

PRE-FEASIBILITY STUDY REPORT FORMAT
(revised version 3)

TA 5972-REG:

Promotion of Renewable Energy Energy Efficiency and GHG Abatement
(PREGA)



December 4, 2004

PROJECT TITLE

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List of Annexes

Author(s), Organisation(s), Date

1. **Executive Summary (for all project elements - no more than half a page)**
2. **Map Showing the Location of the Project - within Country and/or Region/City**
3. **Introduction**

Briefly describe the current country economic, energy and greenhouse mitigation situation; the proposed project; the project's benefits; overall economic and financial viability of the project; stakeholders involved; and likely dates for any following feasibility studies, detailed costing, detailed design, negotiation of power purchase agreements, CDM income streams, and commercial and donor loan negotiations; etc. (no more than one page)

4. Background

- 4.1 Description and prospects for the sector in which the project will operate (such as municipal solid waste or agricultural residues utilisation, agricultural product processing, renewable or hybrid electricity generation for stand alone grid, and whether sector is profitable/growing or unprofitable/shrinking, current utilization of basic energy efficiency measures such as condensate return in energy demand to be met, existence of heating/drying/cooling process loads for use of waste heat, and so forth)
- 4.2 Opportunities, constraints and issues related to the project sector (central/national and provincial/local legal contexts, power export (purchase) prices and terms, existence of fossil fuel and/or grid electricity explicit or implicit subsidies, enforcement of (any) environmental regulations, existence and capacity of energy service companies to provide energy audits/process design/commissioning/financing/project ongoing maintenance, and so forth)
- 4.3 Sustainable development objectives likely to be contributed to by the project (such as reduced air or water pollution, greater use of renewable fuels, reductions in national energy import costs, contribution towards renewable energy or energy efficiency targets, reduced reliance on imported fossil fuels, contribution towards alleviating peak electricity supply constraints, achieving improvements in industry competitiveness from reduced costs, reduced local or regional pollution, and so forth)
- 4.4 Government policies and strategies relevant to the project sector (such as existence of standard power purchase contracts at known prices and for multi-year duration energy supply, policies that facilitate foreign investment, waiver of import duties on capital equipment, repatriation of foreign investment income, and so forth)
- 4.5 Extent to which applicable policies are enforced (such as extent to which policies are/are likely to be backed up with necessary regulations or circulars)

etc, extent to which policies and regulations are or are likely to be consistently enforced, ability to access nominal power export policies as binding contracts for duration of project, and so forth)

- 4.6 Overlap of government and ADB objectives (such as increasing international competitiveness, poverty reduction, sustaining existing livelihoods, support for women and children's health, reduction in indoor/outdoor/local/regional pollution, support for rural sectors, improvement of cost reflectiveness of energy sector, and so forth)

5. Description of the Proposed Project

- 5.1 Project rationale from perspective of relevant key stakeholders (such as why host government, sectoral organizations, civil society groups/NGOs should/do/will continue to support project objectives. Alignment with ADB, other development financial funding agencies and ODA priorities and funding)
- 5.2 Project goal, objective, expected results, activities, scopes, proposed specific characteristics and circumstances. Specifically, what concrete outputs are to be achieved in the project towards the goal and objectives.
- 5.3 Poverty reduction and other MDG (Millenium Development Goal) impacts
- 5.4 Technology transfer (what technology will be transferred, intellectual property issues, ongoing technical support, and so forth)
- 5.5 Core business of the proposed project partners and the business and financial relationships between them (as required and available)
- 5.6 The product(s) or service(s) to be generated by the project: -
- characteristics of energy produced (electricity, steam or hot water at specified temperature/pressure and daily, weekly and monthly quantities to match current and projected energy loads and profiles);
 - realistic expected annual production (GWh, GJ, TOE replaced, etc) to tie in with seasonal fuel supply/energy/production demand, using realistic annual hours of use - including provision for scheduled maintenance and major plant/generator overhauls;
 - how any electricity/fuel/steam/hot water produced will be utilized in an efficient production process including specified current and future process temperature/pressures for steam/hot water/direct drying and so forth;
 - why the stated annual production/activity level is plausible for the plant concerned compared with other comparable plants/activities in the country and in relation to international practice
 - Customer/process ability to pay for full cost of providing energy service (particularly relevant for small grid electricity to replace explicitly and more commonly implicitly subsidized/unrealistically low electricity prices where source of necessary ongoing subsidies is not identified, or source and likelihood of ongoing explicit or implicit subsidies continuing for project duration)

6. Project implementation plan

Include timeframe of the planning, implementation, and operational stages (such as project commencement date, construction starting dates, construction completion dates and project operational lifetimes).

