consuming devices and equipment required to be removed and groups of poor-performing generators disallowed for new construction, taking into account load-based performance, loss increase/decrease, ambient condition impact and coefficient of over-time degrading performance. So, the performance by the plant's year of operation shall be estimated as follows:

Year of operation	1	2	3	4	5	6	7	8	9	10
Plant performance	37.8%	39.9%	40.8%	40.8%	41.8%	41.8%	41.7%	42.7%	42.7%	43.0%
Year of operation	11	12	13	14	15	16	17	18	19	20
Plant performance	43.0%	43.0%	42.9%	42.9%	42.8%	42.8%	42.7%	42.7%	42.6%	42.0%
Year of operation	21	22	23	24	25	26	27	28	29	30
Plant performance	41.9%	41.9%	41.8%	41.8%	40.6%	40.6%	40.5%	39.7%	39.6%	39.6%

+ LHV: Coal lower heating value. LHV = 5,377kcal/kg = 6.2535kWh/kg.

+ C_{coal} : Coal price in the year of calculation [USD/ton]. This price is determined by the mean fuel price of the system's imported coal-fired thermal power

plants within the year prior to the year when data is taken for tariff calculation, and is adjusted according to the fuel devaluation coefficient; if there is an absence of imported coal-fired thermal power plants, the source of reference for fuel price shall be the market price taken from <http://www.coalspot.com/>.

+ k_{coal} : Coal devaluation coefficient is 2%/year.

b) $M_{t,\text{el}}$: Power production in year t of the imported coal-fired thermal power plant is determined as follows:

$$M_{t,\text{el}} = P \cdot T$$

Where:

P : Thermal power plant's capacity [MW], P = 600MW;

T : Plant's average operation hours [hours/year],

T = 7,000 hours/year (see section e).

c) I_0 : The total investment costs during the plant construction mean the total by-year cumulative investment costs during the plant construction including total initial investment, insurance cost and bank interest during the plant construction, and are calculated by the following sequence:

$$I_1 = \left(\frac{I}{m} + I \cdot k_{bh} \right) \cdot (1 + k_{xd})^{m-1}$$

$$I_2 = \left[I_1 + I \cdot \left(\frac{1}{m} + k_{bh} \right) \right] \cdot (1 + k_{xd})^{m-2}$$

$$I_3 = \left[I_2 + I \cdot \left(\frac{1}{m} + k_{bh} \right) \right] \cdot (1 + k_{xd})^{m-3}$$

⋮
⋮
⋮

$$I_0 = I_m = \left[I_{m-1} + I \cdot \left(\frac{1}{m} + k_{bh} \right) \right] \cdot (1 + k_{xd})^{m-m}$$

Where:

I : Total initial investment (excluding insurance and debt interest during the plant construction) [USD] as defined in section dd below;

$I_{1, 2, 3, m}$: Total investment of construction year 1, 2, 3, ..., m (including insurance cost and debt interest during the plant construction);

m : Total number of construction years (years), m = 4 years;

k_{xd} : Interest rate during the plant construction [%/year], $k_{xd} = 6\%$ /year;

k_{bh} : Insurance cost during the plant construction [%/year], $k_{bh} = 0.2\%$ /year.

d) D: Dismantlement cost within the year after the final year of plant lifetime (n+1) shall be estimated as follows:

$$D = \frac{D_{n+1}}{(1+i)^t}$$

Where:

D_{n+1} : Dismantlement cost within year n+1 is defined as 1% of total initial investment (I) with inflation rate included;

$$D_{n+1} = 1\% \cdot I \cdot (1+k_{ip})^n ;$$

k_{ip} : Inflation rate, $k_{ip} = 7\%$ /year;

I : Total initial investment (excluding insurance and debt interest during the plant construction) [USD] as defined in section dd below;

i : Financial discount rate [%] as defined in section g below;

n : Economic lifetime of the thermal power plant, $n = 30$ years

t : Year within the plant's economic lifetime [1, 2, ... n].

dd) I: Total initial investment (excluding insurance and debt interest during the plant construction) [USD] and is determined by the following formula:

$$I = S\bar{D}T \times P$$

Where:

P : Coal-fired power plant's capacity Công suất nhà máy điện than [kW];

S \bar{D} T: Specific investment cost of the imported coal-fired thermal power plant [USD/kW];

The base year's specific investment cost shall form the basis for determining rational specific investment cost for the imported coal-fired thermal power plant.

The specific investment cost for the year when the tariff is prepared shall be based on the base year's specific investment cost, and equipment price index (MUV) for the base year and the year when the tariff is prepared. Assuming that 2014 is the base year and 2015 is the year when the tariff is prepared, the 2015 specific investment cost shall be as follows:

	Unit	Value	Remarks
Specific investment cost, base year, C_{2014}	\$/kW	1700	
MUV, base year, MUV_{2014}		106.34	The base year's MUV (MUV_{2014}) is announced by the World Bank on www.worldbank.org
MUV for 2015, MUV_{2015}		106.65	
Specific investment cost adjusted for 2015, C_{2015}	\$/kW	1705	$C_{2015} = C_{2014} [MUV_{2015}/MUV_{2014}]$

e) T: The average operation hours for the project lifetime are estimated on the basis of the average operation hours of imported coal-fired thermal power plants within the year when data is collected for tariff calculation; if there is an absence of imported coal-fired thermal power plants, the average operation hours shall follow current regulations;

$$T = 7000 \text{ hours/year.}$$

g) i (%): Financial discount rate: The pre-tax weighted average cost of capital (WACC) shall be applied, and determined in accordance with current regulations and the following formula:

$$WACC = w_{debt}k_{debt} (1 - tax) + w_{equity}k_{equity}$$

Where:

