Executive Summary

A. Preamble

Investments to generate energy from industrial wastes (total potential of 1022 MW from 10 selected sectors) are generally cost effective and offer attractive rates of returns. The concept of industrial waste-to-energy has therefore been successfully implemented independently in industrial sectors like distilleries, pulp and paper, dairy etc., in India. The waste-to-energy sector in India is beginning to develop with some full-scale prototype/demonstration projects in the urban solid waste sector. The total power generation potential is estimated to be 1461 MW with an equal proportions of thermal and biological technologies adopted by the 299 (class I) cities considered for this study. These projects are based on biomethanation, gasification, incineration and RDF with a capacity range of 250 – 1000 TPD MSW to produce 2.5 to 21 MW power with a cost of Rs.8 –16 Crores per MW.

The industrial waste-to-energy projects offer good investment opportunities for bankers because of four main reasons. Firstly, the industrial projects offer a decent return on capital employed. Secondly, the risk factor is backed up by credit rating of the promoter increasing the degree of comfort for the banker. Thirdly, the banker enjoys the option of escrowing the entire receivables of the industrial unit to ensure repayment and lastly, the banker has the availability of security for the assistance.

The urban waste-to-energy projects are generally complex and capital-intensive in nature. A waste-to-energy project can be designed, executed and operated by a private entrepreneur/organisation, the industrial unit or the urban local body or by waste management service provider either on supply and commission basis or on BOOT basis.

One of the more important factors to achieve financial closure for projects is the ability of the promoter to structure the project in a manner that addresses all issues related to the technical feasibility and economic viability. For this, the promoter (i.e. the industrial unit or the urban local body or the BOOT operator) prepares and submits a Detailed Project Report to the banker / financial institution, establishing technical feasibility, financial/commercial viability, economic viability, social acceptability and institutional workability of the project.

A proper understanding of the phases of the project cycle and the requirements of the lending institutions are the prerequisites for the project proponent / applicant seeking financial assistance by way of grant / credit / loans, etc. The phases of the project cycle that the proponent needs to consider are Pre-identification, Identification of the project, Preparation of the Project Report, Appraisal of the project, Implementation (Construction / Erection), Operation and Maintenance and Periodical Evaluation

B. Implementation Alternatives

While developing the rationale for funding any waste-to-energy project, the investor is always aware of the fact that any such project undertaken by the industry or the urban local body would only lead to a marginal increase in the overall power generation potential with concurrent benefits of a satisfactory waste management infrastructure. The promoter can be a private entrepreneur/organization or Urban Local Body (ULB). A series of risks and several barriers are inevitable during the course of implementation of all the WTE projects.

Each bank, financial institution and other participants like venture funds, private investors have their own system of rating a project on the risk matrix. The system is based on the technical data available, outlook of evaluating officers and the past performance record of similar projects. Normally, the issues that a bank or financial institution would look while analyzing the risks associated with the waste to energy projects are Promoter's background, Technical soundness of the project, Financial aspects of the project, Security offered towards the assistance, Statutory approvals and other legal documentation in place and Environmental remediation costs associated with the project.

The bankers perceive some additional risks associated with waste-to-energy projects:

- Not many projects have come up in the municipal solid waste-to-energy area
- There are many competing technologies with wide ranging claims on energy generation per unit of waste
- Indian municipal solid waste composition varies with region and no proper characterization data is available to increase comfort level
- Financial position of many urban local bodies is under strain
- Revenue stream may not result into anticipated revenues
- Availability of free raw material (solid waste) may not continue, thereby adding burden on the financial viability

The bankers analyse each project based on the perceived risks associated and the potential of mitigating each risks in a cost-effective manner. The final decision is always based on the risk levels perceived and the degree of comfort provided by the mitigation measures.

C. Financial Viability

Urban WTE Projects

Financial analysis of WTE projects can be used to assess the viability based on the potential revenue generation to the investment made. It is an important tool employed by the financial consultant for screening various project/technology options. It is also a statistical measure of the relationship between various variables (like capital cost, operation and maintenance cost, interest rate, subsidies, revenue income etc.). These are discussed in the report. The results are generally expressed as a percentage or a quotient (like Internal Rate Return, Debt Service Coverage Ratio etc.).

The results of the financial analysis are used for the technology selection for a particular class of city. Details of the financial analysis are given for MSW capacities of 1000,500 and 150 TPD capacity. The salient features based on financial analysis for different plant capacities based on each of the selected technologies are also provided.

All biomethnation (below 1000 TPD capacity), gasification (All Capacities) and RDF incineration (150-500 TPD capacity) projects require either capital or interest subsidy to become financially viable propositions.

The tipping fee option, adopted in western countries, can be an additional source of revenue to improve the viability of MSW to energy projects. But this concept is only notional in India at the present circumstances. The plants, which are not viable without subsidy may become

viable given the benefit of CDM as an incentive. Further, the tipping fee option, adopted in western countries, can be an additional source of revenue to improve the viability of MSW to energy projects. Both these options have the potential to improve the viability of the projects without increasing the budget provision for subsidy/grants.

Industrial WTE Projects

Investments to generate energy from industrial wastes (total potential of 1022 MW from 10 identified sectors) are generally cost effective and offer attractive rates of returns in addition to the statutory regulatory compliance the industry should adhere to. The concept of industrial waste-to-energy has therefore been successfully implemented independently in industrial sectors like distilleries, pulp and paper, dairy etc., in India.

The experiences of the full scale waste to energy installations in pulp and paper sector is upcoming and a financial analysis is carried out to ascertain the viability of the technology options, viz. energy recovery as biogas and as power. The data of a successfully commissioned full scale biomethanation plant at Satia Paper Mill is considered as a basis. The cost data provided by CPPRI have been updated at the rate of 5 % per year for four years for inflation. Thus the capital cost of the biomethnation plant is Rs. 270 Lakhs with an additional Rs 100 lakhs for downstream aerobic treatment.

The IRR of biomethanation plant generating only biogas (without downstream aerobic treatment) is above 35 % and it reduces to 21 % when the downstream aerobic treatment cost is taken into account. The financial analysis shows that utilization of biogas as boiler feed will be viable option since the addition of gas engine to generate power will entail a further investment (Rs 300 lakhs per MW) leads to a unviable situation.

The financial analysis and the emerging trends presented in this study will nevertheless serve as a valuable guideline leading to a realistic appraisal of WTE projects as the technologies mature with more commercial installations.

D. Project Financing

The financial instruments that are most commonly used by the proponents implementing the waste-to-energy projects include:

- Long-term loans for the capital investment to be repaid over a period
- Short-term loans for immediate fund requirements arising out of day-to-day cash flow needs
- Working-capital loans to purchase consumables and cover the time gap between the expenses incurred for operating the plant and realisation of revenue
- Venture funding required for raising equity for the project with a buy-back option

There are various financial institutions / banks and other agencies that fund projects in the energy and environment sectors. Broadly, the financial institutions can be classified as National financing institutions and international financing institutions. Both the Indian and international financial institutions can be further classified into private / non-government and government organisations.

Most private funding agencies do not have schemes or fixed financing patterns for waste-to-energy projects and hence interest rates, repayment schedule, etc. for waste-to-energy projects are not fixed and are project specific. The funding pattern is decided only after the project proposal is appraised with respect to its technical and commercial viability and depends on the risks involved in the project. Each funding agency has a different financing pattern with different requirements, different eligibility criteria and different project appraisal procedures.

In general, agencies dealing with industrial finance support industrial waste-to-energy projects and agencies dealing with urban infrastructure finance tend to support urban waste-to-energy projects.

There are many government agencies in India, providing financial assistance to waste-to-energy projects. These include IREDA, MoEF, MoUD & PA, HUDCO,NABARD,SFCs,IDCS

MNES provides incentives and subsidies to both urban as well as industrial waste-to-energy projects. Ministry of Urban Development and Poverty Alleviation also has provisions for funding the MSW to energy projects under the urban infrastructure schemes. IREDA provides loans for both urban and industrial waste to energy projects.

Bilateral development agencies available for funding of waste-to-energy projects include: USAID, CIDA, CTCTF, kfW, GTZ, JBIC, FMO & ICEF

Multilateral development agencies considered for funding of waste-to-energy projects include the WB, GEF, IFC, ADB & EXIM Bank

Multilateral development agencies generally support projects through financing agreements between governments of the lending and receiving countries.

In case of ADB, a project is identified for financial assistance by an agreement between the government and ADB. The financial assistance for the project is also provided through an agreement between the government and ADB and is not provided directly to the project entrepreneur.

Export Import Bank of the United States (Ex-Im Bank) is one of the major government held international financial institutions involved in funding of waste-to-energy projects. Export credit is an important aspect in international financing, with an aim to increase export of environmental goods and services to developing countries.

E. Financial Closure – Model & Case Study

Five-stage financial closure model for funding MSW/WTE model has been developed. The various stages are:

- Preparation of DPR
- Acquisition of Clearances
- Application for Financial Assistance
    - Technical Appraisal
    - Financial Appraisal
- Application for Lending

  - Technical Appraisal
  - Financial Appraisal
- Financial Closure

The DPR goes through each of these stages progressively towards financial closure of the project after which the proposed project will be ready for implementation. A case study of MSW Biomethanation project to generate 10 MW power incorporating a check list of various activities towards project financing is given as an example in Chapter 5 of this report.

In the end, a roadmap for funding elaborates the procedural guidelines developed right from the stage of preparation of the project report to the stage of securing financial closure and assistance from the bankers / investors. The roadmap covers attributes related to (i) Project Application (ii) Project Sanction and (iii) Post Sanction Stages.

In conclusion, it could be stressed that while preparing the project proposal and subsequent documentation for financial assistance, it must be appreciated that

- **Each project is tailor made;**
- **Each banker has its own guidelines;**
- **Each project has to be financially structured taking into account factors such as**
  - **Ability of promoters to raise funds;**
  - **Financial strength of the company to borrow funds;**
  - **Adequacy of assets for security cover; and so on**
- **Each project has its own revenue models and sensitivities;**

Consequently, no two projects are comparable for arriving at an appropriate financial structure or package and each project is weighed on its individual merits and funded.

1 Introduction

This document is seventh in the series of Technical Memoranda for preparing a National Master Plan for the development of Waste to Energy in India and Table 1.1 lists the major activities. The earlier reports in the series focussed on the following aspects of the overall WTE scenario in the country:

- Database on solid and liquid waste generation for the urban [299 - Class I cities] and ten industrial sectors (dairy, distillery, poultry, leather tanneries, slaughter houses, cattle farms, pharmaceutical, starch and sago, paper and sugar)
- Identification and evaluation of appropriate Waste-to-Energy technologies (like Biomethanation, Gasification / Pyrolysis, Incineration, Landfill with gas recovery and Composting) by an extensive literature search and an assessment of their global status and rank.
- Review and assessment of the current R & D programs related to waste-to-energy technologies in various National and International Laboratories, R&D institutions and some major corporate research centres. Opportunities for collaborative research programmes and a networking model are proposed for their successful commercialization.
- Critical study of current legal and administrative framework, government infrastructure and policies and recommendation of some reforms to support waste-to-energy programs.
- The report on shelf of prioritized projects developed a ranking system for commercialization WTE technologies in the urban and industrial sectors.
- Technical memorandum of waste to energy technology transfer identified the various options for expeditious and widespread commercialization and replication of the relevant global technologies.

This document on Investment and Funding strategies deals with project finance and funding / investment mechanisms needed for the successful implementation of WTE technologies in the country.

1.1 Waste To Energy Generation Potentials

The potential energy recovery estimates based on biological and thermal technologies for handling urban solid waste equivalent to total 64,000 TPD generation of MSW are shown in Table 1.2. The estimated power generation potential from MSW are 1461 MW (2001-02), and 2667, 3275 and 4565 in the year 2007, 2012 and 2017.

An estimate of the energy generation potential for the different industrial sectors is given in Table 1.3. which includes – distillery, dairy, poultry, leather tanneries, slaughterhouses, cattle farms, pharmaceutical, starch and sago, paper and sugar. In certain sectors like sugar and tapioca starch, both liquid and solid substrates are available as WTE resources and both are included in the assessment of power generation potential. Biomethanation has emerged as the preferred WTE option based on its (a) current status as a mature technology for various industrial wastes and (b) track record with a long list of successfully operating full-scale installations in India and abroad. Several WTE recovery projects have been implemented

during the past decade for the generation of biogas / power based on biomethanation of industrial liquid and solid/semi solid wastes.
The total power generation potential of the urban and industrial sector is estimated to be 2500 MW (2001-02).

