

Renewable Energy Projects and Key Financing Issues

Climate Thailand Conference 2010

Jupiter Room 14, Challenger Building,
IMPACT Exhibition Center, Muang Thong Thani
19-21 August 2010
Time 9:00-12:00

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Renewable energy frameworks in place

I Background

1.1 Renewable energy under SPP and VSPP regulations refers to power plants using:

- Wind
- Solar
- Hydro
- Biogas
- Biomass

as sources of power generation.



1.2 VSPP VS SPP

- VSPP - power plant selling power to the PEA or MEA of not more than 10 MW.
- SPP – power plant selling power to the EGAT of more than 10 MW up to 90 MW.

1.3 Adder

- Adder is the special purchase price per kW-hour on top of normal tariffs calculated in accordance with formula under the relevant SPP or VSPP regulation.

1.4 Why renewable energy projects?

- Qualified for CDM under Kyoto Protocol
- In line with 15-year alternative energy development plan (แผนพัฒนาพลังงานทดแทน 15 ปี) (2008-2022) announced by Ministry of Energy
- By 2022, renewable energy will account for ~20% of total generation capacity (from 6% this year)
- Adders are given as incentive for investment in renewable energy projects separate from privileges granted under BOI
 - Exemption on corporate income tax for 8 years (without cap on profit)
 - Exemption on import duty for machinery for certain years
 - Etc.
- Steady revenue stream over the life of PPA

II Applicable Rules and Regulations

2.1 VSPP Scheme

- a) Rule on Purchase of Power (ระเบียบการรับซื้อไฟฟ้าจากผู้ผลิตไฟฟ้าขนาดเล็กมาก (พลังงานหมุนเวียน) พ.ศ. 2549) กำหนดในเรื่อง
 - Base tariffs (อัตรารับซื้อไฟฟ้า)
 - Power generation process
- b) ระเบียบว่าด้วยการเดินเครื่องกำเนิดไฟฟ้าขนาดเล็กกับระบบของการไฟฟ้าฝ่ายจำหน่าย
- c) Standard PPA
- d) Adder
 - Adder is given under the PEA Notification (for projects located outside Bangkok) and MEA Notification (for projects located in Bangkok)

* Currently, new applications for wind and solar projects (from 28 June 2010) are not accepted and adder for new solar projects is cancelled and will be replaced by the “Feed-in-Tariff”.

Highlights from the VSPP Adder Notifications

- Adders are available for all types of renewable energy
- Amount of adder given to each type of renewable projects varies
- Classification of adder
 - Normal adder - available for all VSPP renewable projects
 - Special adder - given to VSPP projects located in 3 southernmost provinces of Thailand, i.e., Yala, Pattanee and Narathivas.
- Rate of adder (from max. to min.)
 - Solar – Baht 8 per KWh for projects having executed PPA and Baht 6.5 per KWh for projects whose applications are under consideration
 - Wind
 - Waste
 - Hydro
 - Biomass and biogas
- Adder availability period
 - Wind and solar projects : 10 years from COD (for projects having executed PPA)
 - Other types of projects : 7 years from COD
- Adder for new solar projects has been cancelled and will be replaced by Feed-in-Tariff.

Adders granted to VSPP Renewable Energy Projects

Fuel	Previous Adder (Baht/kWh)	Present Adder (Baht/kWh)	Special Adder for the 3 Southernmost Provinces (Baht/kWh)	Total Adder for the 3 Southernmost Provinces (Baht/kWh)	Special Adder for Projects Replacing PEA Diesel Power Plants (Baht/kWh)	Total Adder for Projects Replacing PEA Diesel Power Plants (Baht/kWh)	Term from COD (years)
1. Biomass							
– Up to 1 MW	0.30	0.50	1.00	1.50	1.00	1.50	7
– More than 1 MW	0.30	0.30	1.00	1.30	1.00	1.30	7
2. Biogas							
– Up to 1 MW	0.30	0.50	1.00	1.50	1.00	1.50	7
– More than 1 MW	0.30	0.30	1.00	1.30	1.00	1.30	7
3. Waste							
(1) Fertilization or landfill	2.50	2.50	1.00	3.50	1.00	3.50	7
(2) Thermal process	2.50	3.50	1.00	4.50	1.00	4.50	7
4. Wind							
– Up to 50 kW	3.50	4.50	1.50	6.00	1.50	6.00	10
– More than 50 kW	3.50	3.50	1.50	5.00	1.50	5.00	10
4. Hydro							
– From 50 kW but less than 200 kW	0.40	0.80	1.00	1.80	1.00	1.80	7
– Less than 50 kW	0.80	1.50	1.00	2.50	1.00	2.50	7
5. Solar	8.00	8.00	1.50	9.50	1.50	9.50	10
Cancelled							