W : Weight (debts w_{debt} 70%; equity w_{equity} 30%);

k : interest rate, in which:

+ Debt interest rate k_{debt} is estimated as follows:

$$k_{\text{debt}} = \text{Risk premium} + \text{Government's 10-year bond interest rate} \\ = 3.70\% + 6.17\% = 9.87\%$$

Risk premium	3.70%	http://data.worldbank.org/indicator/FR.INR.RISK
Government's bond interest rate (10-year)	6.17%	http://asianbondsonline.adb.org/vietnam.php

+ Equity interest rate k_{equity} is estimated as follows:

$$k_{\text{equity}} = \text{debt interest rate} + \text{market risk premium (equity)} \\ = 9.87\% + 8.80\% = 18.67\%$$

Debt interest rate	9.87%	
Market risk premium (equity)	8.80%	IESE Business School, Navarra, Spain; http://www.iese.edu/research/pdfs/DI-0920-E.pdf

tax: i.e. Corporate income tax (Tax = 22%), which is adjusted when the law on corporate income tax is amended.

h) The US\$ exchange rate applicable to the year when data is collected for tariff calculation shall be calculated on the basis of daily average and follow the US\$ selling rate at the closing time as determined by Headquarter Office, Bank for Foreign Trade of Vietnam.

2. Avoided transmission loss costs

Following are formulas for calculating the average avoided transmission loss costs for the North, Central and South regions:

$$T_{B,Avg} = \sum_j (T_{B,j} \times t_j) \\ T_{T,Avg} = \sum_j (T_{T,j} \times t_j) \\ T_{N,Avg} = \sum_j (T_{N,j} \times t_j)$$

Where:

$T_{B,Avg}, T_{T,Avg}, T_{N,Avg}$:	Average avoided transmission loss costs for the North, Central and South regions respectively.
$T_{B,j}, T_{T,j}, T_{N,j}$:	Avoided transmission loss costs for the North, Central and South regions respectively by hour and season, which are defined by components of avoided transmission loss costs within the ACT applicable to small hydro power plants as annually calculated by the National Load Dispatch Center in accordance with provisions as prescribed in Circular No. 32/2014/TT-BCT dated 9 October 2014 or substitute documents.
t_j	:	Power production proportion by season and hours within the year (%) in accordance with provisions as prescribed in Circular No.

	57/2014/TT-BCT dated 19 December 2014 by the Minister of Industry and Trade on the method/sequence of formulation and promulgation of electricity generation cost frame or substitute documents.
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3. Avoided carbon tax costs

To be applicable when relevant legal regulations are made available.

4. Benefits to local employment

To be applicable when relevant legal regulations are made available.

APPENDIX III
**STANDARDIZED POWER PURCHASE AGREEMENT FOR GRID-
CONNECTED BIOMASS POWER PROJECTS**

*(Attached herewith Circular No. 44/2015/TT-BCT dated 09 December 2015
by the Minister of Industry and Trade)*

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**STANDARDIZED POWER PURCHASE AGREEMENT FOR GRID-
CONNECTED BIOMASS POWER PROJECTS**

BETWEEN

SELLER

(Name)

AND

PURCHASER

(Name)

*(Attached herewith Circular No. 44/2015/TT-BCT dated 09 December 2015
by the Minister of Industry and Trade)*

SOCIALIST REPUBLIC OF VIETNAM
Independence- Freedom- Happiness

POWER PURCHASE AGREEMENT

Pursuant to the Electricity Law No. 28/2004/QH11 dated 03 December 2004 and the Law on Amendment of and Supplement to some Articles of Electricity Law dated 20 November 2012;

Pursuant to Commerce Law dated 14 June 2005;

Pursuant to the Prime Minister's Decision No. 24/2014/QĐ-TTg dated 24 March 2014 on the support mechanism for development of biomass power projects in Vietnam;

Pursuant to Circular No. 44/2015/TT-BCT dated 9 December 2015 by the Minister of Industry and Trade on the on project development, Avoided Cost Tariff and Standardized Power Purchase Agreement for biomass power projects;

Based on the demand for power purchase/sale of the two parties,

Today, DD.....MM.....YY, at.....

We are:

Seller: _____

Address: _____

Phone: _____ Fax: _____

Tax Code: _____

Account No.: _____ at Bank _____

Represented by: _____

Title: _____ (authorized by _____ in accordance with

Authorization Document No. _____, DD _____ MM _____ YY _____)

Purchaser: _____

Address: _____

Phone: _____ Fax: _____

Tax Code: _____

Account No.: _____ at Bank _____

Represented by: _____

Title: _____ (authorized by _____ in accordance with

Authorization Document No. _____, DD _____ MM _____ YY _____)

The parties hereto agree to sign the Power Purchase Agreement for the power purchase and sale as follows:

Article 1. Interpretation of terms

In this Agreement, the following terms shall be construed as follows:

1. Lender means an organization/individual that grants the Seller or Purchaser loan(s) to effectuate this Agreement.

2. Party or parties means the Seller, Purchaser or both or entities(s) that shall take on rights and obligations of a party or the parties of this Agreement.

3. Connection point is where the electric line of the Seller is connected to the electric system of the Purchaser as agreed in Appendix A of this Agreement.

4. Electricity delivery point is where the metering equipment is installed in order to determine the Seller's power output sold as prescribed in Appendix B (this delivery point belongs to the main or back-up metering system at the power plant).

5. Electric power purchased/sold is the amount of electric power generated by the power plant at its highest capacity, subtracted by the electric power self-consumed and lost by the power plant at the electricity delivery point, calculated in kWh and accepted to be sold and delivered to the Purchaser by the Seller as prescribed in Appendix C of this Agreement.