The waste-to-energy sector in India has made a beginning only recently with only two full-scale prototype/demonstration projects under execution for handling urban solid wastes. A list of nine recent MSW to energy projects proposals at various stages of finalisation/ implementation is given in Table 1.4. Data presented in the table includes information on the quantum of MSW to be handled, power generation, process technology - biomethanation, gasification and RDF incineration. These projects cover a capacity range of 250 –1000 TPD MSW to produce 2.5 to 21 MW power. Figure 1.1 shows a two-fold variation in capital cost (Rs.8-16 crores per MW) for these projects.

It appears that the capital cost per MW energy generation for low solids biomethanation projects (Table 1.4 & Figure 1.1) tend to decrease as the technologies mature with time. This is evident from the fact that the capital cost per MW energy generation for the Lucknow project in 2000-01 was 16 crores, while the same for the proposed project in Mumbai is 12.60 crores (2002-2003).

The dual objective of the waste-to-energy projects are waste treatment and safe disposal. With a higher quantum of the waste treated per unit project capital cost, a proportionately higher reduction in the green house gas emission can be achieved. This is illustrated in Figure 1.2 in terms of quantum of waste (TPD/Rs. crores) treated for upcoming projects and proposals in India

1.2 WTE Projects

Waste-to-energy concept is a matter of great concern to various stakeholders - urban local bodies, the state government, state pollution control boards, the environmental service providers and the public at large owing to the multiple benefits of resource recovery, energy recovery, waste management and disposal, environmental compliance, reduced GHG emissions and environmental impacts. The concept is also very relevant and useful to industrial units since it adds to the bottom-line of the company. The waste generated is a liability for these units and the waste-to-energy concept helps to generate a useful resource - energy.

Investments to generate energy from industrial waste are cost effective and offer reasonably good rates of return. The concept of industrial waste-to-energy has therefore been successfully implemented independently in industrial sectors like distilleries, pulp and paper, dairy etc., in India. The potential investment opportunities in the municipal waste-to-energy sector have come up only recently in India. The total budget required for achieving this potential is around Rs. 15500 Crores (assuming an average preliminary estimate of Rs 12 Crores per MW for both the technologies based on the limited cost data available, Table 1.4).

A waste-to-energy project can be designed, executed and operated by the industrial unit or the urban local body or by a private waste management service provider either on supply and commission basis or on Build Own Operate Transfer (BOOT) basis. It is necessary that the project proponent understands the techniques to evaluate the funding options and ranks them on the basis of sound techno – economic viability criteria to arrive at the most optimal solution.

The waste-to-energy projects tend to be complex and capital-intensive with a number of stakeholders and issues. As a result, considerable financial barriers exist in their investments

necessitating appropriate strategies to overcome the barriers. This report identifies several such financial barriers encountered in implementation of waste-to-energy projects / investments and explores strategies to overcome them.

A schematic representation of the various phases in financing full scale MSW WTE projects is shown in Figure 1.3.

One of the most important factors to achieve financial closure for MSW/WTE projects is the ability of the promoters to structure the project in a manner that addresses all issues related to the technical feasibility and economic viability. For this, the industrial unit or the urban local body or the BOOT operator would normally prepare a Detailed Project Report for submission to the financial institutions and funding agencies seeking financial assistance for these projects.

Financial analysis is an important management tool for resolving several important aspects of financing waste to energy projects like the technological and financial constraints, relevant funding options, loans, grants, subsidies and incentives etc. The financial viability of the project can also be improved by proposing a tax (tipping fee) and higher debt: equity ratio. Advanced thermal processes such as gasification/ pyrolysis and various novel technologies such as microwave waste destruction, laser waste destruction and plasma pyrolysis are presently being pursued vigorously by the developed countries. Some of these opportunities could be candidate projects under Clean Development Mechanism . Article 12 of the Kyoto Protocol to the UN FCCC (United Nations Framework Convention on Climate Change) can also be considered as a potential tool to increase the financial viability of the waste to energy projects in India. Article 12 of Kyoto protocol specifies that developing countries are to benefit from CDM projects resulting in "Certified Emission Reductions" (CERs) and that industrialised countries may use CERs to comply with their quantified emissions reduction commitments. In this manner a country like India could play host to such projects and benefit from new investment opportunity and accelerate economic productivity to reduce local environmental problems.

Table 1-1 Activities in National Master Plan for the Development of Waste – to – Energy in India

1. Urban Industrial Database
2. Waste-To-Energy Technologies
3. Research And Development
4. Government Infrastructure
5. Prioritisation Of Viable Projects
6. Technology Transfer
7. Funding Strategies
8. National Master Plan

Table 1-2 Power Generation Potentials based on MSW/WTE technologies

S. No	Details	Unit	Five year plans Target / Potential			
			2001-02	**2006-07 (X)**	**2012-13 (XI)**	**2016-17 (XII)**
A. Capacity : > 1000 TPD MSW Generation						
1	No. of Cities		15	19	28	41
	MSW Generation	TPD	49135	79972	127748	195526
	Energy Potential	MW	835	1400	2230	3388
B. Capacity : 500-1000 TPD MSW Generation						
2	No. of Cities		9	19	28	35
	MSW Generation	TPD	5870	13184	19610	24120
	Energy Potential	MW	110	232	351	416
C. Capacity : 250-500 TPD MSW Generation						
3	No. of Cities		30	40	56	64
	MSW Generation	TPD	10605	14098	19295	23542
	Energy Potential	MW	186	246	304	382
D. Capacity : 150-250 TPD MSW Generation						
4	No. of Cities		30	47	60	76
	MSW Generation	TPD	5518	8953	11504	15093
	Energy Potential	MW	87	143	192	253
E. Capacity : < 150 MSW Generation						
5	No. of Cities		215	174	127	83
	MSW Generation	TPD	15098	14720	11829	7554
	Energy Potential	MW	243	246	198	126
F. Total						
	MSW Generation	TPD	**86226**	**130927**	**189986**	**265835**
	Energy Potential	MW	**1461**	**2267**	**3275**	**4565**

Table 1-3 Power Generation Potentials of Industrial Sectors*(2001 – 2002)

Sr. No.	Sector*	No. of Units	Total Capacity (2001-02)	Power Potential (MW) 2001-02
1	Distillery	267	10717 KLD	402
2	Sugar	431	1313021 TPD	290
	Pressmud			*(243)*
	Wastewater			*(47)*
3	Maize Starch	10+	1392000 TPA	84
	Liquid waste			*(19)*
	Solid waste			*(65)*
4	Slaughter House	3600	100 million sheep and 2.8 million buffaloes per annum	75
5	Paper (300 days)	52	3474 TPD	46
6	Poultry	3786	57091405 Birds	52
7	Dairy	521	28 KLA	49
8	Tapioca Starch	-	1866 TPD	19
9	Tannery	3000	1918 TPD	5

(Reliable estimates of the power generation potential are not available for pharmaceutical and cattle farm sectors. Consequently, these sectors are not included in the above table.)*

(+) More than 10 units

TPD – Tonnes per Day
TPA – Tonnes per Annum
KLD – Kilo litre per Day
KLA – Kilo litre per Annum

Table 1-4 Highlights of Some Ongoing/ Proposed MSW WTE projects in India

Sr. No.	Project Location	Technology	Financing Mechanism	Status (Year)	Power		Project Cost (Rs. Crores)		Quantum of MSW	
					MW	MW/ 100T	Total	Cost /MW	Tonnes/ day	Tonnes/ MW
1	Lucknow, UP	Biomethanation (Low Solids/ BIMA) ENTEC, Austria Asia Bioenergy, Chennai	BOO	Under Execution (2003)	5	1.67	80	16	300	60
2	Nagpur, Maharashtra	Biomethanation (High Solids/ DRANCO) GWS, Belgium CICON, Bhopal	BOO	Shelved (1999)	5.4	0.84	47.3	8.74	650 (max)	120
3	Mumbai, Maharashtra	(WABIO) Bermaco/ WM Power Ltd,	BOO	Proposed (2002)	11	1.1	140	12.72	1000	91
4	Mumbai, Maharashtra	Biomethanation Ericsons, USA SOUNDCRAFT Mumbai	BOO	Proposed (2002)	11.5	1.15	145	12.60	1000	87
5	Ulhasnagar, Maharashtra	Biomethanation (WABIO) HYDROAIR, Navi Mumbai	BOO	Proposed (2002)	2.5	1	28	11.2	250	100
6	Navi Mumbai, Maharashtra	Biomethanation (WABIO) HYDROAIR, Navi Mumbai	BOO	Proposed (2002)	3.5	0.875	43	12.28	400 (340 MSW + 60 Vegetable waste)	114

Sr. No.	Project Location	Technology	Financing Mechanism	Status (Year)	Power		Project Cost (Rs. Crores)		Quantum of MSW	
					MW	MW/ 100T	Total	Cost /MW	Tonnes/ day	Tonnes/ MW
7	Chennai, TN	Gasification EDL New Delhi	BOO	Planning (1999)	14.85	2.475	180	12.12	600	40
8	Mumbai, Maharashtra	Gasification EDL-New Delhi	BOO	Proposed (2002)	21	2.1	240	11.42	1000	48
9	Hyderabad, A.P	RDF-Incineration SELCO-Hyderabad	BOO	Execution (2003)	6.6	0.95	40	6.06	700	106

[MSW Gasification projects presently promoted in India (Chennai, Mumbai Projects)involve Capital Investments of 12.12 and 11.42 Crores per MW which is 15 to 20% less compare to the average cost of similar projects by National Renewable Energy Laboratory (NREL), USA. Source: Addendum 2-1,2-2,Technical Memorandum on Waste to Energy Technologies, 11th June 2003.]

Figure 1.1 Capital Cost of Some Proposed MSW/WTE Biomethanation projects (low solids) (Rs. Crore/MW)*

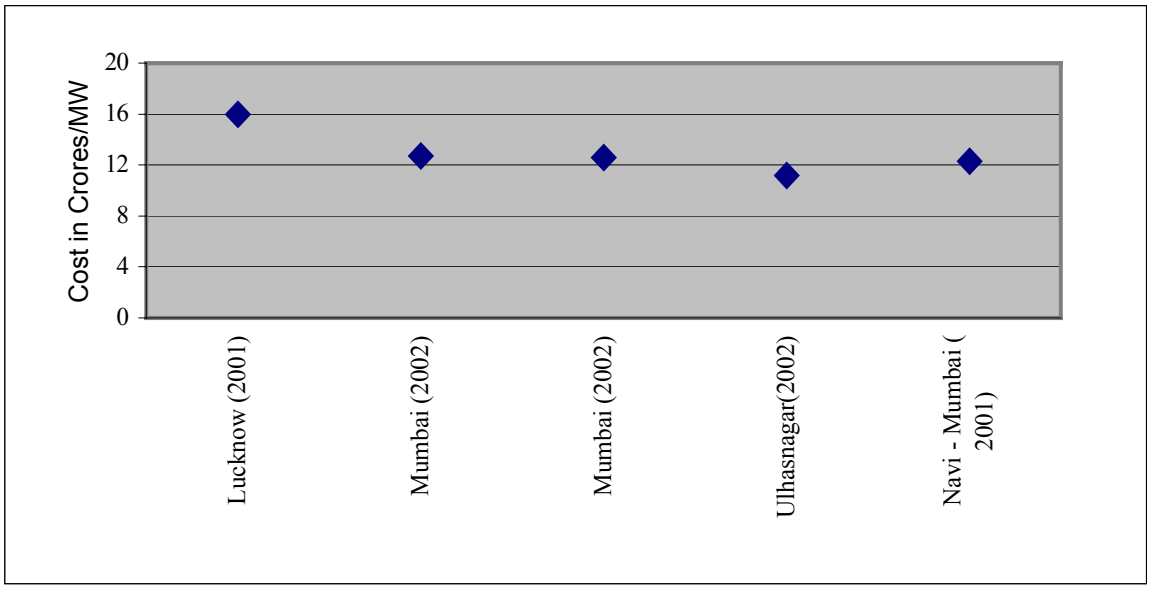


Figure 1.2 MSW Treated per unit Capital Cost of WTE Projects (TPD/Rs. Crore)