2.2 SPP Scheme

- a) Rule on Purchase of Power (ระเบียบการรับซื้อไฟฟ้าจากผู้ผลิตไฟฟ้ารายเล็ก (จากพลังงานหมุนเวียน) พ.ศ. 2550) ประเภท Firm และ Non-firm
- b) Standard PPA
- c) Adder
 - Adder is given under the EGAT Notification
 - Classification of adder - Same as VSPP

* Currently, new applications for wind and solar projects (from 28 June 2010) are not accepted and adder for new solar projects is cancelled and will be replaced by the “Feed-in-Tariff”.



Highlights from the Notification

- Generally same as VSPP Adder
- Amount of adder for each type of fuel source varies
- Rate of adder (from max. to min.)
 - Solar – Baht 8 per KWh for projects having executed PPA and Baht 6.5 per KWh for projects whose applications are under consideration
 - Wind
 - Waste
 - Biomass and Biogas
- Adder availability period
 - Wind and solar projects : 10 years from COD (for projects having executed PPA)
 - Other types of projects : 7 years from COD
- Adder for new solar projects has been cancelled and will be replaced by Feed-in-Tariff.

Adder under SPP Renewable Energy Projects

Fuel	Previous Adder (Baht/kWh)	New Adder (Baht/kWh)	Special Adder for the 3 Southernmost Provinces* (Baht/kWh)	Total Adder for the 3 Southernmost Provinces (Baht/kWh)	Term from COD (years)
1. Biomass	-	0.30	1.00	1.30	7
2. Biogas	-	0.30	1.00	1.30	7
3. Waste	2.50	2.50	1.00	3.50	7
(1) Fertilization or landfill					
(2) Thermal process	2.50	3.50	1.00	4.50	7
4. Wind	3.50	3.50	1.50	5.00	10
5. Solar	8.00	8.00	1.50	9.50	10
Cancelled					



2.3 Feed-in-Tariff

- a) Will replace adder for solar, wind and probably all categories of renewable projects
- b) Points to be factored in Feed-in-Tariff determination
 - Project costs
 - Technology deployed
 - Government's subsidy
 - etc.
- c) Likely to be a fixed rate applicable throughout the life of PPA regardless the change in base rate and Ft.
- d) Rate of Feed-in-Tariff may vary on annual basis



III Major Renewable Energy Projects Being Developed

- Biogas / Biomass – plenty on VSPP program
- Wind farm – many projects on SPP program being developed in Phetchabun, Nakornratchasima, Chaiyaphum
- Solar projects
 - Major SPP solar projects currently in the market:
 - 74 MW by NED (3 parties JV)
 - 38 MW by Bangchak
 - 51 MW by Bangkok Solar
 - 25 MW by Ekarat Solar
 - 25 MW by Solartron
- Waste – heavy in municipal waste