6. Agreement includes this text and Appendices herewith.

7. Inter-bank average interest rate is the inter-bank average interest rate applicable to 01 (one)-month term as announced by the State Bank of Vietnam at the time of payment.

8. Base interest rate is the interest rate announced by the State Bank, acting as the basis for credit institutions to determine the interest of their business activities.

9. Agreement year is a calendar year of 12 (twelve) months counting from the first day of January to the last day of December of that year, except for the first agreement year which shall start on the date of commercial operation and end on the last day of December of that first agreement year. The last agreement year shall end on the last day of the agreement duration.

10. Due date refers to a 15 (fifteen)-day term from the date on which the Purchaser receives electricity-payment bill as issued by the Seller.

11. Business days: are the days except Saturdays, Sundays and holidays as prescribed current regulations.

12. Date of commercial operation of generators is the date on which the Power Plant is ready to sell electricity to the Purchaser and satisfies the following conditions: (i) the Power Plant has already completed its initial tests on electricity generators and connection equipment, (ii) the Power Plant has

been licensed for electricity activities in the field of power generation and (iii) the two parties have completed meter readings for payment purposes.

13. Date of commercial operation of the Power Plant is the date on which the commercial operation of the last generator takes place, and the Power Plant is granted with the official Permit for electricity activities in the field of power generation.

14. A power plant consists of the Seller's power generation equipment, protective equipment, connection equipment and related auxiliary equipment; and land to be used for electricity and auxiliary facilities for the purpose of electricity production under this Agreement.

15. Standards and technical regulations of the electricity industry are regulations, standards and practices applied in the electricity industry and issued by competent organizations of Vietnam, or regulations/standards of international organizations or of nations in the regions in accordance with legal stipulations and recommendations of equipment manufacturers, taking into account resources, materials, fuel and technical conditions acceptable to the Vietnamese electricity industry at a given point of time.

16. Regulations on the operation of national electricity system mean Circulars/Processes prescribing the standards for operation of the electricity system, conditions and procedures for grid connection, load dispatch of the electricity system, and metering in the electricity transmission and distribution system.

17. Emergency situations are situations that may disrupt electric power supply services to the Buyer's customers, including cases that may cause substantial damages to the national electricity system, threatening the human lives and properties or affecting the technical capacity of the power plant.

Article 2. Delivery, power purchase/sale and operation

1. Power delivery

From the date of commercial operation, the Seller agrees to deliver and sell electric power to the Purchaser and the Purchaser accepts to buy electric power from the Seller in compliance with the provisions of this Agreement. The Purchaser shall be responsible for purchasing all electric power generated to the grid by the Seller at the electricity purchase price as stipulated in Clause 2 of this Article. The Seller shall be entitled to the environment-related benefits in compliance with legal stipulations and international treaties.

2. Electricity purchase/selling price

The electricity purchase/selling price in this Agreement shall apply the provisions as stipulated in Article 14 of the Prime Minister's Decision No. 24/2014/QĐ-TTg dated 24 March 2014 on the support mechanism for development of biomass power projects in Vietnam and Circular No. 44/2015/TT-BCT dated 9 December 2015 by the Minister of Industry and

Trade on the on project development, Avoided Cost Tariff and Standardized Power Purchase Agreement for biomass power projects as follows:

a) For combined heat and power projects: The electricity selling price at the delivery point is 1,220 VND/kWh (excluding VAT, equivalent to 5.8 US cents/kWh). The purchase price shall be adjusted to the fluctuations in VND/USD exchange rate.

b) For other biomass power projects: The electricity selling price shall apply the annually-promulgated avoided cost tariff for biomass power projects.

3. Electricity purchase/sale

The Seller shall agree to operate the power plant within the available capacity of equipment and in accordance with standards and technical regulations of the electricity industry. The Seller shall not be liable for direct damages to the Purchaser as caused by Seller's provision of insufficient electric power, which is not the Seller's fault. If no Purchaser's written consent is reached when the Seller reduces the electric power sold for the purpose of electricity sale to the third parti(es) or for other purposes, the Seller shall not be exempt from his/her liability.

4. Operation plan

a) Prior to or on the effective date of this Agreement, the Seller shall provide the Purchaser with the chart(s) on annual average electric power generation at the power plant's bus bar on a monthly basis in compliance with the basic design of the power plant and the chart(s) on electric power generation using biomass data of the previous years.

b) The Seller shall provide the Purchaser with annual electricity production plan(s), comprising of:

- Monthly operation plan(s) of the year (electricity output and available capacity);

- Generator maintenance/repair plan(s) for different months of the year (if any).

c) The Seller must provide information on maintenance/repair and generator mobilization plan(s) for the load dispatch entity (which has control authority) in compliance with legal stipulations on the operation of the national electricity system.

5. Outage

a) The Seller shall inform, within three months in advance, the Purchaser of the scheduled outage and expected duration for periodic repairs. The Purchaser shall be required to discuss, prior to the outage, with the Seller if the change for outage date/duration is to be requested. The Seller shall be responsible for discussing and reaching an agreement with the Purchaser in accordance with the Standards/Regulations of the electricity industry and Regulations on power system operations.

b) The Seller shall be required to inform, at its earliest convenience, the Purchaser of the unplanned outage (including duration) and complies with the Regulations on power system operations.

6. Electricity grid operation

In order to ensure the power purchase/sale as prescribed in the PPA, the Seller and Purchaser shall be responsible for the operation and maintenance of electricity grid and power plant connection equipment within the scope of properties management in compliance with Regulations on the plant's connection voltage-based electricity distribution/transmission grid, Standards/Regulations of the electricity industry and Regulations on power system operations. The Purchaser shall be required to discuss and reach its consensus with the Seller on load balance and voltage stability for the distribution grid, making sure the maximum load of distribution/transmission grid.