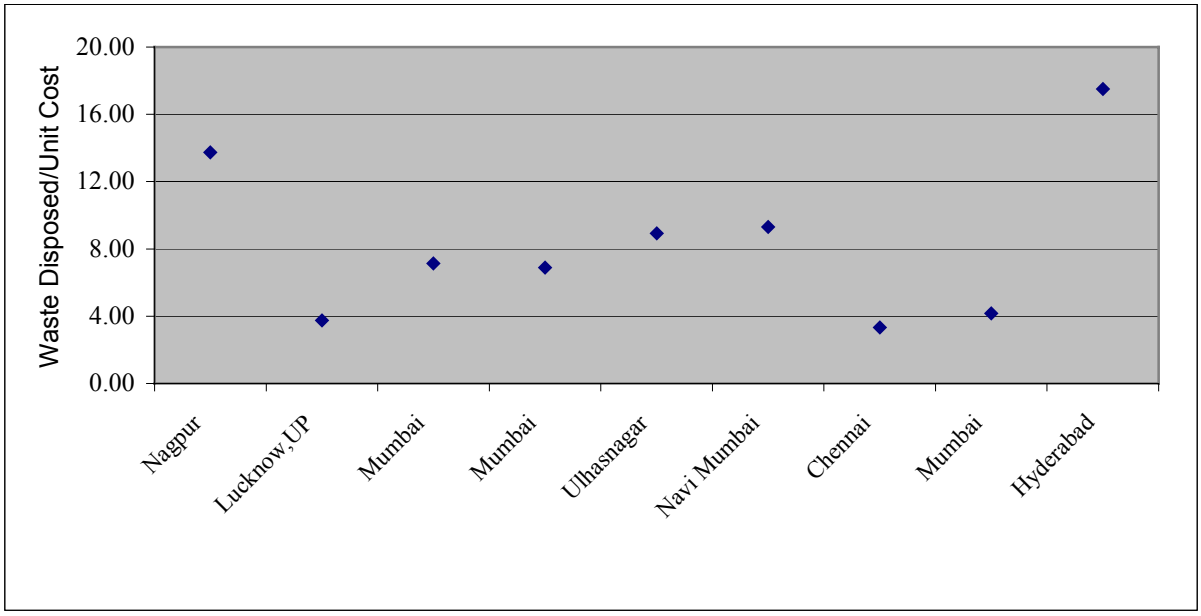
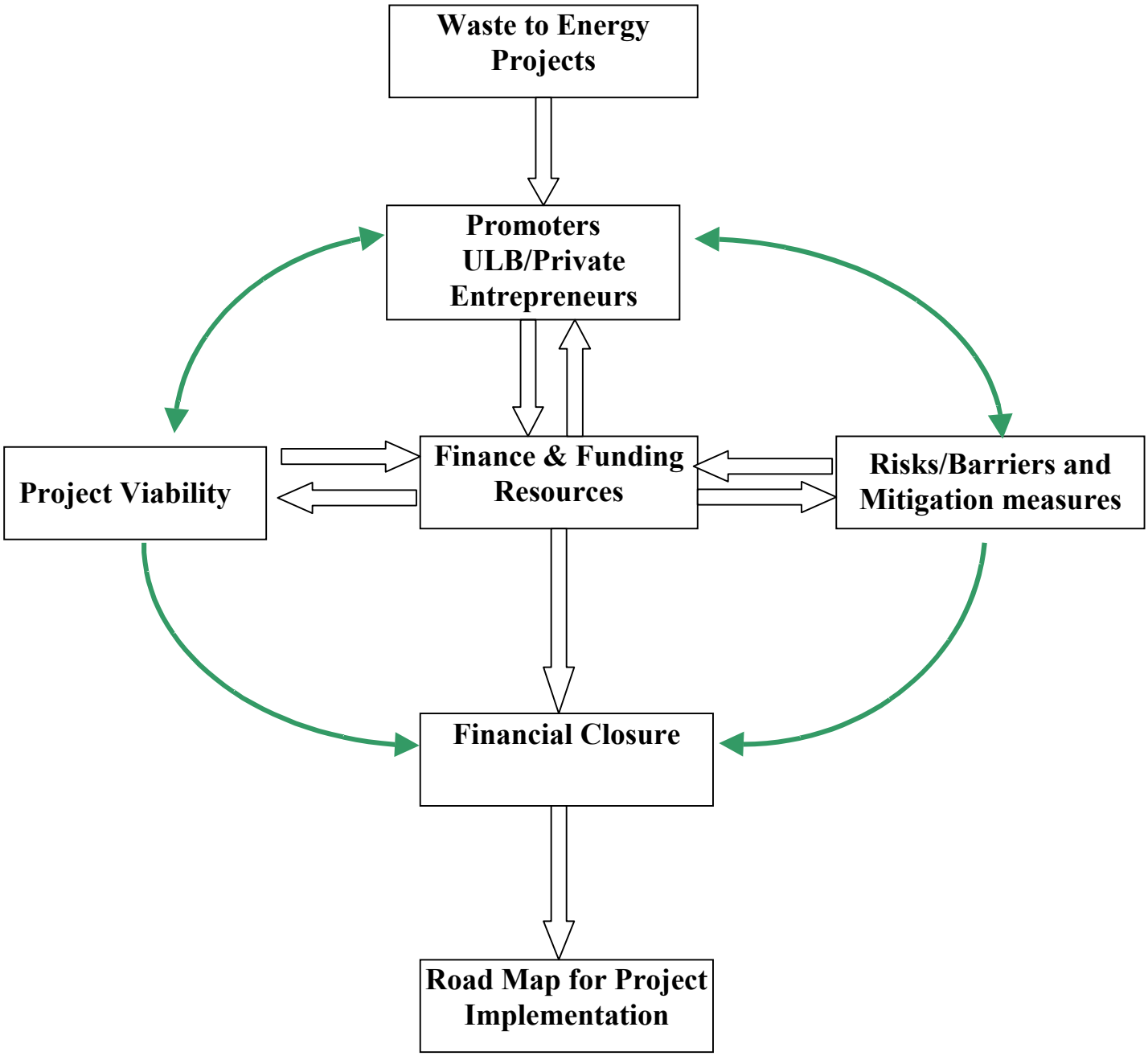


Figure 1.3 **Key Stages in financing of MSW to Energy Projects**



2 Implementation Alternatives

2.1 Introduction

While developing the rationale for funding any waste-to-energy project, the investor is always aware of the fact that any such project undertaken by the industry or the Urban Local Body (ULB) would only lead to a marginal increase in the overall power generation potential with concurrent benefits of a satisfactory waste management infrastructure. The promoter can be a private entrepreneur/organization or ULB. A series of risks and several barriers are inevitable during the course of implementation of all the WTE projects.

A critical assessment of the various risks and barriers and suggested appropriate remedial measures is an important phase of identifying suitable financial resources as illustrated in Figure 1-3, which is a pre-requisite for satisfactory financial closure for all urban WTE projects.

The industrial sectors generally offer good investment opportunities unlike urban sector with greater inherent risks. The industrial waste-to-energy projects offer a conducing investment scenario because of four main reasons. Firstly, the industrial projects offer a commercially attractive return on capital employed. Secondly, the risk factor is backed up by credit rating of the promoter increasing the degree of comfort for the investor. Thirdly, the investor enjoys the option of escrowing the entire receivables of the industrial unit to ensure repayment. Finally, the investor has assured security for the assistance. Several industrial sectors like distillery, paper, starch have installed full scale WTE projects availing some of these opportunities. On the other hand, municipal waste-to-energy projects are relatively new and appropriate/adequate risks mitigating measures are not readily implemented.

This chapter identifies several potential risks and barriers as perceived by investors and appropriate mitigation measures so as to encourage wide spread interest and investment in urban WTE projects.

2.2 Potential Risks and Barriers

It is necessary for the project proponent to recognize that the most important activity for achieving a financial closure is a critical assessment of all the associated risks and barriers perceived by the investor. A list of some of the potential risks and barriers perceived in Urban and Industrial Waste-to-Energy projects is given in Table 2-1.

It is significant to note here that waste-to-energy projects in established industrial sectors such as distilleries, paper also have several perceived risks which have a better degree of comfort towards mitigation. Consequently, these projects enjoy a favorable response from the investors. Whereas, in case of municipal solid waste-to-energy projects not many projects have come up and hence there is no track record on performance.

Each bank, financial institution and other participants like venture capitalist, private investors have their own system of rating a project on the risk matrix. Normally, the investor would look at the following risk factors and barriers while analyzing the risks associated with waste-to-energy projects:

Promoter's background: Promoter's ability to undertake such projects, past track record in project implementation and current management capabilities of company(ies) are the three main aspects of promoters background that can be considered as potential risks.

In India, majority of the urban local bodies are under severe financial constraint to undertake these projects and state governments are also not in position to provide funds for implementing these activities. The firms, which propose to undertake these projects, have fewer technical and financial resources to carry project to its logical conclusion on their own. The private sector participation depends on the patience and the ability of the proponent to tie up all the issues to undertake, implement and operate the project

Technical Aspects: Major technical aspects include soundness of the project in terms of proven track record, adaptability / success probability of the technology proposed. Also, impact of technology up-gradation on the project and access to such up-gradation should be considered in case of global technologies with a rapidly expanding market opportunity.

In case of Indian municipal wastes waste characteristics differs from region to region, resulting in varying energy outputs and generally no reliable data is available with the urban local bodies. Also, no performance data is available in the absence of any operating unit for "waste-to-energy" in the urban sector of reasonable capacity.

Focussed indigenous technology development efforts with demonstration plants of reasonable capacity can resolve several of the perceived technology related risks and barriers. The foreign collaborators provide technical solutions based on very preliminary data of random samples which can seriously affect operations of the plant unit. The technical output stipulated in these foreign technologies is based on the actual operations but for waste of totally different nature and hence the factors considered for adapting these applications in this country may not be reliable. The scale of operations for the uncertainties in full scale operating plants abroad will not be comparable with the proposed installed capacities in India raising the scaling up factor.

Financial aspects: Financial soundness of the promoter in terms of ability to bring in money as and when required for the project, adequate cash reserves to overcome any cost overruns, capability to repay in-spite of poor revenues, financial track record and available fallback measures are some of the main financial considerations for the promoter.

The financial aspects of the project include better financial ratios and assured revenue streams leading to a financially viable project. Some of these factors affecting financial viability of the project are discussed further here.

Currently, the revenue stream comprises of proceeds from the sale of energy (electrical power) and sale of manure. The sale of power to the nearby industrial unit would be rated as less risky provided the industrial unit is creditworthy and the sector in which it is operating has an optimistic outlook. However, the sale to the state electricity boards (or to the newly formed entities in some of the reforming states) would be rated with higher risk and the lenders could be unwilling to participate in such venture. The project also carries a risk of variations in the price realisation of power and manure, thereby affecting the viability on the other hand manure sale requires a proper distribution system in place. The availability of free raw material (solid waste) may not continue, on a sustained basis thereby adding to the burden on the financial viability

The quantity and quality of gas generation has a major impact on the targeted revenue potential and on the project viability. Quantity and quality of gas generation is further determined by the waste characteristics and these can be validated during project appraisal.

The cost of project in terms of unit power generated is very high due to waste segregation requirement making the entire assistance very sensitive to even slight variations in the revenue model assumptions.

The availability of funds from the multilateral and bilateral agencies is progressively becoming a costlier option. Some focussed (lines of credit) operated by financial intermediaries, are made also available at prevailing market costs. The onward lending will also be governed by the creditworthiness of the proponent seeking assistance.

Other factors affecting financial viability of the project are related to the ULBs. The glaring gaps in the balance sheets of most urban local bodies /state governments will not provide any financial comfort to investors in terms of the following concerns:

- Ability to raise equity component of means of finance for the project
- Ability to raise finance out of internal accruals in case of time/money overruns
- Ability to repay the assistance (both interest and installment) in the stipulated time frame
- Providing finance at finer rate of interest
- Creditworthiness for medium or even short term view

Some other issues, which can pose risks to the WTE projects, include the following:

- Procedural delays in statutory approvals and other necessary legal documentation and
- Environmental remediation costs associated with the project

2.3 Mitigation Measures

The investors have an inherent tendency for limiting their commitment in providing financial assistance to high-risk projects. It is therefore necessary for the project proponent to understand the way a investor reviews the project in order to secure a financial closure. The investor must ensure that the credit offered by him does not turn into a "non performing asset". Some of the mitigation measures that can help the project proponent to reduce the risk/liability associated with his project are discussed in following sections.

Promoter related measures: The investors assign a lot of importance to the creditworthiness of the promoter. This can be enhanced by bringing in additional partners with sound financial background and willing to provide financial guarantees. A further financial commitment by such partners by way of equity could also raise the degree of comfort for the investors. The ability to raise equity, additional resources to meet cost overruns, timely payment of dues, etc. have a direct impact on expeditious project implementation and operation. Any stressed financial position can not be improved overnight. However, using certain innovative project packaging, the proponent could reduce the risk perception. The project packaging could involve a strategic partner with a sound financial background, who is willing to invest in the project as seed money. It could also involve securitising the cash flows (either present from existing operations or future from project operations or both) through say "escrow mechanism" to improve comfort towards meeting repayment obligations. The "rate of interest" is directly related to the "perception of risk associated" with project towards repayment of principal amount and interest in timely manner. A financially sound consortium, which would address the technical risks competently, has a very good chance of raising the finances at competitive market rates .

The urban local body can enhance the degree of comfort for the banker by escrowing a part of its revenue from other operations such as tax collections (which would cover the interest and installment outgo throughout the tenure of the assistance) or by securing a state government guarantee (from a better-rated state). On the other hand private sector participation can be

encouraged by rationalizing the time required for completing all documentation towards the project.