7. Contribution to sustainable development

- 7.1 Long-term GHG and reduction of local pollutants.
- 7.2 Other benefits including economic, social, environmental and technological improvements.
- 7.3 Other impacts of the project (note an example of a positive impact would be if the demonstrated project technology is replicated in other projects in the same country or elsewhere in Asia).

8. Project Baseline and GHG Abatement Calculation

8.2 Current production and delivery patterns (These provide the starting point for defining a framework of a baseline for monitoring activities. Therefore, technical information on the baseline (current delivery system or “without project” scenario), its status and adequacy in meeting the demand is required).

8.3 Flowchart of the current delivery system with the main components and their connections (such as process or power plant process schematics).

8.4 Status, adequacy and operation modes of the baseline (current delivery system).

8.4 Project boundary and monitoring domain

List the GHG emission sources and sinks related to the project, and make a distinction amongst: -

- Direct on-site emissions (Emissions from fuel combustion, say from coal or gas used in a power plant)
- Direct off-site emissions (Such as emissions from transportation of coal or biomass used in the power plant)
- Flow chart of the project (with its main components and connections).
- Project boundaries (such as drawn in the flowchart, and excluding processes beyond the control or influence of the project, but including the relevant control processes beyond the strict project boundary – for example to generate secondary energy carriers like electricity and/or heat).

8.5 Baseline methodology and calculation of baseline emissions

- Statement of which approved methodology (as approved by the CDM Executive Board) has been selected.
- How the approved methodology will be applied in the context of the project.

- Present the baseline and its underlying assumptions and analysis in a clear and transparent manner, preferably in a spreadsheet model.
- Describe formula, state assumptions, calculate and project the anthropogenic emissions by sources of GHG of the baseline.
- Describe formula, calculate and project any leakage of the baseline.

8.6 Calculation of total project GHG emissions

- Describe formula and calculate the post-project implementation GHG emissions' total based on direct and indirect emissions.

8.7 Net emission reduction

- Calculate the emission reduction from the project by subtracting the total project emissions from the baseline emissions. Give emission reduction figures for all years from the start of the project until the end of the crediting time. Indicate clearly the proposed CDM crediting period of the project¹.

9. GHG emission reduction monitoring and verification

- 9.1 Identification of data needs and data quality with regard to accuracy, comparability, completeness and validity;
- 9.2 Describe methodology used for data collection and monitoring including quality assurance/control provisions for monitoring, collecting and reporting;
- 9.3 Estimates of costs for monitoring and verification

10. Financial Analysis of the Project [use manual of ADB (2002)]

10.1 Estimation of Overall Cost Estimates

List and sum total costs, in both foreign and local currencies.

10.2 Project Financial Analyses

- The FIRR and NPV without the benefits of CO₂ credits
- The FIRR and NPV with the inclusion of CO₂ credit prices at 3, 5 and 10 US \$/t of CO₂

10.3 Financing Plan

Indicate the sources and proportions of finance for all foreign and local costs

11. Economic Analyses [use manual of ADB (1997)]

11.1 Statement of poverty reduction impacts

11.2 Statement of social, gender and environment impacts

- Reduction of local pollutants, further findings and recommendations etc
- Land use impact, if relevant

¹ The crediting period can be either a period of seven years, with the potential for renewal for maximum 2 additional periods; or a period of ten years.

- Migration, resettlement, good governance, community infrastructure, community organization, etc

11.3 Project Economic Analyses

- The EIRR and NPV without the benefits of CO₂ credits
- The EIRR and NPV with the inclusion of CO₂ credit prices at US \$ 5/tonne of CO₂ with sensitivity analysis at \$3 and \$10/tonne

12. Stakeholders' comments

- 12.1 Invitation letters to the Stakeholders
- 12.2 Comments of local Stakeholders (such as public, individuals, groups and communities likely to be affected by the project)
- 12.3 How any comments received have been incorporated in the project design

13. Key factors impacting project & baseline emissions

- 13.1 List key legal, economic, political, socio-demographic, environmental and technical factors affecting: -

- baseline of energy production, use, costs, emissions; and
- project activity levels, energy production, energy use reductions, GHG emission composition or levels.

- 13.2 Project Uncertainties

List, rank and comment on risks and means available to manage key factors that may affect the achievement of a successful project (such as reliance on passing and/or enforcement of government policies, risk that necessary multi-year binding power purchase agreements will not be available in practice, risk of trade liberalization lowering product prices, duration and cost impacts of process or product approval or implementation delays, and so forth)

14. Conclusions and Recommendations

15. Any other relevant information

16. Annexes, for any more detailed supporting data and reports

17. References

ADB – Asian Development Bank, (1997), Economic Analysis for Projects, Asian Development Bank, Manila, Philippines.

ADB – Asian Development Bank, (2002), Guidelines for the Financial Governance and Management of investment Projects Financed by the Asian Development Bank, January, Manila, Philippines