7. Interruptions during the receipt and purchase of electricity

The Purchaser shall not be liable for obligations of purchasing or receiving electricity when:

a) The Seller's power plant does not guarantee its operation and maintenance in compliance with the regulations on the operation of the national electricity system and technical standards/regulations of the electricity industry;

b) The Purchaser installs equipment, and repairs, replaces, inspects or checks the electricity grid, and all of these activities are directly related to the connection to the Seller's power plant;

c) The transmission/distribution grid, which is connected to the Purchaser's grid, or the Purchaser's electricity grid equipment, which is directly connected to transmission/distribution grid, encounters incidents;

d) The Purchaser's grid requires post-incident recovery solutions in accordance with provisions on the operation of the national electricity system and technical standards/regulations of the electricity industry.

8. Interruptions during the electricity delivery and sale

The Seller may terminate or curtail the amount of electricity sold and delivered to the Purchaser in the event of equipment installation, repairs, replacement, inspection, testing or repairs of the power plant, which directly affects the delivery of electric power to the Purchaser.

Before terminating or curtailing the amount of electricity delivered to the Purchaser, the Seller must notify the Purchaser thereof for at least 10 (ten) days in advance, clearly stating the reasons for interruptions, expected starting date and duration of interruptions.

9. Coordination

The Purchaser shall be responsible for minimizing the curtailment or outage duration in circumstances as described Clause 7 of this Article. Except for emergency cases, the Purchaser shall be required to inform the Seller for at least 10 (ten) days in advance, clearly stating the reasons for curtailment or outage, expected starting date and duration of interruptions. When necessary, the Purchaser must transfer load dispatch commands related to the operation of the power plant as received from the load dispatch entity and the Seller must comply with those commands, except for the cases in which those commands would change the plant's mobilization characteristics.

10. Power factor

The Seller agrees to operate the power plant in synchronized manner with the Purchaser's grid for the purpose of electricity delivery at the delivery point and voltage level/power factor from 0.85 (corresponding to outgoing reactive power) to 0.90 (corresponding to incoming reactive power) as prescribed in Appendix C. Except when the Purchaser otherwise requests, the Seller's power plant must serve the Purchaser at the power factor as determined in accordance with the Regulations on distribution grid at the delivery point.

11. Synchronized operation

The Seller shall be responsible for providing the Purchaser with written notification at least 30 (thirty) days before the first-time synchronization of power generators at the Seller's power plant into the Purchaser's electricity grid. The Seller must coordinate with the Purchaser during the first-time and subsequent synchronizations.

12. Standards

The Seller and the Purchaser must comply with regulations relating to the delivery and receipt of electricity in accordance with the Regulations on distribution grid, Regulations on metering and legal normative documents related to the electricity industry.

13. Change of commercial operation date

Within 06 (six) to 12 (twelve) months prior to the commercial operation date as stipulated in Appendix A, the Seller must give official confirmation on the change of commercial operation date. The parties shall be liable for cooperation; the Purchaser shall not be allowed to decline without valid justifications.

Article 3. Connection, metering and operation of the power plant

1. Responsibilities at electricity delivery point

The Seller shall be responsible for the investment in/installation of equipment for the electricity transmission and delivery to the Purchaser at the electricity delivery point. The Purchaser shall be responsible for cooperation with the Seller in performing this installation.

2. Connection

a) The Seller shall be responsible for the investment, construction, operation and maintenance of connection equipment, which is for connecting the power plant to the electricity transmission/distribution grid in accordance with Regulations on transmission/distribution grid and other related regulations. The Seller shall bear the costs for upgrading the metering system at the transformer station in order to measure/count 02 (two)-way active and reactive power in the distribution line linking with the power plant in accordance with the provisions as stipulated in Appendix B of this Agreement.

b) The Purchaser shall reserve the right to review the technical design and adequacy of protective devices. The Purchaser must provide the Seller, within 30 (thirty) days from the receipt of a complete set of design-related technical documentation, with the written notification on appraisal results. The Purchaser must notify in writing all design errors that are detected. The Seller must perform additional modifications as recommended by the Purchaser in accordance with legal regulations on national electricity system operation and technical standards/regulations of electric power industry.

3. Connection standards

The Seller's and Purchaser's equipment must be installed, operated and connected in compliance with Regulations on distribution grid.

4. Inspecting the implementation of connection standards

Upon the receipt of in-advance notification as regulated, one party shall reserve the right to inspect the other party's connection equipment to ensure the compliance with legal regulations on the operation of the national electricity system. The inspection should not affect the operation of the inspected party. If the inspected party's equipment fails to meet the conditions for operation and maintenance, the inspecting party must notify the inspected party all required calibrations. The inspected party shall be responsible for applying necessary remedies upon the receipt of justified request for calibrations from the inspecting party.

5. Excited generator

If the Seller's power plant has excited generator(s), the Seller must install a separate capacitor for each generator for the purpose of calibrating the power factor. Those capacitors must be connected or disconnected concurrently with each excited generator. The KVAR of capacitors must ensure the highest standard value, but not exceed KVAR no-load thresholds of generators. The Seller must pay the Purchaser for electricity consumption for operating excited generator(s) at electricity retail price of the corresponding voltage level if the consumed electricity is taken from the Purchaser's electricity grid. This payment shall be made in accordance with the provisions as prescribed in Article 4 of this Agreement.