Technical Measures: In order to enhance the technical acceptability of the project various measures need to be taken from the stage of making initial feasibility report to the final selling of the outcome. The quality of feasibility report prepared for the project is very important. The report should have a proper approach and analysis of the waste characterization, seasonal and regional variation, projected operations at the worst scenario, fall back measures, performance data from some plants operating in similar conditions and appropriateness of scale up or scale down for current application. Some projects have failed on account of technical snags in spite of proven track record of success elsewhere in the world. These failures are due to wrong selection of design parameters, wrong selection of equipment, improper installation and operation of the system, overloading or underloading, not maintaining the optimum operating conditions or specifications and different/varying feed stock. It would be advisable that the project proponent involves the investor from a stage wherein the technical tie-ups with technology vendor and power purchaser are being finalized in order to avoid disagreements with investors during project appraisal.

Financial Measures:

Financial viability of the project is one of the key aspect for investors. The financial viability of the project is based on the revenue model considered for the project. A model that is based on sound and practical assumptions would always be acceptable to the bankers rather than the one which indicates very high rates of return but has revenue streams under stress. The main revenue in the waste-to-energy project is sale of power. For an industrial unit, the power is consumed used for captive purposes reducing the dependence on grid power. This in-house consumption infact reduces the energy bill for the said industrial unit apart from making it self-reliant. Therefore, the risk perception in this transaction is the least. However, the investor's outlook on the particular industrial unit and the sector does play a role. In case of urban waste-to-energy projects, this is considered a major risk by the investors. Here the options available to the urban local body or the BOO/BOOT operator is to sell the power generated to a nearby industrial unit or to the state electricity board. The risk ratings of these two options would have corresponding effect on the risk perception. In such cases, an agreement among the proponent, investor and the buyer, wherein an escrowing arrangement with the buyer's revenues could reduce the risk level. Back to back guarantee by better-rated state government could also be acceptable as an additional security in case the escrowing mechanism fails for some unforeseen reasons. A similar arrangement for manure revenue could be adopted. The price variations in the power and manure will also affect revenue generation and the liabilities of the promoter.

Another major component that has an impact on the viability of the project is the "cost of segregating the waste" at the waste-to-energy facility. If the urban local body is able to implement a programme whereby it receives completely segregated (pre-sorted) waste from the generators, it could bring down the project cost by about 40 to 50%. In fact this could convert most of the waste-to-energy projects into "attractive" investment propositions for the investors. Over and above these, the project may carry risk of foreign exchange implications on account of technical collaboration fees, royalties etc. These could be effectively hedged with forward premium.

There is a need to develop a corpus (on similar lines like "textile upgradation fund" or "sugar development fund") which would provide for the part of the project cost on soft terms (say 3% interest differential with respect to the rate for financial closure). This corpus could be generated out of the tax or cess collected by the urban local body towards providing waste

management facilities to the public. An efficient collection system could also provide for the repayment of assistance secured for capital investment and the annual operating cost.

Other Measures:

- Project implementation risks can be mitigated by effective management practices and well co-ordinated follow-up and legally enforceable contracts with all vendors. For example the contracts entered into by the project proponents with the raw waste suppliers, energy purchasers must be very clear defining the roles and responsibilities, both technical and financial, of the parties signing the contracts. These contracts should be legally enforceable in India.
- An effective implementation of laws by the authorities for setting up these projects could trigger development of many projects simultaneously. A bigger market may also bring in global major players, who are both technically and financially sound, to enter the market with interest. This could lead to availability of finance for such projects being backed by the global players through various guarantees and financial commitments.
- The strict implementation of solid waste management regulations by the competent authorities would ensure that the urban local bodies do not shift their priorities from waste-to-energy project to some other issue and cause fund diversion or reallocation of resources. This would also prevent time and cost overruns due to shortage of funds and directives from these bodies to the proponents.
- Waste characterization and segregation should be made the responsibility of the urban local body and reduction in overall project cost could be achieved.
- A concept similar to Energy Service COmpanies (ESCO) could be introduced to implement waste-to-energy projects wherein the services provided by the proponent would include technical management, securing funds with repayment obligations, operating the plant and sharing revenue with the client towards its management fees.
- The time taken to complete all project related formalities / documentation is fairly long. This discourages the proponents with good track and financial record to undertake such projects. Such firms prefer to stay away from such projects and compete in other areas.
- The role played by the investors in making these projects "happen" is not very well appreciated by the other stakeholders. Thus no efforts are ever made to educate the investing sector in terms of the technological advances made, research work done, global trends, actual plant performances, etc. The delegations, which visit waste-to-energy installations running successfully, would rarely have representatives from the investment sector. Recently some efforts are being made by apex industry associations like CII and FICCI to include representatives from the banking/investment sector to participate in conferences and round table discussions to increase interactions with the technology vendors, BOO/BOOT operators and the urban local bodies. These efforts would certainly result into capacity building of the banking/investment sector to understand, develop, appraise and put in place a structured viable financial model for these projects.

2.4 Summary

The detailed discussion of risks and barriers associated with WTE projects and corresponding mitigation measures gives an in-sight into the aspects that would be considered by the investor before investing in the project. It is clear that an investor would always be looking for a project that is (i) well established in the market, (ii) has defined risk patterns and proven mitigation measures, and (iii) similar to projects already assisted in the past and therefore has made the investor aware of the likely trend for the proposed assistance.

Any project that is different from the existing portfolio in terms of concept, technology, application or revenue model would be considered risky and would be routed through a rigorous screening mechanism. An investor may altogether avoid funding a risky project rather than take a higher credit risk by increasing spread /margin.

Though the approach towards project risk assessment is normally the same, each investor has his own lending policies, guidelines and procedures. The investor which are playing a dominant role in project finance, have specific groups looking after a particular portfolio over the years. This provides a thorough in-sight in that specific area as well provides an ability to foresee future trends in the area to undertake portfolio-restructuring measures before the assets become bad.

Table 2.1 Potential Risks and Barriers Identified in Waste-to-Energy Urban Projects

A. Promoter Related
• Majority of the urban local bodies are under financial strain • strained balance sheets of urban local bodies /state governments do not provide financial comfort to investors • Creditworthiness for long or even short term view • The private sector participation depends on the patience and the ability of the proponent to tie up all the issues
B. Technology Related
• Differing regional waste characterization resulting in unknown design parameters • Lack of reliable data with the urban local bodies • No performance data is available in the absence of any operating unit for "waste-to-energy" in the urban sector of reasonable capacity • Successful segregation of waste prior to "treatment" has major impact on the performance of the proposed treatment scheme • No indigenous, focussed technology development effort with demonstration plant of reasonable capacity has been undertaken • The scale of operations for the successfully operating plants abroad is not comparable with the proposed installed capacities in India (Indian capacities very large in this sector) raising doubt about the scaling up factor. • The firms, which propose to undertake these projects, have fewer technical and financial resources to carry project to its logical conclusion on their own.
C. Finance Related
• The entire revenue model is based on the assumptions of timely receipts from sale of power generated, Efficient distribution system for manure in place and availability of free raw material (solid waste) • The project also carries a risk of variation in the price realisation of power and manure, thereby affecting the viability
D. General Barriers
• Long time taken for completing all the formalities/ documentation to get the project started • The closure of agreements especially related to receipt of raw waste from the urban local body and the power purchase agreement . • The investors lack expertise /capacity to understand, develop, appraise and put in place a structured viable financial model for these projects. • Shifting priorities of the urban local bodies – from waste-to-energy to other issues resulting in diversion of funds and other support

3 Financial Viability

3.1 Introduction

The strengths and weaknesses of any project which are determined by the profit and loss account based on a systematic procedure for determining several tangible internal and external factors and ratios. Project viability analysis as a practical means of monitoring and improving performance is greatly enhanced when

a) It is prepared regularly and on a consistent basis so that trends can be highlighted and the changes investigated.
b) It is prepared showing the interrelationship and interdependent nature of the factors which, contribute to financial success of a project.

The financial viability analysis of any project can be carried out by examining all the difference income and expenditure streams. In the case of a Waste to Energy project these can be classified as follows:

- Expenditure stream comprising of the fixed and variable cost
- Income stream comprising the sale of the energy produced (governed by the prevailing power tariff) and sale of the manure, provided the technology is biomethanation.

3.2 Basis

Financial analysis of WTE projects can be used to assess the viability based on the potential revenue generation to the investment made. It is an important tool employed by the financial consultant for screening various project/technology options. It is also a statistical measure of the relationship between various variables (like capital cost, operation and maintenance cost, interest rate, subsidies, revenue income etc.). The results are generally expressed as a percentage or a quotient (like Internal Rate Return, Debt Service Coverage Ratio etc.).

3.2.1 Technology

Any one or all WTE technologies, landfill with gas recovery, biomethanation, gasification or incineration, can be considered to be applicable for Waste-to-Energy projects utilizing sorted MSW as the feedstock. Amongst these landfill with gas recovery is excluded as a potential technology option in view of "The Municipal Solid Waste (Management & Handling) Rules, 2000, Schedule II (Management of Municipal Solid Waste), Point 6 (Disposal of municipal solid wastes: Landfilling shall be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing. Land filling shall also be carried out for residues of wastes processing facilities as well as pre-processing rejects from waste processing facilities. Land filling of mixed waste shall be avoided unless the same is found unsuitable for waste processing. Under unavoidable circumstances or till installation of alternate facilities, landfilling shall be done following proper norms. Landfill sites shall meet the specifications as given in Schedule – III). Financial analysis has been used as an evaluation framework for three technologies (i.e. biomethanation, RDF Incineration and gasification) in relation to the typical plant capacities (1000, 500, 150 TPD). Financial analysis of WTE projects has been based on several technical, economical, and fiscal considerations and assumptions.

3.2.2 Cost

The capital cost for various technologies are based on rather limited information available from the technology providers or project proponents. Currently WTE technologies are at an infancy stage in the country and project costs should improve with increase in the number of installations. (The financial analysis and the emerging trends presented in this study can serve as a guideline for preliminary assessment. A more realistic appraisal of the future WTE projects can be made as the technologies mature as proven options with more commercial installations)

3.2.3 Commercial Viability

Any project can be considered to be commercially viable if the rate of return exceeds the Cost of Capital. The extent upto which the IRR should be more than the Cost of Capital is calculated in this section.

The two most common ways expecting returns on a investment are

(a) Return on Capital Employed (ROCE), Return on Total Investment; or
(b) Return on Equity (ROE), Return on Total Investment less the borrowings

The former options relating to the Return on Total Investment Approach shall be suitable for a WTE plant because of the associated risk and will also allow incentive for optimising the return by financial management, refinancing etc.

One of the major issues, which needs to be addressed in this context, is to standardize the debt-equity ratio for the purpose of determining the rate. A debt-equity ratio of 3:1 would be, generally, preferable. However, due to the high capital investment and the associated risks it will be prudent to adopt a debt-equity of 2: 1.

The rate of return will depend on the interest rate of the debt and the equity portion. A simple method would be to adopt the Prime Lending Rate (PLR) for this purpose. ROR can then be evolved taking into account the return on equity at 20%, because the equity is the amount for which the tax has been paid already, and the return on debt portion equivalent to PLR at say 14%. On a base of 100, the return on equity would work out to 6.66 and the interest on debt would be 9.33. Both added together (6.66+9.33) would give an ROCE of 16% to make a project viable. It is also necessary to make a provision, which would take care of the risk of the investment, income-tax element, market forces, etc. In a typical ROCE model, these elements cannot be allowed to be a pass through and, therefore, a provision of 3% could take care of these and other requirements.

Any project that can generate a return at a rate 5 % more than the cost of capital can be considered to be commercially viable. At this present juncture waste to energy projects will require additional incentives for a commercially viable proposition

3.2.4 Energy Tariff

3.2.4.1 Rationalization of Energy Tariff

The cost of electricity generated from a waste to energy plant cannot be compared with the electricity generated from the conventional projects. The total cost of electricity to be generated

from the plant is still comparable to the existing price level of the electricity to the end consumer. The various advantages of green power from waste to energy plant is as follows:

- Generation of green electricity minimizes the environmental hazards as compared to electricity generation from conventional fuel
- No hidden cost in the total price of electricity like foreign exchange fluctuation, cost of fuel, fuel cost adjustments
- No investment in the cross country fuel transportation
- Saving in fossil fuel reserves

It is obvious that the financial viability of the waste to energy plant is firmly depends upon the sale of the energy. At present, MNES has a policy for sale of power generated from waste to energy plants. The details of the MNES policy are discussed in Chapter 2 of the " Technical Memorandum on Study of Government Infrastructure". Based on this MNES policy some state governments have issued policy orders to promote WTE projects. The policy orders issued by the state governments of Maharashtra, Madhya Pradesh, Andhra Pradesh, Uttar Pradesh and Tamil Nadu for promotion of WTE projects are included in Appendix IV of the " Technical Memorandum on Study of Government Infrastructure".

