### ESCAP Asia-Pacific Seminar on Climate Change

# A CASE STUDY IN CDM PRACTICALITIES

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# **1 Purposes of the Study**

1) Facilitate, through partial funding, the production of a PDD for a specific project

2) Help develop expertise in PDD production and other CDM practicalities

3) On the basis of actual experience, identify additional measures needed to further promote CDM

### 2 The Project

### 1) Description

- a) Five (at least four) 20MW renewable energy power plants in Thailand. To be fueled by rice husk.
- b) Thai developer
- c) World-class equity partners and EPC/O&M contractord) NEPO subsidies

### 2) CDM status

a) Schedule

- PDD prepared by TMS
- Desk review by DNV
- Site-visit by DNV

- Finished (April)
- Finished (May)
- Finished (June)
- Revised PDD (minor improvements) To be finished

(August)

• Disclosure for public comments

Planned for

August/September

#### b) Preliminary validation comments

- Baseline --- Well-elaborated and reasonable
- MVP --- Conceptually sound but needs a little further development
- Overall --- Likely to fulfill the requirements for CDM

#### 2) CER buyers

- a) Strong interest from distinguished CER investors
- b) Scarcity value for Asian CERs at the moment

# **3 Host Country Approval**

### 1) Three approaches

- a) Ad-hoc project-based MOUs
- b) No action until host country policies and procedures are clearly established
- c) Middle way (Our approach)

#### 2) Phased-out validation process

- Phase I ... Desk review
- Phase II  $\dots$  Site visit  $\rightarrow$  All is fine except for host country approval
- Phase III ... Formal validation following host country approval

### 3) Advantages of the middle-way approach

- a) Organized approach
- b) Expertise development
- c) Host country officials and stakeholders will have specific projects to look at to deepen discussions

### **4 Lessons Learned**

### 1) CDM process less onerous than it seemed

- a) Rule book vs. playing
- b) DOE more practical than feared
- c) Professional service available to assist with PDD production

### Validation



(Cf) Auditing financial statements

(Cf) Producing financial statements

### 2) Value of financial assistance for PDD development

- a) Developers reluctant to spend out-of-pocket expenses in view of uncertainty about
  - CDM framework
  - Prospect for approval of their project

b) Spending staff time viewed as acceptable investment

#### 3) Two advantages of CDM designation

- a) Direct: CER revenues → Provide a critical increase in ROE
- b) Indirect: Higher project status → Increases the project's attractiveness to equity investors and lenders

# 5 Additional Measures Needed for CDM Promotion

### 1) Augmented financial assistance for PDD production

- a) Number of projects
- b) Types of project
- c) Frequency of the program

### 2) Project Funding

a) CERs are helpful in enhancing ROEs.

b) However they cannot fund renewable energy projects by themselves

- Typically amount to only 5-10% of capex, less on a discounted cash flow basis.
- Difficulty in bringing the revenue forward
- c) Project finance for CDM projects
  - Risk mitigation
  - Capacity building

# APPENDICES



### **A CER Revenues**

### 1) Renewable energy

a) Example: A 20MW plant with US\$30 million for capexb) Rough estimate calculations:

- 20 MW x 24h x 365d x  $0.80 \cong$  140,000 MWh/year
- 140,000 MWh/year x 0.56kg CO<sub>2</sub>e/KWh ≅ 75,000 tCO<sub>2</sub>e/year, where 0.56= (0.40 + 0.72)/2
- 75,000 tCO<sub>2</sub>e/year x (\$3-5) = \$0.23-0.38million/year

#### (US\$million)

Crediting Period Price	Annual	7 years	10 years	21 years
US\$3/CO2	0.23	1.6	2.3	4.8
US\$5/CO2	0.38	2.7	3.8	8.0

#### c) Upside Potential

- Replacing more carbon-intensive energy use. (e.g. bunker oil-fuelled on-site power generation)
- Methane emission in baseline

(e.g. some fuel sources are left is decay clearly emitting methane and no regulations likely to change the situation)

#### 2) Methane Capture

- a) Example: A facility to capture 4,000 tCH4/year with US\$4 million for capex.
- b) Rough estimate calculations
  - 4,000 tCH4/year x 60% x (21-3)  $\cong$  43,000 tCO<sub>2</sub> /year
  - 43,000 tCO<sub>2</sub>e/year x (\$3-5) = \$0.13-0.22 million/year
  - (0.13-0.22) x 10years = \$1.3-2.2million

Even on a discounted cash flow basis, a significant part of the initial investment can be recovered through CER sales. c) Upside potential

- Additional credits for displacement of fossil fuel in steam/electricity generation (Typically a 10%-15% increase in the CER amount.)
- In some cases, baseline emissions can be equal to the amount of methane captured.

 $\rightarrow$ 100% instead of 60% in b) on the previous page.

Typically landfill methane recovery projects fall in this category.

# 3) ROE enhancement by CERs in renewable energy projects

- \$30million capex  $\rightarrow$  \$10million for equity assuming a 2:1 debt/equity ratio
- 75,000tCO<sub>2</sub>e/year  $\rightarrow$  0.23~0.38million/year at @\$3~\$5
- Increase in ROE:  $$0.23 \sim 0.38 \text{ million} / $10 \text{ million} = 2.3 \sim 3.8\%$

(Note: The increase in ROE can be more than 5% if the project displaces a heavily carbon-intensive mode of power generation, e.g. on-site diesel.)

### B Some of Our Experiences in CDM Projects

### 1) Renewable energy

- a) Thailand 5 X 22MW power plants using rice husk as fuel
- b) Thailand 20MW power plant using emission-neutral biomass fuel
- c) Malaysia 10MW power plant fueled by empty fruit bunches

### 2) Methane capture

Philippines – anaerobic treatment of municipal waste to capture methane; the methane will be used to fuel power generation.

- Malaysia Methane recovery from wastewater at palm-oil plantation: the biogas will then be used to generate power, replacing fossil-based electricity
- Philippines Anaerobic treatment of wastewater at a large chicken farm

### C About us

### 1) Tokyo Mitsubishi Securities

- a) Wholesale investment banking arm of Bank of Tokyo-Mitsubishi
- b) Full range of financial activities in equities, bonds, and derivatives

### 2) Clean Energy Finance Committee

- a) Operating unit specializing in environmental financial services related to clean energy
  - Financial advisory services equity, debt, and CDM finance
  - Assistance with CDM process
  - Production of Project Design Document (baseline setting, etc.)
- b) Team of professionals dedicated solely to energy CDM projects in Asia