6. Metering

a) The Seller's responsibilities:

- Install and maintain the main and backup metering equipment for the purpose of power metering and billing;
- Make available the space for installing the metering equipment if the connection point is within the power plant.

b) Requirements of metering equipment:

- Comply with metering and other related regulations;
- Be capable of storing and recording bi-dimensional active and reactive power;
- Be capable of transferring data to locations as requested by the Purchaser;
- Be leaded/sealed and capable of recording/storing large quantity of data.

7. Meter readings

Every month (or otherwise agreed by the two parties), the Purchaser and the Seller shall together perform the meter readings.

After giving notification as prescribed, the Purchaser shall be allowed to enter the power plant or metering equipment place for meter readings and other activities related to the performance of this Agreement. The Purchaser's activities at the power plant must not affect the Seller's normal operations. The Purchaser-appointed employees or inspectors must obey safety regulations and the power plant's rules.

8. Inspection of metering equipment

a) The checks/inspection of metering equipment and confirmation of metering equipment accuracy must comply with power-metering regulations and be performed by competent or authorized organization(s). Inspection(s) should be done before the first-time operation of metering equipment. All metering equipment must be sealed, leaded and locked after being inspected, and the Purchaser shall reserve the right to witness this process.

b) All the power plant's metering equipment must be inspected on a yearly basis in accordance with power-metering regulations, and the inspection cost shall be paid by the Seller. If required, a party may propose to inspect the accuracy of any metering equipment, and the inspection cost shall be borne by the proposing party. The inspection results must be notified to the other party upon request. If the metering equipment shows errors, which are greater than the acceptable level as prescribed in metering regulations, the Seller shall be responsible for calibrating or replacing and returning the Purchaser the relevant paid amount plus the interest rate of relevant paid amount (based on the prescribed basic interest rate) and inspection expense(s). Each party shall be notified in advance and reserve the right to appoint person(s) to participate in sealing-off, checking, inspecting and

leading/sealing the power meter. If one party finds that the power meter is broken or not working, such party must promptly notify the other party for subsequent checks and repairs by the one who owns the equipment.

9. Transfer of electricity ownership

At the electricity delivery point, the electricity ownership shall be transferred from the Seller to the Purchaser. At this point, the Purchaser shall have the right for ownership/control and take responsibility for the electric power received. The electric power shall be transmitted by three (3)-phase AC, fifty hertz frequency (50Hz) with the voltage as specified in Appendix C of this Agreement.

10. Operation of the power plant

The Seller must operate the power plant in accordance with Regulations on electricity distribution grid; Standards of the electricity industry and other relevant legal provisions.

Article 4. Billing and payment

1. Billing

Every month (or otherwise agreed by the two parties), the Purchaser and the Seller shall together performing the meter readings on the agreed date to determine the amount of electricity delivered in the given month. The Seller shall record, using the template format, the meter readings that shall be confirmed the Purchaser representative(s), and send meter-reading results together with printed invoice (or by fax with an official letter later or by mail) to the Purchaser no later than 10 (ten) working days from the completion of meter readings.

2. Payment

a) The Purchaser shall pay the Seller for the entire electric power purchased/sold no later than the due date of payment as prescribed in Clause 2 Article 2 and Appendix D of this Agreement.

b) If the Purchaser fails to pay within the period as specified above, the Purchaser shall be liable to pay the interest for the late payment. The late payment interest shall be equal to the inter-bank average interest rate applicable to one (01)-month term, counting from the date after the due date.

c) If the Purchaser does not participate in the meter readings as prescribed in Clause 1 of this Article, the Purchaser shall be required to pay the Seller the amount of electric power delivered in accordance with regulations.

3. Estimation of electricity sold

If there is insufficient data necessary to determine the amount of electricity or payment that the Purchaser owes the Seller (except for cases as specified in Clause 4 of this Article), the Seller shall be required to estimate

those figures and make adjustment to the payment amount to reflect the actual situation for the purpose of subsequent payments.

4. Sequence of applying and replacing meter figures

In order to determine the electricity amount received and accepted by the Purchaser within a given payment period, the meter readings, billing and payment must be based on data estimates of the following sequence:

a) Power plant's main meter figures for the given payment period, which show a degree of accuracy in accordance with the provisions of Clause 8, Article 3 of this Agreement;

b) Power plant's backup meter figures (if the backup meter is used to meter the electricity delivered), which show a degree of accuracy in accordance with the provisions of Clause 8, Article 3 of this Agreement;

c) When all meters fail to accurately record the electricity amount delivered, the estimation of electricity delivered must be done on the basis of the power plant's monthly average data (if any) for the same payment period of the preceding year of the agreement year, and must be reasonably adjusted for the given billing period based on the corresponding available data that affect the power plant's electricity generation, e.g. biomass parameters, generator efficiency, number of operating hours, operation duration of generator(s) and self-consumed electricity (generally referred to as "operation parameters") while the meters are not working.

In the absence of reliable data, the estimation of electricity delivered must be done on the basis of the power plant's monthly average electricity data collected for 06 (six) payment periods (or less if the power plant has been operating for less than 06 (six) months) just preceding the date when meters stop working and must be adjusted according to the outage duration or operation parameters.

5. Bill disputes

a) If one party does not agree with all or part(s) of the bill in terms of electricity output delivered or payment amount, such party shall reserve the right, prior to the due date of payment, to send a written notification to the other party. If the parties fail to reach agreement, the duration for dispute settlement for one party or all parties shall be 01 (one) year from the date when the Purchaser receives the valid invoice.

b) If the Seller wins in dispute settlement as stipulated in Clauses 1 and 2, Article 7 of this Agreement, the Purchaser must pay the Seller all the disputed amount plus the interest calculated on the basis of inter-bank average interest rate and the monthly interest to be covered from the due date to the payment date of disputed amount.