Due to the enforcement of "The Electricity Act, 2003" the MNES policy shall not be valid further. At this juncture an exercise has been carried out to rationalize the power tariff. The rationalization approach is discussed in the following section.

3.2.4.2 Highlights of Electricity Act 2003

The electricity bill was introduced in the Lok Sabha on 30th August 2001 and was subsequently referred to the standing committee on Energy for examination and report. Based on the recommendations of the standing committee on Energy, the government of India made certain amendments. The electricity bill along with these amendments was passed by Lok Sabha and Rajya Sabha on 9th April 2003 and 5th May 2003 respectively. The high lights of this act is as follows:

The objectives of the Act are "to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishments of Appellate Tribunal and for matters connected therewith or incidental thereto".

The Electricity Act, 2003 repeals the old legacy of 1910 and another of 1948.It has been further hailed as a revolutionary piece of legislation, which will catalyze the reforms in the India's power sector. The Act does not deal specifically with generation of power from renewable sources excepting that the Act desires that atleast 10% of electricity generation shall be derived from renewable resources such as wind, biomass, solar, waste, etc.

The Act empowers the Central Government to formulate the national policy in consultation with the State Government and the Central Electricity Authority (CEA). The national policy, which is yet to be formulated, is expected to provide a general perspective of the Government on the energy scenario in the country.

The present Act does not prescribe the method of tariff regulation and it is expected that the national policy would provide some guideline for the same. The Act provides for the State Electricity Regulatory Commissions (SERCs) to finalize the tariff under the guidance of the Central Electricity Regulatory Commission (CERC).

The Act specifies that the tariff should safe guard the interest of the consumers with a reasonable recovery of the cost through sale of electricity (Section 61). The tariff principle should encourage efficiency, competition, economic use of resources, good performance and optimum investments along with the commercial principles of the generating company. The SERC can adopt flexible approach for determination of the tariff.

3.2.4.3 Methods of Tariff Fixation

Two basic approach can be adopted for fixation of the electricity tariff, namely, Cost of Service Approach and Performance Based Ratemaking Approach. In the cost of service approach, one has to go into the various components constituting tariff. In waste to energy generation, cost of fuel (biogas or syngas) is a variable component and all other components such as cost of servicing the capital (equity and loan), depreciation and O&M are fixed components. In performance based ratemaking approach the revenue requirement of the utility is recognized. Here incentives are provided for improving the efficiency and reducing costs. The tax liabilities of utility are also to be accounted for in the tariff structure.

As waste to energy sector is in their infant stage in the country, there are limitation in terms of the data availability, the lack of historical perspective and relative unfamiliarity with the subject. For the above stated reasons at the present juncture cost of service approach would be more applicable for tariff fixation of waste to energy plants.

However, for the purpose of this report the case with MERC has taken as basis for the fixation of the energy tariff. This is the classic case because the power purchaser in this case is a private organisation, who mainly work for profit. The private organisation has agreed to purchase a power generated from waste to energy projects at the rate of Rs.3.50 per Kwh, deducting the charges of transmission and distribution losses. (Reference Compilation made by MERC for the Case No 15 of 2002, 2003, Page 138). The same reference is given as Appendix 3 A.

Likewise the tariff of Rs 3. 48 requested by M/s Shriram Energy Systems limited for RDF – Incineration project at Vijayawada is also under the review by Andhra Pradesh Electricity Regulatory Commission (APERC).

3.2.4.4 Need for Escalation in the Energy tariff

The benefits and costs of a project have to be expressed in terms of equivalent money value, but also they have to be expressed in terms of money of a particular time. This is not just due to the differences in the value of money at different times because of inflation. A rupee available five years from now is not as good as a rupee available now. This is because a rupee available now can be invested and earn interest for five year and would be worth more than a rupee in five years. If the interest rate is r then a rupee invested for t years will grow to be (1+r)t. Therefore the amount of money that would have to be deposited now so that it would grow to be one rupee in t years in the future is (1+r)-t. This called the discounted value or present value of a rupee available t years in the future. In-order to take care of this aspect there is a need for the escalation in the Energy tariff. For the purpose of this report an escalation of 25 % after every five year is presumed.

3.2.5 Other Parameters

1. The economic life of the project is considered as 15 years for all the technologies
2. Capital cost is considered to be borrowed from financial institutions and is considered to paid back in equated yearly installment at the interest rate of 14%
3. Operation and maintenance cost includes all money incurred for the successful operation of a WTE facility such as maintenance cost, operation costs including salaries, license fee, insurance, royalty etc. Operation and Maintenance costs is assured to increase annually at the rate of 8%, 7 % and 6 % after every five years respectively.
4. The commercial value of the compost by-product in case of biomethanation is directly taken from the technology provider.
5. The present price of manure is taken as Rs 1000 per Tonne and is assumed to increase at the rate of 15% after every five years
6. Project realization period is considered as equivalent to the moratorium period
7. Discount factor is taken as 11%
8. The capital cost of the project includes the major components of pretreatment, main process and post treatment stages. For the purpose of this analysis direct benefits (resource recovery) alone considered.
9. WTE projects also have many intangible benefits, (like better environmental condition due to the treatment and safe disposal of waste, improvement in the socio-economic conditions of the city). These are usually confined and can be considered to be specific to a particular city, region, state and technology, thus these are considered while carrying out this analysis.
10. A realistic appraisal of all WTE projects requires that all aspects of the project, positive (benefits) and negative (costs), must be expressed in terms of a common unit; i.e., there must be a "datum line." The most convenient common unit is money and all benefits and costs of a project are measured in terms of their equivalent money value (INR). When the rupee value of benefits at some time in the future is multiplied by the discounted value of one rupee at that time in the future the result is discounted present value of that benefit of the project. The net benefit of the projects is represented by the sum of the present value of the benefits less the present value of the costs.

3.3 Financial Analysis of Typical Projects

3.3.1 MSW to Energy Projects

The results of the financial analysis are used for the technology selection for a particular class of city. Details of the financial analysis are given in Table 3.1 to Table 3.3for MSW capacities of 1000,500 and 150 TPD capacity.

The salient features based on financial analysis for different plant capacities based on each of the selected technologies are highlighted below:

A. Plant Capacity : 1000 TPD (Table 3.1)

RDF Incineration appears to be an attractive technology, as it does not require any kind of subsidies (neither capital nor interest). The financial computation shows this option has a

higher value of IRR (23.3 %) for an interest rate of 14 %. Biomethanation system also appears to be a financially viable proposition with IRR of 17.7 %.

Gasification systems apparently as such is not financially viable, it may need a mechanism to make it be financially viable.

B. Plant Capacity : 500 TPD (Table 3.2)

At an intermediate MSW to Energy plant capacity of 500 TPD, RDF- Incineration alone appears to be financially viable with the assumptions and independent of any subsidy with IRR = 13.1 %. Biomethanation and gasification systems are not financially viable.

C. Plant Capacity : 150 TPD (Table 3.3)

All the three technologies considered are not financially viable at this capacity. Thus, these technologies require subsidies to become financially viable for a plant capacity of 150 TPD.

Table 3.4 gives a summary of the financially viable MSW WTE projects of the three selected capacities (1000, 500, 150 TPD) and the need of subsidies for plants of smaller capacities.

3.3.2 Industrial Waste to Energy Projects

Investments to generate energy from industrial wastes (total potential of 1022 MW from 10 identified sectors) are generally cost effective and offer attractive rates of returns in addition to the statutory regulatory compliance the industry should adhere to. The concept of industrial waste-to-energy has therefore been successfully implemented independently in industrial sectors like distilleries, pulp and paper, dairy etc., in India.

Utilization of spentwash for energy generation (Biogas) has been very successfully adopted by several distilleries in the country and biomethanation can be regarded as a mature technology for this application. Similarly, some dairies have recognised this opportunity for recovering bio-energy and installed full-scale biogas generation plants in the past 4-5 years.

The energy generation potential of sugar sector, especially pressmud, is significant. However, there is no operating plant in this sector thus there is a need to develop adequate data for this sector.

The experiences of the full scale waste to energy installations in pulp and paper sector is upcoming and a financial analysis is carried out to ascertain the viability of the technology options, viz. energy recovery as biogas and as power.

The data of a successfully commissioned full scale biomethanation plant to generate biogas in Satia Paper Mill is considered as a basis for performing the financial analysis (Table 3.5). The cost data are escalated at the rate of 5 % per year for four years for inflation. Thus the capital cost of the biomethnation plant is Rs. 270 Lakhs with an additional Rs 100 lakhs for downstream aerobic treatment.

The summary of the financial analysis is given in Table 3.6. The IRR of biomethanation plant generating only biogas (without downstream aerobic treatment) is above 35 % and it reduces to 21 % when the downstream aerobic treatment cost is taken into account.

The financial analysis shows that utilization of biogas as boiler feed will be viable option since the addition of gas engine to generate power will entail a further investment (Rs 300 lakhs per MW) leads to a unviable situation.

3.3.3 Summary

All biomethnation (500 TPD capacity), gasification (All Capacities) and RDF incineration (150 TPD capacity) projects require either capital or interest subsidy to become financially viable propositions.

MSW to energy projects have made a beginning only in the past 2-3 years with the active support and lead taken by MNES, GoI. The performances of the upcoming planned projects

Table 3-1. Financial Analysis of MSW WTE Facility (Capacity: 1000 TPD)

S.No	Financing options	Units	General (No subsidy)			With Capital Subsidy			With Interest Subsidy		
	Technology		Biomethanation	Gasification	RDF_INC	Biomethanation	Gasification	RDF_INC	Biomethanation	Gasification	RDF_INC
1	Project Life	Years	15	15	15	-	15	-	-	15	-
2	Capital	Rs. Lakhs	10000	21904	6483	-	21904	-	-	21904	-
3	O&M	Rs. Lakhs	850	1628	878	-	1628	-	-	1628	-
4	Interest rate	%	14	14	14	-	14	-	-	14	-
5	IRR	%	17.7	9.3	23.3	-	14	-	-	14	-
6	Subsidy		Nil		Nil	-	3.4*	-	-	7.5**	-
7	Viability #		Viable	Not viable	Viable	-	Viable	-	-	Viable	-

** - Rs Crores/ MW*
*** - Value in %*
 # - If IRR is equivalent to the interest rate then the project is considered as viable

Table 3-2. Financial Analysis of MSW WTE Facility (Capacity: 500 TPD)

S.No	Financing options	Units	General (No subsidy)			With Capital Subsidy			With Interest Subsidy		
	Technology		Biomethanation	Gasification	RDF_INC	Biomethanation	Gasification	RDF_INC	Biomethanation	Gasification	RDF_INC
1	Project Life	Years	15	15	15	15	15	-	15	15	-
2	Capital	Rs. Lakhs	6000	13000	3890	6000	13000	-	6000	13000	-
3	O&M	Rs. Lakhs	500	845	527	500	845	-	500	845	-
4	Interest rate	%	14	14	14	14	14	-	14	14	-
5	IRR	%	13.1	3.4	17.5	14	14	-	18.8	14	-
6	Subsidy				Nil	1.6*	6.0*	-	2.7**	9.4**	-
7	Viability #		Not Viable	Not Viable	Viable	Viable	Viable	-	Viable	Viable	-

** - Rs Crores/ MW*
*** - Value in %*
 # - If IRR is equivalent to the interest rate then the project is considered as viable

Table 3-3. Financial Analysis of MSW WTE Facility (Capacity: 150 TPD)

S.No	Financing options	Units	General (No subsidy)			With Capital Subsidy			With Interest Subsidy		
	Technology		Biomethanation	Gasification	RDF_INC	Biomethanation	Gasification	RDF_INC	Biomethanation	Gasification	RDF_INC
1	Project Life	Years	15	15	15	15	15	15	15	15	15
2	Capital	Rs. Lakhs	1800	4600	1400	1800	4600	1400	1800	4600	1400
3	O&M	Rs. Lakhs	170	299	190	170	299	190	170	299	190
4	Interest rate	%	14	14	14	14	14	14	14	14	14
5	IRR	%	10	<1	7.3	14	14	14	14	14	14
6	Subsidy					2.6*	9.8*	0.76*	4.6**	14**	1.4**
7	Viability #		Not Viable	Not Viable	Not Viable	Viable	Viable	Viable	Viable	Viable	Viable

** - Rs Crores/ MW*
*** - Value in %*
 # - If IRR is equivalent to the interest rate then the project is considered as viable

Table 3-4. Summary of the Financial Viable MSW/ WTE Projects (Capacity 1000, 500, 150 TPD)

S.No	Capacity	Technology		
		Biomethanation	Gasification	RDF-Incineration
1	1000 TPD			
A	Capital Subsidy (Rs Crores / MW)	Nil	3.4	Nil
B	Interest Subsidy (%)	Nil	7.5	Nil
2	500 TPD			
A	Capital Subsidy (Rs Crores / MW)	1.6	6.0	Nil
B	Interest Subsidy (%)	2.7	9.4	Nil
3	150 TPD			
a	Capital Subsidy (Rs Crores / MW)	2.6	9.8	0.76
b	Interest Subsidy (%)	4.6	14.0	1.4

Table 3-5. Cost Data of a Typical Biomethnation plant (50 TPD Pulping Capacity)

S.No	Parameter	Cost (Rs Lakhs)
1	Capital Cost	224
2	Operating Cost / annum	70

Source: Central Pulp and Paper Research Institute, 2004

Table 3-6. Financial Viability of a Typical Biomethnation plant for a 50 TPD Paper Mill.