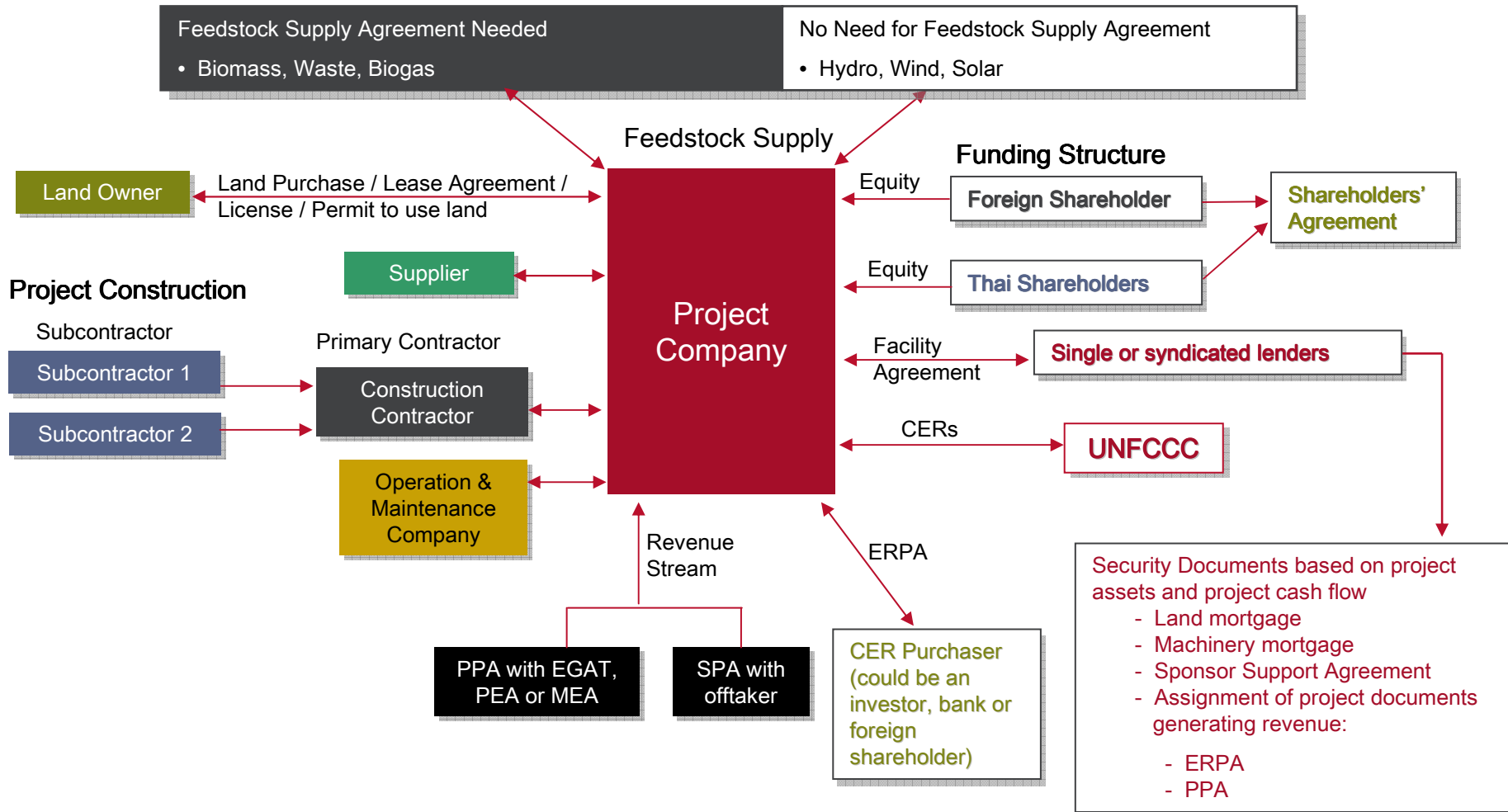
IV Financing Sources

- Commercial banks – key financing source
- Government funds on limited basis



V Project Structure

Project Finance on Limited Recourse Basis





VI Key Bankability Issues

6.1 Major Shareholders / Sponsors

- Who are they?
- Their financial positions
- Level of commitment to the project
- Financial support normally required by lenders up to project completion date:
 - Shareholding retention
 - Cost overrun support (COS)
 - Cash deficiency support (CDS)



6.2 Project costs – Debt to Equity Ratio

Minimum 1 : 1

Moderate 2 : 1

Maximum 3 : 1

6.3 Land issues

- Zoning
- License / permit to utilize land
- Location must correspond with the delivery point specified in the PPA



6.4 EPC Contract, Supply Contract, Construction Contract

- Turnkey or split
- Contract split for tax planning
 - Onshore – offshore - coordination
 - Onshore – offshore – guarantee by parent company

Tax advice and opinion must be sought to minimize the recharacteristic risks

- Liquidated damages
 - Delay – rate per day
 - Performance - % of contract price



6.5 Power Purchase Agreement with the Grid

- SCOD
- Contracted deliverable in MW
- Delivery point
- EGAT's, PEA's, MEA's consent is required for the assignment of rights and novation

6.6 ERPA

- Revenue from sale of CERs (if significant) can strengthen cash flow of the project

6.7 Feedstock Supply Agreement

- Required for biomass, biogas and waste projects
- Long term supply commitment, price (fixed with indexation) and enforceability of an agreement are key issues

6.8 Permits and Licenses

- Construction phase
 - EIA may be required for both VSPP and SPP project, depending on technology, location, etc.
 - 10MW threshold applies to thermal power plants only
 - Serious impact EIA and HIA may be required for biomass projects of 150 MW or more (under a draft regulation)
 - Construction permit
- Operation phase
 - Energy Operation License (ใบอนุญาตประกอบกิจการพลังงาน)
 - Power generation license (ใบอนุญาตผลิตไฟฟ้า), issued to power generation operators; and
 - Power distribution license (ใบอนุญาตจำหน่ายไฟฟ้า), required if power is sold to non-power producer
 - Controlled Energy Permit (ใบอนุญาตผลิตพลังงานควบคุม)

Q&A



Thank you

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