If the Purchaser wins, the Seller shall be required to refund the disputed amount that the Seller already received, plus the interest calculated on the

basis of inter-bank average interest rate and the monthly interest to be covered from the date of payment receipt to the payment date of disputed amount.

All payments referred herein must be done within 15 (fifteen) days from the issuance date of final decision on dispute settlement in accordance with Article 7 of this Agreement.

Article 5. Force majeure

1. Force majeure

In this Agreement, force majeure means events that occur beyond the control and are not due to the non-performance, inadvertence or lack of responsibility during the Agreement performance of a party, including the following:

a) Decision(s) by competent authorities, affecting a Party's fulfillment of obligations;

b) After the date of commercial operation, the Seller fails, despite all reasonable efforts, to obtain the permit(s) or approval(s) from the State competent agenc(ies).

c) Natural disasters, fires, explosions, floods, tsunamis, epidemics or earthquakes;

d) Violence, riots, war, resistance, sabotage, embargo, besiegement, blockade, or any act of war or hostilities against the community whether the war is declared or not;

đ) Nationalization, expropriation or confiscated properties of the Seller under decision(s) by competent State agencies;

e) Other causes, which are beyond the control and not the faults of the party citing for force majeure events.

2. Settlement of a force majeure event

In case of force majeure, the party citing for force majeure event(s) shall:

a) Promptly send a written notice on force majeure event(s) to the other party, clearly stating reasons, sufficient supporting evidence for such force majeure event, anticipated time/duration and possible impacts on its fulfillment of obligations;

b) Make all efforts within its capacity to perform its obligations as stipulated in the Agreement;

c) Promptly take necessary remedies and provide evidence for its reasonable efforts to address such force majeure event;

d) Take necessary measures to mitigate damages to the parties of the Agreement;

dd) Promptly inform the parties of the termination of such force majeure event.

3. Consequences of a force majeure event

If all remedies/actions as prescribed in Clause 2 of this Article are taken without leading to the fulfillment of a part or the whole of its obligations as prescribed in this Agreement, the violating party shall be exempt from liabilities related to the failure to perform obligations under the Agreement as caused by such force majeure event.

4. Duration of a force majeure event

If a force majeure event prevents a party from fulfilling this Agreement's obligations for a period of 01 (one) year, the other party shall reserve the rights to unilaterally terminate the Agreement after 60 (sixty) days from the date of written notification unless such obligations are to be performed within 60 (sixty) days; and provided that the Purchaser does not choose to terminate the Agreement under force majeure events as stipulated in paragraphs b and dd, Clause 1 of this Article.

Article 6. Duration of Agreement

This Agreement shall take effect from DD...MM...YY and terminate after 20 (twenty) years from the date of commercial operation. Upon the completion of the Agreement, the contents of this Agreement shall continue to take effect for a certain period of time necessary for the concerned parties to prepare the final invoice(s), adjust invoice(s), make payments and complete all rights/obligations in this Agreement.

For CHP plants within sugar mills that already started their operations without having determined the date of commercial operation, the duration of the Agreement shall be agreed upon by the two parties.

Article 7. Breaches, damage compensations and suspension of Agreement performance

1. The Seller's breaches

a) The Seller fails, within 03 (three) months, to meet the commercial operation date as prescribed in Appendix A, except for force majeure event(s);

b) The Seller fails, within 60 (sixty) days from the receipt of the Purchaser's written notice, to perform or comply with the contents of the Agreement.

If the Seller or the Seller's lending party has tried to address the breaches within the said 60 (sixty) days but its remedial actions could not be completed within such period, the Seller or the Seller's lending party shall be allowed to continue its remedial actions for a maximum of 01 (one) year from the receipt date of written notice on the Seller's breaches. The Seller shall be required to continue its remedial actions in a shortest duration of time, except for cases as prescribed in Article 5 of this Agreement;

c) The Seller denies the validity of a part or the whole of this Agreement;

d) It violates the Seller's commitments as stipulated in Article 10 of this Agreement.

2. The Purchaser's breaches

a) The Purchaser fails, within 60 (sixty) days from the receipt of the Seller's written notice, to perform or comply with the contents of the Agreement.

If the Purchaser or the Purchaser's lending party has tried to address the breaches within the said 60 (sixty) days but its remedial actions could not be completed within such period, the Purchaser or the Purchaser's lending party shall be allowed to continue its remedial actions for a maximum of 01 (one) year from the receipt date of written notice on the Purchaser's breaches. The Purchaser shall be required to continue its remedial actions in a shortest duration of time, except for cases as prescribed in Article 5 of this Agreement.

b) The Purchaser fails to pay the non-dispute amount on the due date under this Agreement, this failure continues for more than 90 (ninety) days without valid justifications;

c) The Purchaser denies the validity of a part or the whole of this Agreement;

d) It violates the Purchaser's commitments as stipulated in Article 10 of this Agreement.

3. Remedial procedures and settlement of agreement breaches

a) If a breach of the Agreement is found, the affected party must send written notice to the violating party. The violating party must be cooperative to address such breach;

b) The lending party of the violating party shall reserve the right to, as a remedy, appoint a third party or replace the violating party provided that a written notice must be sent to the violating party. In this case, such replacement should not increase the financial burden on the affected party. The affected party must accept such replacement or ask the third party as appointed by the lending party to remedy the agreement breaches. The lending party of the violating party shall provide the affected party with a written notice on anticipated remedies on the violating party's behalf, and reach a consensus with the affected party on a reasonable period from the receipt date of written notice on the fulfillment of Agreement's obligations on the violating party's behalf.