Parameter	Option 1	Option 2	Option 3
	Biomethantion	Biomethantion + Downstream Aerobic Treatment	Biomethantion + Downstream Aerobic Treatment + Power Generation
Capital Cost (Rs Lakhs)	270	370	570
O&M cost/ annum (Rs Lakhs)	80	110	170
Interest Rate (%)	14	14	14
IRR (%)	35.4	21.5	<0

4 Project Financing

4.1 Objectives

Several financial instruments are employed for facilitating and accelerating investments in a specific WTE project with the following major objectives:

Attract promoters to waste-to-energy projects:

- Increasing funding options and reducing barriers in project financing.
- Capacity building of stakeholders, Project proponents, Bankers, Urban local bodies
- Improve creditworthiness of the proponents and project through structured financial products.
- Promoting insurance as a financing mechanisms to enhance the credit of the proponent or reduce the credit risk for banker
- Co-financing projects for sharing risks
- Leasing matching with revenue generation
- Escrowing assured receivables from the project or other operations
- A cess from residents for the waste management (per head basis or load basis)
- A relief in cess for residents opting for waste segregation at source

4.2 Funding Options

With solid waste management regulations in place, the waste-to-energy projects are expected to be set up by many urban local bodies. The major obstacle for their implementation is the limited availability of finance for such projects cost-effectively. The general lack of information about the financing options is one of the major constraints faced by the proponents.

Financial instruments commonly used by the proponents implementing the waste-to-energy projects are listed in Table 4.1. However, certain financial instruments may be specifically structured to suit individual project requirements.

- Long-term loans for the capital investment to be repaid over a period
- Short-term loans for immediate fund requirements arising out of day-to-day cash flow needs
- Working-capital loans to purchase consumables and cover the time gap between the expenses incurred for operating the plant and realisation of revenue
- Venture funding required for raising equity for the project with a buy-back option

The various funding options are:

- Capital Subsidy
- Interest Subsidy and
- Clean development Mechanism
- Tipping Fee and
- Other Incentives such as Tax credits etc.,

4.2.1 Capital Subsidy

Any capital subsidy shall be a part of the total investment, it could be based either on the raw material processed - quantum of MSW in case of MSW to Energy plant or on the output, power generated (MW) with the maximum limit.

At present MNES, GoI is giving a capital subsidy on the basis of the output, Rs 3 Crores per MW with a maximum limit of Rs 15 Crores.

Financial analysis has been carried to determine the magnitude of the capital subsidy required for three technologies (i.e. biomethanation, RDF Incineration and gasification) in relation to the typical plant capacities (1000, 500, 150 TPD).

The same assumptions used in Section 2.3 are considered for the purpose of this financial analysis. Based on the results of the financial analysis, technology wise capital subsidy is shown in Table 4.2.

4.2.2 Interest Subsidy

The interest subsidy shall be given on the debt component for a project, which makes the project more attractive for the investor. The interest subsidy can be given through the reduction in the interest rate. The present policy of MNES is to give an interest subsidy to reduce the interest rate to 6 %.

The Financial analysis with the assumption mentioned in Section 2.3 is carried out to work out the interest subsidy requirement. The interest subsidy requirement is shown in Table 4.3.

4.2.3 Clean Development Mechanism

It is obvious from the pervious section that the Waste to energy projects, especially in Urban Sector has an investment barrier. The Clean Development Mechanism is expected to generate certified emission reductions (CERs) – homogeneous emission reductions that are standard in their effect on global warming and certified in their quality. Second, the process can give rise to markets for investment in projects that anticipates the creation of CERs leading to increased project viability. Associated with both types of markets are supporting secondary markets that facilitate investments and risk management.

India has acceded to the Kyoto Protocol on 26th August 2002 through, which will benefit the country through transfer of technology and additional foreign investments when the Kyoto Protocol comes into force.

Waste to Energy CDM projects involve the following three levels of stakeholders,

Level 1: the Ministry of Environment and Forest, Ministry of Non-Conventional energy Sources and United Nations development Programme, Inter-governmental Panel on Climate Change.

Level 2: the project proponents, the financing institutions

Level 3: Buyers, Certifiers and Validators

WTE and CDM Project

The following are the requirements to be met for a WTE Project to be considered as a CDM Project. CDM investments that be additional to what would have occurred in their absence, i.e., they cannot be business as usual. It stipulates that emissions reductions certified by operational entities must be "additional" to any that would occur in the absence of the certified project activity. All have the CDM Projects dual objectives i.e. of emission reduction and sustainable development. Meeting both the objectives will require a regulatory climate conducive to investment, which at the same time ensures that environmental and developmental goals are achieved. Design criteria and regulations governing CDM projects need to be evaluated and selected with reference to these multiple objectives.

An exercise has been carried out to estimate the total CERs that can be generated from a typical 500 TPD MSW to Energy plant.

The Municipal Solid Wastes (Management and Handling) Rules, 2000 was issued by the Central Government under the Environment (Protection) Act, 1986. Most local authorities are yet to take steps to implement these Rules. According to the Municipal Solid Wastes (Management & Handling) Rules, 2000 every municipal authority, within the territorial area of the municipality, is responsible for the implementation of the provisions of these rules, and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of municipal solid wastes. The first deadline for improving landfill sites passed on March 31, 2001, still in most of the cities MSW is generally dumped into the land without any treatment. However, it is expected that there will be gradual compliance to the Municipal Solid Waste (Management and Handling) Rules 2000 over the time. Thus the level of compliance to Municipal Solid Waste (Management and Handling) Rules 2000 and the present system of dumping the solid waste in land is considered as baseline for estimation of CERs.

The quantum of methane emission from the solid waste dumpsite is determined as per the below equation:

Methane Emissions from Landfill = MSWT * DOC * DOCT * MCF * F * C
(Source: Chapter 5 of IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories)

Where :

MSWT	=	Total MSW disposed at the landfill (TPD)	= 500
DOC	=	Degradable organic carbon fraction in the MSW	= 0.18*
DOCF	=	Fraction of DOC that actually degrades	= 0.6
MCF	=	Methane correction factor for Land fill	= 0.6*
F	=	Fraction of Methane in Landfill gas	= 0.5*
C	=	Carbon to methane conversion factor	= 16/12

** Source: Chapter 5 of IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*

Based on the above equation, it is estimated that a typical MSW to Energy plant of capacity 500 TPD can obtain around 9,21,000 CERs during the project life of 15 years. Figure 4.1 shows the increase in the CERs and reduction in the non compliance of MSW Rules 2000.

The project should establish the following additionalities in order to qualify for consideration as CDM project activity:

Emission Additionality: The project should lead to real, measurable and long term GHG mitigation. The additional GHG reductions are to be calculated with reference to a baseline.

Financial Additionality: The CDM project should contribute to the viability of the project.

Technological Additionality: The CDM project activities should lead to transfer of environmentally safe and sound technologies and know how.

Regulational Additionality: The CDM Project activities should lead to more than what is required to meet the existing Regulations.
Investment Additionality: The funding for CDM project activity should not lead to diversion of official development assistance (ODA).

The project proponent has to demonstrate how the additionality criteria has been achieved through the Project Design Document (PDD), which should contain the following aspects of the project

1. General description of project activity
2. Baseline methodology
3. Duration of the project activity / Crediting period
4. Monitoring methodology and plan
5. Calculations of GHG emissions by sources
6. Environmental impacts
7. Stakeholders comments

There are several pending issues related to the implementation of CDM in India

- India is yet to formulate the National Designated Authority, which can approve a project for its sustainability.
- Baseline methodology needs to be approved by the CDM executive board
- MSW to Energy projects are relatively very small due to which the transaction and verification cost of the project works out to be expensive and this issue can be resolved through bundling of the project.

4.2.4 Tipping Fee

In the present context waste to energy projects are not commercially viable due to the huge capital investment. These projects can be made commercially viable by charging a "tipping" fees, charged by developer. The project proponent of a waste-to-energy facility can charge something slightly less than the going tipping fee and still be an economically attractive alternative. Knowing the projected waste input rates and energy output projections, the plant operator can then make revenue stream projections which can be used to obtain a tipping fee. In the present context, the Urban Local Body manages the MSW and does not levy any fee or

charges on public or private generators to dispose of wastes. Tipping fees are often instituted to cover the higher cost of creating and operating these facilities, and these fees will create incentives for waste-to-energy plants. The benefits of the tipping fees is illustrated by a case study below.

Case Study

The Midcoast Solid Waste Corporation is a quasi-municipal solid waste disposal organization that services four member municipalities: Camden, Hope, Lincolnville, and Rockport in California.

The fees collected for landfilling the construction and demolition waste is the major source of income. This income is utilized to finance the facility's operation. Landfilling of the construction and demolition waste has led to a premature filling of the available landfill space. On the other hand the flow of construction and demolition waste is also diminishing because of the slowing amount of commercial construction in the area, and the weakening economy. This as lead to a deficit of approximately US $ 89,000, the financial shortfall is getting worse and it is estimated that the deficit would reach US $356,000. The possible solutions to address the deficit is to increase property taxes or to put tipping fees in place.

The current system for paying for the cost of trash disposal is based on the property tax rate. However, the authorities urge that tipping fee is better option because the tipping fees will relate directly to the quantum of waste an individual, family or business dispose. Thus there may be reduction in the waste generation rate, which in-turn will increase the life of the facility and reduce the operating cost.

Besides this being able to charge on a per-bag basis for residents, and a per-ton basis for commercial businesses and institutions, helps the local body to move away from the property tax rate as the primary funding source for the facility. This will also reduce the property tax appropriation.

Currently, among the four member towns, the property tax rate is the source of $882,375 of operating funds for the facility. Under Tipping fee scheme, it's estimated that at least $850,000 of that income would be generated from per-bag and per-ton fees. With the income from this fairer source involving tipping fees, the reliance on municipal property taxes can be greatly reduced. The long-term goal of the MCSWC is to eliminate the property tax subsidy for the facility.

In-order to encourage recycling of the waste the authorities levied the tipping fee for the recyclables, which should be deposited separately. This strategy will further increase the life of the landfill and reduce the operating cost. In a nut shell, tipping fee can accomplish:

- A fair way of paying for the disposal of municipal solid waste, based per ton disposal costs.
- An increase in the recycling rate.
- A more stable financial base, which is less dependent on the cash flow generated by construction and demolition disposal.
- Increased life of the facility
- Reduction the operation cost

4.2.5 Term Loan

The term-loan is the most conventional financial instrument used by the proponents to avail financial assistance. The assistance is provided to fund purchase of capital equipment. The assistance carries a fixed or floating rate of interest and is required to be repaid over a fixed tenure including grace period. The loan is secured against the assets of the proponent.

4.2.6 Internal Cash Accruals

The proponents sometimes may opt for funding the purchase of capital equipment out of the revenues earned from the existing operations and retained. This route is applicable for funding small requirements. For waste-to-energy type projects (especially for urban waste-to-energy) the project cost is significantly higher and internal cash accruals could only be a part financing option.

4.2.7 Equity Participation

The finance raised through equity participation is the cheapest means of raising money. It does not carry any interest rate or any fixed repayment obligation. The dividend outgo is based on the successful operations of the company and is not mandatory. The equity infusion eases stressed cash flow conditions. It also provides additional leverage for the firm to raise finance from the banking sector.

Equity participation can also be made by a strategic investor in the company. The buy-back option provides the proponent a route to regain the equity. The dividend on the equity may be higher than a normal term loan rate of interest.

4.2.8 Lease-Purchase Financing

The leasing is used to finance purchase of equipment without adding any liability on the balance sheet. The leasing could be structured in such a manner that the lease payment is linked with the revenue from the sale of power and manure. The equipment could be purchased by the company at the end of lease period at market value.

The advantage in lease financing is that the entire cost of acquisition is financed. Since this acquisition is off the balance sheet, the company can still opt for additional debt.

4.2.9 Venture Capital Financing

The venture capitalist invests in the company as equity participant. However, these investors are not interested in the ownership. The future outlook of the company and the potential to generate higher return through higher dividend is what a venture capitalist looks for. The equity may either be sold back or sold in the market as per the arrangement agreed upon.