4. Compensation for damages

a) The violating party shall be obliged to pay compensation for damages caused by its breaches to the affected party. The compensation shall cover the values of actual/direct damages to the affected party as caused by the violating party as well as potential direct benefits for the affected party in case of no breaches;

b) The affected party must provide proven evidence on damages/level of damages caused by such breaches and potential direct benefits for the affected party in case of no breaches.

5. Suspension of Agreement performance

If the breaches of the Agreement are not settled in accordance with Clause 4 of this Article, the affected party may continue to ask the violating party to take remedial actions or to suspend the Agreement performance by providing written notice to the violating party. If the affected party chooses to suspend the Agreement performance under the provisions of this Agreement, the Agreement parties shall not be required to perform contractual obligations, except for cases as prescribed in Clause 1 of this Article, and the affected party shall reserve the right to request for damage compensation from the violating party.

If the Seller is the affected party that chooses to suspend the Agreement performance, the compensation shall be calculated as the value of the Seller's actual electricity generated in the preceding year as of the suspension date of Agreement performance.

Article 8. Settlement of disputes

1. Settlement of disputes via negotiations

a) In case of disputes between parties of this Agreement, the requesting party must provide the other party with a written notice on the disputes and subsequent requirements within a certain valid period. The parties shall negotiate the possible settlement of disputes within 60 (sixty) days from the receipt date of written notice from the requesting party. The settlement of disputes, which are related to electricity payment, shall be done within 15 (fifteen) days from the receipt date of written notice from the requesting party.

b) If the consensus cannot be reached as prescribed above, the parties may submit a written request to the General Directorate of Energy for assistance.

c) This mechanism for dispute settlement shall not apply to disputes, which are not directly arisen from this Agreement between one party of the Agreement and the third party.

2. Settlement of disputes in the electricity market in compliance with legal regulations

If the settlement of disputes via negotiations as described in Clause 1 of this Article is not possible or one of the parties does not comply with the negotiation results, a party or parties may request for dispute settlement in accordance with the provisions of the MoIT's Circular No.40/2010/TT-BCT dated 13 December 2010 prescribing the sequence and procedures for settling disputes on the electricity markets, or choose a body, as agreed by the two

parties, in order to settle disputes in accordance with the provisions of relevant laws.

Article 9. Entrustment, transfer and restructuring

1. Entrustment and transfer

If this Agreement is entrusted or transferred for performance purpose, the provisions on rights and obligations as prescribed in the Agreement shall continue to take effect to the parties' legal/authorized representatives.

If the Seller entrusts or transfers the performance of this Agreement, the Purchaser's written consensus shall be required, except for cases that the Seller partly or wholly authorizes its lending party in order to borrow and purchase equipment or construct the power plant. If the Seller's entrusted amount is close to the value of good-performing equipment, it is regarded as a valid entrustment under this Agreement.

The party that entrusts or transfers shall be required to send a written notice on entrustment or transfer to the other party.

2. Restructuring

If the restructuring of the electricity industry affects the Seller's or Purchaser's rights or obligations under this Agreement, the performance of the Agreement shall be transferred to take-over unit(s). The Purchaser must be responsible for written confirmation and guarantee that take-over units shall fulfill their obligations to purchase or distribute electricity and other rights/obligations under this Agreement.

3. Choosing to participate in the electricity market

The Seller may choose to participate in electricity market in accordance with the regulations on competitive electricity market. In this case, the Seller must send the Purchaser and ERAV a written notification for 120 (one hundred and twenty) days in advance, and shall reserve the right to unilaterally terminate this Agreement upon fulfillment of notified obligations in accordance with legal regulations.

Article 10. Other agreements

1. Amendment of the Agreement

The amendment of and supplement to this Agreement shall be done in accordance with stipulations of Circular No. ...DD...MM...YY by the Minister of Industry and Trade on project development, Avoided Cost Tariff and Standardized Power Purchase Agreement for biomass power projects, and shall be performed in writing.

2. Obligations for cooperation

The Seller shall be obliged to perform legal procedures related to the power plant. The Purchaser shall be responsible for cooperating with the Seller to obtain its license and necessary approval/permission from competent State agencies related to the plant location, fuel, resources management,

investment, transmission and sale of electric power, ownership and operation of the power plant, including the provision of supplementary or archived documents and carrying out other necessary and reasonable activities for the purpose of agreement performance by the parties.

3. Applicable law

The interpretation and performance of this Agreement shall be done in consistent with provisions of Vietnamese laws.

4. Non-fulfillment of rights

The non-fulfillment of rights at any time under this Agreement shall not affect the enforcement of rights under the subsequent Agreements. The parties agree that a party's statement on non-fulfillment of rights to any commitments or conditions under the Agreement, or any breaches of the Agreement shall not be considered as an abandonment of such party's similar rights in the future.

5. Independence of Agreement contents

In case any part of this Agreement is considered as inconsistent with the legal regulations or invalid under the court's ruling, other parts of the Agreement shall still take effect if these parts can be comprehensively interpreted without necessary reference to the invalid text.

6. Notification

Any notifications, invoices or other necessary communications during the performance of this Agreement must clearly state the date and reference to the Agreement. Notifications, invoices or communications must be made in writing and delivered by mail or fax. If being sent by fax, the original must be sent later by mail with prepaid postage. Notifications, invoices or communications must be sent to the following addresses:

- a) The Seller: Director General, _ _____, Việt Nam;
- b) The Purchaser: _____, _____, Việt Nam;
- c) The parties should specify, in their notifications including those related to the lending party, the another sender's or recipient's address in a format as prescribed in this Clause;
- d) For the said methods of delivery, each notification, invoice or communication sent by mail shall be considered as being delivered and received by the time it reaches the recipient's address or by the time it is refused by the recipient at such address.