4.2.10 Securitisation

The securitisation is a mechanism wherein the company ties up its future guaranteed income as a structured product. Against this product, it raises a lump sum cash to fund the project.

4.2.11 Credit Guarantee

This mechanism would provide a guarantee to bankers against repayment defaults. Irrespective of the financial instrument used, the banker would require lien on the assets funded.

4.2.12 Utility Financing

The urban local bodies can also provide finance by creating a pool of funds raised through efficient cess collection system for providing solid waste management services to the citizens.

4.3 Funding Sources

The funding sources include various National and International Funding Institutions, the details of which are included in the subsequent sections.

4.3.1 National Funding Institutions

India has a well-developed network of financial institutions, funding agencies and commercial banks, which can provide vital financial support to various developmental and commercial WTE projects. While the financial institutions participate in project financing through long term loans, equity participation, leasing, etc., the commercial banks offer short-term finance for working capital. The commercial banks can also offer project financing and exclusive equipment financing. Recently the non-banking finance companies (NBFCs) have also commenced financing infrastructure projects.

There are some state level financial and specialized institutions, which also supports infrastructure projects and non-conventional energy development activities. Some specialised financial institutions have the resources to develop, formulate and implement waste-to-energy projects in the industrial and municipal sectors and have access to the funds available from bilateral and multilateral agencies through special lines of credit. These funds could also be used to promote technology development and demonstration projects.

The financial commitment from the various financial institutions and commercial banks is governed by a set of project specific lending policies as well as by rules and regulations.

Various financial institutions operating in India can be conveniently classified as private, government and non-government organizations. A list of agencies / institutions belonging to these categories is given in Figure 4.2. (A brief description of these institutions together with contact information and project funding information are given in Appendix 4-A and Appendix 4-B respectively).

IREDA is the disbursing agency of MNES and provides loans for both urban and industrial waste to energy projects. HUDCO provides loans to support urban waste to energy projects.

Most private funding agencies do not have any ongoing schemes or arrangements for financing waste-to-energy projects The funding pattern is decided only after the project proposal is appraised with respect to its technical and commercial viability and depends on the risks involved in the project. Each funding agency will have its own project appraisal procedures and eligibility criteria to decide project specific interest rates, repayment schedules, etc.

In general, agencies dealing with industrial finance also support industrial waste-to-energy projects and agencies dealing with urban infrastructure programmes also tend to support urban waste-to-energy projects.

Private / public sector agencies like IL&FS and IDFC fund urban waste-to-energy projects similar to urban infrastructure projects. Financial institutions like ICICI and IDBI primarily finance industrial waste-to-energy projects.

In addition to these the central Ministries, MNES, MoEF, MoUD provide financial support in the form of subsidies. The primary objective of these subsidies is to demonstrate the technologies

State Financial Corporations and Industrial Development Corporations and Energy Development Agencies have the common objective of promoting industrial growth in the respective states by providing financial support. These agencies can fund industrial waste-to-energy projects under pollution control or pollution prevention schemes.

4.3.2 International Funding Institutions

There are several international financial institutions and agencies that also fund projects in the energy and environment sectors. Figure 4.3 shows a list of some of the lead organisations providing funds for urban and industrial waste-to-energy projects. These are grouped in terms of Private Financial Institutions, Government Held Corporations, Bilateral Development Agencies, Multilateral Development Agencies and Foundations. (A brief description of these institutions together with contact information and project funding information are given in Appendix 4-C and Appendix 4-D respectively).

A list of projects supported by the W. Alton Jones Foundations is given in Appendix 4-D

Export credit is an important aspect in international financing institutions like Ex-Im Bank of the US. It gives export credit to US exporters, with an aim to increase the export of environmental goods and services to developing countries. Ex-Im Bank also provides financing to creditworthy foreign buyers if the product or service has at least 50 percent U.S. content and does not adversely affect U.S economy.

Bilateral development agencies generally support projects through financing agreements between governments of the lending and receiving countries (examples – USAID, JBIC). In case of USAID, financial support can be obtained by agreement between governments of the two countries, as individuals or non-government organizations are not given the financial assistance directly. However, NGOs or other organizations / entrepreneurs identified by the Indian government are provided assistance through the government.

In case of institutions like FMO, financial support is provided for companies in emerging markets / developing countries (countries which the World Bank has designated as 'low and middle income countries').

Agencies like CIDA and KfW, support project partners / businesses in their respective countries which have involvement in projects being developed or implemented in developing countries like India. In case of KfW, it offers loans, export and project finance to small and medium enterprises in Germany. For investment outside Germany, it supports small and medium enterprises with German participation. CIDA, through one of its programmes, supports Canadian businesses, planning business activities in developing countries and through its other programme, it provides Official Development Assistance to developing countries.

Bilateral development agencies like GTZ, CIDA, JBIC, provide development assistance to developing countries for various projects in the energy and environment sectors. JBIC also provides export and import loans to Japanese and foreign exporters/importers.

Multilateral development agencies generally support projects through financing agreements between governments of the lending and receiving countries (examples – ADB). A project is identified for financial assistance by an agreement between the government and ADB. The financial assistance for the project is also provided through an agreement between the government and ADB and is not provided directly to the project entrepreneur.

A matrix showing the various funding agencies and nature of the financial support provided by them is presented in Table 4.4.

Table 4.1 Role of National Financial Institutions and Funding Agencies to promote WTE Projects

Lending / Funding Agency	Financial Support Assistance			
	Loan	Equity	Subsidies / Grants / Incentives	Sector
A. Financial Institutions				
ICICI Bank	Yes	Yes	No	Industrial
IDBI	Yes	Yes	No	Industrial
IDFC	Yes	Yes	No	Urban
IL&FS	Yes	Yes	No	Urban
SIDBI	Yes	No	Yes	Industrial (SSI)
B. Government Funding Agencies				
IREDA	Yes	No	No	Urban / Industrial
HUDCO	Yes	No	No	Urban
NABARD	Refinancing	-	Yes	Rural
C. State Financing Corporations				
MSFC	Yes	No	No	Industrial
MPFC	Yes	No	No	Industrial
KFC	Yes	No	No	Industrial
RFC	Yes	No	No	Industrial
D. Industrial Development Corporations94				
APIDC	Yes	No	No	Industrial
KSIIDC	Yes	Yes	No	Industrial

Table 4.2 Technology wise Capital Subsidy (Rs Crores / MW)

S.No	Capacity (TPD)	Technology		
		Biomethanation	Gasification	RDF-Incineration
1.	1000 TPD	Nil	3.4	Nil
2.	500 TPD	1.6	6.0	Nil
3.	150 TPD	2.6	9.8	0.76

Table 4.3 Technology wise Interest Subsidy (%)

S.No	Capacity (TPD)	Technology		
		Biomethanation	Gasification	RDF-Incineration
1.	1000 TPD	Nil	7.5	Nil
2.	500 TPD	2.7	9.4	Nil
3.	150 TPD	4.6	14.0	1.4

Table 4.4 Financial options available from International Financial Institutions and Funding Agencies

	Export Credit	Soft Debit	Equity	Grants
A.Private Financial Institutions				
E & Co	Yes			
EEAF	Yes			
REEF	Yes			
Triodos Bank, The Netherlands	Yes	Yes		
B. Government Held Corporations				
Ex-Im Bank (the US)	Yes	Yes		
C. Multilateral Development Agencies				
The World Bank		Yes		
GEF		Yes		Yes
IFC		Yes	Yes	
ADB		Yes	Yes	Yes
D. Bilateral Development Agencies				
USAID				Yes
CIDA (Canada)				Yes
KfW (Germany)				Yes
GTZ (Germany)				Yes
JBIC (Japan)	Yes	Yes		Yes
FMO (Netherlands)				Yes
E. Foundations				
WAJ				Yes

Figure 4.1. Cumulative CERs for a Typical 500 TPD MSW to Energy Plant and Non-Compliance of MSW Rules 2000.

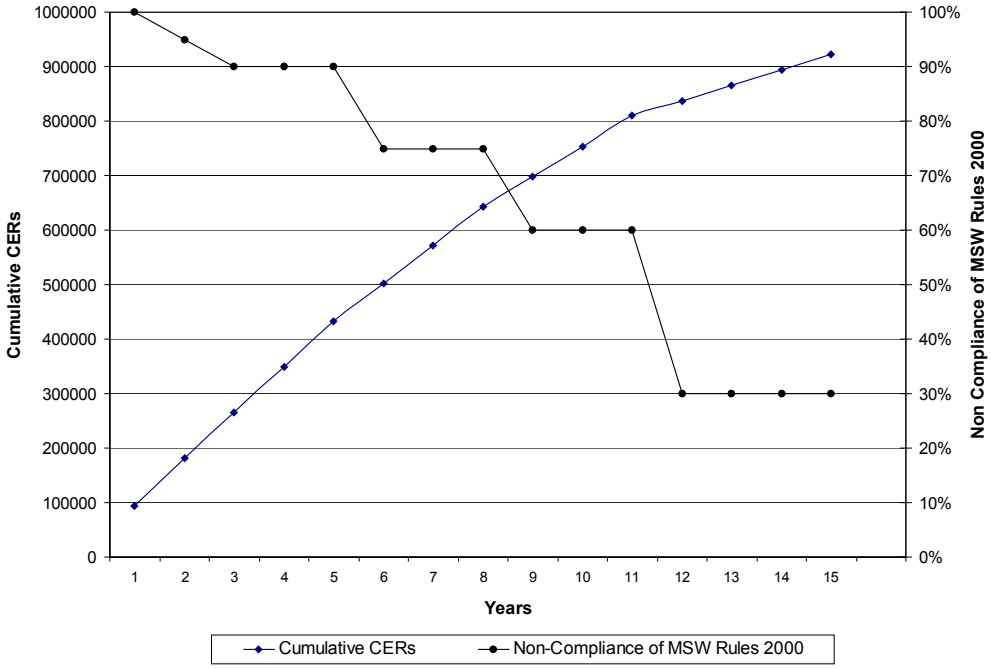


Figure 4.2. National Financial Institutions, Commercial Banks and Funding Agencies

A. Financial Institutions (Private)

- ICICI Bank Limited (ICICI)
- Industrial Development Bank Of India (IDBI)
- Infrastructure Development Finance Corporation (IDFC)
- Infrastructure Leasing & Financial Services (IL&FS)
- Small Industries Development Bank of India (SIDBI)
- Winrock International India (WII)

B. Funding Agencies (Central Government)

- Indian Renewable Energy Development Agency Limited (IREDA)
- Ministry of Non Conventional Energy Sources (MNES)
- Ministry of Environment and Forests (MOEF)
- Ministry of Urban Development & Poverty Alleviation (MoUD & PA)
- Housing and Urban Development Corporation (HUDCO)
- National Bank for Agriculture and Rural Development (NABARD)

C. Funding Agencies (State Government)

- State Financial Corporations (SFCs)
- Industrial Development Corporations (IDCS)
- State Energy Development Agencies (SEDA)

Figure 4.3 International Financial Institutions and Funding Agencies

A. Private Financial Institutions

- E & Co
- Environmental Enterprises Assistance Fund (EEAF)
- Renewable Energy and Energy Efficiency Fund (REEF)
- Triodos Bank, The Netherlands

B. Government Held Corporation

- Export Import Bank of the United States (Ex-Im Bank)

C. Bilateral Development Agencies

- The United States Agency for International Development (USAID)
- Canadian International Development Agency (CIDA)
- Canadian Technical Cooperation Trust Fund
- Kreditanstalt fur Wiederaufbau (KfW),Germany
- German Agency for Technical Cooperation (GTZ)
- Japan Bank for International Cooperation (JBIC)
- Netherlands Development Finance Company (FMO)
- India Canada Environment Facility (ICEF)

D. Multilateral Development Agencies

- The World Bank
- UNDP -Global Environment Facility (GEF)
- International Finance Corporation (IFC)
- Asian Development Bank (ADB)

E. Foundations

- W. Alton Jones Foundation

5 Financial Closure : A Model and a Case Study

5.1 Financial Closure

A proper understanding of the phases of the project cycle and the requirements of the lending and funding institutions are prerequisites for the prospective project proponents / entrepreneur seeking financial assistance by way of grant / credit / loans / incentives, etc.

The phases of the project cycle are:

- Identification of the project
- Preparation of the Detail Project Report (DPR)
- Appraisal of the project
- Implementation (Construction / Erection) Plans
- Operation and Maintenance (performance)
- Monitoring (Performance)

The Detailed Project Report needs to establish the techno-economic viability of the proposed project under a variety of criteria including technical, financial, economical, social and institutional aspects. These aspects are briefly high-lighted below.