7. Confidentiality

The Purchaser agrees to keep confidential the power plant's information as stipulated in the Agreement's Appendices, except for the information previously announced by the Seller or the General Directorate of Energy.

8. Termination of Agreement

This Agreement shall be terminated in the following circumstances:

- a) After 20 (twenty) years from the date of commercial operation;
- b) A party shall reserve the right to terminate the Agreement in case of force majeure event that prevents the other party from performing the Agreement obligations for a period of longer than 01 (one) year. In this case, the termination of Agreement must be performed according to the sequence as prescribed in Clause 5 Article 5 of this Agreement;
- c) The Seller participates in the electricity market.

Article 11. Implementation commitment

The two parties shall be committed to perform this Agreement as follows:

- 1. Each party is legally established to engage in business operations in Vietnam;
- 2. Each party’s signature and performance of this Agreement is in accordance with the conditions and contents of the Power Operations License as issued by the competent authority and relevant legal provisions;
- 3. A party shall have no legal or administrative acts preventing or affecting the other party from performing this Agreement;
- 4. A party’s signature and performance of this Agreement shall not violate any provisions of other Agreements or not be part of another Agreement in which such party is a beneficiary.

The Agreement is made in 10 (ten) copies of equal validity with 4 Appendices, which are integral to this Agreement. Each party keeps 04 (four) copies, and the Seller shall be deemed to send 01 (one) copy of PPA to the General Directorate of Energy and 01 (one) copy to the ERAV.

SELLER’S REPRESENTATIVE
(Title)

PURCHASER’S
REPRESENTATIVE
(Title)

(Sealed and Signed)

(Sealed and Signed)

(Full Name)

(Full Name)

APPENDIX A
TECHNICAL SPECIFICATIONS OF THE POWER PLANT

(Attached herewith the Agreement No. ...DD ... MM ... YY...)

Part A. General specifications

1. Name of the power plant: _____
2. Location of the power plant: _____
3. Rated power: _____ kW
4. Power sold to the Purchaser: minimum ____ kW; maximum ____ kW
5. The power plant's self-consumption: minimum __ kW; maximum __ kW
6. Expected annual electric output: _____ kWh
7. Completion date of plant construction: _____
8. Expected date of the plant's commercial operation: _____
9. Voltage generated to distribution grid: _____ V
10. Connection point to distribution grid: _____
11. Location of metering equipment: _____

Part B. Operational parameters of specific technology

1. Generation technology (CHP, independent power generation):
2. Characteristics of designed operation: _____

APPENDIX B
REQUIREMENTS FOR SYSTEM CONNECTION

(Attached herewith the Agreement No. ...DD ... MM ... YY...)

(To be separately applied to individual projects according to technical specifications of the projects, including one-line diagram of connection devices, list of metering system characteristics/voltage)

APPENDIX C
METERING AND DATA COLLECTION SYSTEM

(Attached herewith the Agreement No. ...DD ... MM ... YY...)

I. Place of installation and features of the metering system

1. Place of installation of the metering system:

The main and backup metering systems shall be installed in the power plant in accordance with the agreement on technical design for electricity metering system as stipulated in Document No.....of.....(as an appendix to the Agreement).

2. The features of the metering system must be consistent with the provisions as prescribed in the MoIT-promulgated Circular on Power Metering.

II. Technical requirements for the metering system

Technical requirements for metering devices/circuits, seal-off measures and requirements for meter data collection/readings must be consistent with the provisions as prescribed in the MoIT-promulgated Circular on Power Metering.

III. Places of metering

The two parties agree on the power plant's current places of metering as follows:

Generator cluster	Main metering system	Backup metering system
	[...]	[...]
[...]	[...]	[...]
	[...]	[...]

IV. Methods to determine the power delivered

1. On the first (1st) day each month, legal representatives of the two Parties shall jointly conduct meter readings and prepare a minute that confirms the meter figure at 0h00 of the first (1st) day and the amount of power delivered/received in the preceding month.

a) The amount of power delivered by Seller to the Purchaser within the paid month shall be calculated by the formula:

$$A_G = \sum_{i=1}^n A_{G_i}$$

Where:

A_{G_i} : Amount of power delivered at the main metering system's place i within the month;

A_G : Amount of power paid by the Purchaser to the Seller within the paid month (kWh).

b) The amount of power received by Seller from the national electricity system within the paid month shall be calculated by the formula:

$$A_N = \sum_{i=1}^n A_{N_i}$$

Where:

A_{N_i} : Amount of power received at the main metering system's place i within the month;

A_N : Amount of power paid by the Seller to the [Power Company ...] according to the electricity tariff applicable to industrial customers as prescribed by competent state agencies (kWh).

APPENDIX D

ELECTRICITY PAYMENT

On monthly basis, the Purchaser shall make payment to the Seller for the entire power purchased at the price as stipulated in clause 2 of Article 2 according to the following formula:

$$Q = P * F * A_g * (1+t)$$

Where:

- Q means the total electricity payment made by the Purchaser to the Seller (dong);
- A_g means the amount of power purchased/sold every month;
- F means the VND/USD exchange rate (selling rate) as announced by the Vietnam Bank for Foreign Trade on the preceding date of the Seller's bill issue date (VND/USD);
- t means the value-added tax rate (%);
- $P = (P_{MB} \text{ or } P_{MT} \text{ or } P_{MN})$ means the electricity selling price, which is prescribed in the Circular No. 44/2015/TT-BCT dated 09 December 2015 by the Minister of Industry and Trade on the project development, Avoided Cost Tariff and Standardized Power Purchase Agreement for biomass power projects, and shall be annually promulgated by the MoIT.