Technical Feasibility – This is not merely theoretical but is established after considering the local conditions / situations, in respect of available technology – possibility of transfer of technology – innovation (with concrete steps – Agreement / Memorandum of Understanding etc.), technical know how – manpower, availability (assured) of the material and so on. If possible, some alternatives are considered / compared and the best technical alternative (on a sustainable basis) is chosen.

Financial Viability – It is not enough that the project is technically feasible but it needs to be financially viable on a long-term basis. Certain assumptions are made on a realistic basis to establish the viability.

Economic Viability – Sometimes the financial viability may not be established in a short period. However, the project affects the economy in general – gives boost up to the economy in respect of employment, improving quality of life, making available the scarce commodity, etc. In such circumstances, the Economic Rate of Return is much more than the Financial Rate of Return, justifying the project on economic considerations. In these circumstances, the Ministry will have to play a crucial role of assisting the project authority by way of grants / subsidy and other incentive schemes. In such cases, the Economic Cost Benefit analysis will be more relevant than the Financial Cost Benefit analysis.

Social Acceptability – This aspect ensures that the project is consistent with the National Social Operatives and Policies, Examines effect on various groups and Environment, Affordability and Employment, etc.

Institutional Feasibility – This is mainly concerned with the manpower requirement, organisational capabilities, structures and policies, legal aspects, inter agency co-ordination, fall back arrangements, etc.

Before the Detailed Project Report, there are two previous stages – Pre-identification and Identification. They are expected to be taken care of by the Ministry in the context of National Plans and Policies and Sector Plans, Policies and Strategies. More relevant issues will be the requirement in the power sector, existing and projected demand in the region where the proposed project will be implemented, tariff structure, availability of the trained staff and needed material in the region and the data on oil and gas, coal, geothermal, solar, biogas, wind, tidal, wood and vegetable fuels.

Such Project Reports are required to be prepared with lot of efforts including surveys, data collection and techno/economic analysis etc. The cost for this study and preparation of the Report could be significant and hence could be partially subsidized.

The complete Detailed Project Reports are then forwarded for the 'Appraisal of the Funding Agencies / Financial Institutions'. Once the project is appraised and considered for funding, then the project proponent is expected to implement the project as per the time schedule prescribed and monitor it to ensure that the project is being implemented as planned.

It is necessary to monitor the project both during its period of construction / erection, but also at the operation / maintenance stages to ensure that the teething troubles properly resolved. A periodical evaluation ensures that not only the project is successfully completed but also it is sustainable and capable of paying back the loans on given terms and conditions.

For any project to achieve financial closure, the repayment capability of the project proponent plays a major role. The waste-to-energy projects proposed by the urban local bodies are usually submitted on stand-alone basis and are reviewed with a major focus on the repayment capability of the proponent.

Project development by the urban local bodies takes relatively longer and generally has lower returns. It also suffers from other major issues (such as acceptable power purchase agreements, wide variation in waste characteristics, lack of existing performance data, etc.). These factors tend to increase the project risks and relatively less attractive for the banking sector and investors. While it is possible that based on the creditworthiness of the BOOT operator, the lenders/investors may have a higher degree of comfort level for financing a project with the urban local body, some of the issues listed above often lead to delays in achieving financial closure.

In short, projects must be "bankable". This is especially true of waste-to-energy projects as they are capital intensive projects and need to be financed by commercial sources. Project success requires not only compliance with the requisite financial parameters and conditions, but also technical, business and managerial skills that help the promoter to convince the bankers or other private investors for an active participation in the project.

5.1.1 Model of MSW to Energy Project

A financial closure model for funding MSW/WTE projects is shown in Figure 5.1.The model has the following typical sequence of five steps:

1. Preparation of DPR
2. Acquisition of Clearances
3. Application for Financial Assistance

- Technical Appraisal
- Financial Appraisal

4. Application for Lending
    - Technical Appraisal
    - Financial Appraisal
5. Financial Closure

The DPR goes through each of these stages progressively towards financial closure of the project after which the proposed project will be ready for implementation.

Several details must accompany the specific detailed project report (DPR) in an effort to obtain clearances and sanctions as the proposed project moves through the scrutiny of the concerned government agencies, departments and appraisal committees. These are listed in Appendix 5A.

5.1.2 Project Sanction Criteria

Most of the bankers have a similar system for undertaking appraisal of the project. Usually once the application is submitted to the banker, it is assigned to an appraising officer (or a team of officers) for review. In case the initial review indicates that the proposal should be followed up further, then detailed appraisal is carried out. A site visit is undertaken to meet the various stakeholders to assess the willingness towards implementation and the level of co-operation that would be available for the proponent. A reference is also made to the existing banker of the main proponent, if necessary.

Based on the information furnished by the proponent, the information gathered during the site visit and the analysis performed, a basic appraisal note is prepared. The feedback from the risk management group is taken for assigning credit rating for the proponent. Based on the credit rating, amount of assistance requested and tenure of the assistance, a term sheet is generated for the proponent.

If the term sheet is acceptable to the proponent (with or without negotiations), the detailed appraisal is submitted to the sanctioning authority. Once the sanctioning authority accepts the proposal, the proponent is informed about the sanction and is asked to take care of post sanction documentation to make this assistance effective,

5.1.3 Post Sanction Follow-ups

Once the assistance is sanctioned by the sanction committee, the documentation related to the loan agreement and security creation is required to be completed for making this assistance effective.

Normally most of the bankers have similar procedures as far as documentation is required. The requirements are elaborated below:

- Company must pass board resolution for acceptance of Bankers' terms and conditions;
- Completion of signing of loan agreement;
- Creation of interim and permanent security;
- Signing of undertakings as stipulated by the banker;
- Submission of guarantees;

- Setting up of escrow mechanism;
- Submission of documents pertaining to the borrowing power and balance portion (companies to satisfy banker that its existing borrowings together with proposed borrowings from the said banker and others are within the limits stipulated by the shareholders under section 293(1)(d) of the companies act, by producing Auditor's certificate to that effect).
- Submission of Income Tax department's 'No Objection Certificate' for creating charges;
- 'No objection' letters from existing bankers to create pari-passu charges, if any;
- Title reports of properties to be mortgaged with the banker;
- Opening a 'No-lien' account for the project to receive disbursements
- Any other specific documentation as stipulated by the banker.
- Monitoring and reporting requirements
- Periodic progress reports as agreed with the banker;
- Submission of chartered accountant's certificate for the expenditure incurred and means of financing deployed on periodic basis;
- Compliance with reporting requirements of the bilateral /multilateral agencies, if the funds are routed through specific lines of credit.

5.2 Case Study (MSW to Energy Project)

A new company, ABC Ltd. (ABC) has come forward to set up a plant for MSW disposal in your city. Several methods are available for ABC for the disposal of municipal solid wastes by Sanitary landfill, Composting, Incineration, Biomethanation. ABC has selected biomethanation as the technology for energy recovery from MSW. This technology ensures minimal stress on ecology by recovering valuable energy and organic manure from the waste. The application of organic manure as a biofertiliser provides a link to closes the natural ecosystem in terms of satisfying the carbon, nitrogen and phosphate cycle, which together determine the sustainable development of the environment

Municipal Solid waste quality

The availability of municipal solid waste as feed stock is guaranteed by the City Municipal Corporation and ABC has the option to receive any other organic waste to increase the power generation. Further, the Municipal Corporation has assured to supply the necessary waste with a guarantee on volatile solids (which is main substrate for biogas generation). The Municipal Corporation will deliver the waste at the allotted sites.

Land Lease and waste availability

The City Municipal Corporation has given 5 acres of land on lease for a period of 30 years to ABC for setting up the project and running on BOO basis. Land lease rent will be Rs. 1 per sq.m per annum with a provision for the lease period to be extended to 90 years. ABC India Pvt. Ltd. (ABCIPL), is the Indian promoter of the Joint venture Company, ABC Ltd. (ABC), and the foreign collaborator being ABC Worldwide Inc, USA.

The municipal corporation currently collects over 1000 TPD MSW whereas the project require 600TPD. The agreement with municipality can also have provision for adequate compensation in terms of MSW quantity for holidays and return of trucks with more than 30% debris/inerts, so that an average of 600 MT per day of MSW will be available at the site at no cost.

Foreign Collaborator and Technical know-how

ABC India Pvt. Ltd. (ABCIPL) along with ABC Worldwide Inc, has floated the WTE Ltd. (WTE) which will be executing the project on Build, Operate and Own, BOO basis. ABCWI, the foreign collaborator, has executed over fifty plants related to sewage, agricultural and industrial wastes, and using bio-methanisation route, in Europe and Asia. The company has patented the digester, which is being offered for the project. Currently, the equity capital of Rs.10 million of ABC is not fully subscribed and the proposed participation of 74% by ABCWI and 26% by ABCIPL can be achieved through private funding.

As the foreign equity of the new company is 74% in the renewable energy sector, it will come under the automatic approval category of FIPB Notification SI. No. C-5 division 43 of the press Note No. 2/1997 series F No.10/31/97-IP, dated 17.1.97 of Ministry of Industry. Additionally, as the project is imported on lease and lease rentals are to be repatriated, approval of RBI for forex has to be obtained.

ABCIPL Board and ABCIPL can form a JVC namely ABC to implement the MSW to energy projects and the JVC should nominate a person, as the authorized signatory, which will satisfy the demand of the municipal corporation and State Electricity Board (SEB).

The government can adopt the guidelines issued by MNES for power purchase, wheeling and banking though the final tariff will be based on PPA to be signed. Thus, power evacuation and purchase by SEB ensures that the total net energy generated by the projects will be bought by SEB at agreed rates. As per the guidelines from Ministry of Non-Conventional Energy Sources MNES, renewable energy projects do not require environmental clearance.

ABCWI has not transferred the technical know-how to either ABCIPL or ABC or informed the detailed shareholding of ABCWI but they have authorized ABCIPL through their license and technology arrangement to market and/or execute ABCWI technologies in India.

Power generation from methane

Gas with methane content of 65% will have a lower heat value of 5100 Kcal per m^3 based on standard calculations. Biogas engines of CG with 65% methane have a specific fuel consumption of 0.43 m^3 of gas per kwh (including their internal power requirement). Thus, the plant is expected to generate 2,28,978 kwh of electricity per day considering above said engines and gas quantity assumed for economic analysis.

Based on CG engines with a net power of 1.60 MW each, total energy generation per day could be 230,400 kwh. Considering the performance of back up exhaust gas steam boiler and condensing turbine system, additional energy expected per day is 31,920 kwh. If the performance of the digester improves thereby increasing the gas generation, which could be utilised by the gas engines, or if the volatile solids digested increases above 50%, excess gas has to be flared or additional engines could be added up later. Total energy generation based on the gas engines and the backup steam turbines will be 262,320 kwh. However, considering a plant load factor of 95%, net total energy possible from the engines is 249,204 kwh. Internal

auxiliary energy consumption of the plant is expected to be 35,008 kwh. Considering the internal plant energy requirements, the net saleable energy is 106,460 kwh and 214,196 kwh.

A downtime of one hour per day for engines for maintenance and hence, auxiliary power consumption of gas engine and heat recovery system has been based on 23 hours operation. However, as the gas availability is well within the capacity of engines for both the plants and the total net energy generation based on gas availability is less than 95% of maximum net energy possible from the capacity of gas engines, the daily generation mentioned above is being considered for 365 days. As gas engines have higher availability, plant availability for 95% of the time is realistic.

As only 50% of the total volatile solids of MSW are considered to be digested in the digester, remaining solids will be present in the sludge to the extent of 100 TPD. The system provides for disposal of residue either as liquid or dewatered sludge as organic fertilizer

Power Purchase Agreement and Power Evacuation

The power purchase agreement to be signed by ABC with SEB allows ABC to sell the power to SEB. The PPA can also allow ABC to wheel or bank the power giving them greater flexibility. The PPA can have escalation cost component on a yearly basis for a specific period.

The wheeling charges could be slightly higher for third party sale. The deemed saleable energy comes into effect after the expiry of annual exemption of 480 hours during which time the Board will pay for the reduced or no generation of energy if the power could not be evacuated due to factors purely under the control of Board. This protects ABC in that Board guarantees the energy purchase.

The Board can open an irrevocable, unconditional, revolving letter of credit without recourse in a nationalised bank equivalent to 45 days of payment based on 100% plant load factor. This is further backed up by an escrow account for the same amount in a Nationalised Bank which makes ABC to hold all revenues from certain, identified HT consumers. This is the back up provided by all SEBs for IPP's against the Board's default. There is also a legally binding State Government guarantee as a back up for Escrow Account.

The PPA provides for compensation up to Rs.l0 lakh per MW if the project synchronisation is delayed due to no fault of Board, thereby acting on ABC to complete the project and synchronisation within 33 months.

As per PPA, the plant could supply up to 11.4 MW of power to SEB and it is the duty of ABC to bring the above power to the nearest grid sub-station up to SEB metering point, at the prescribed Voltage of 33 kV.

The PPA ensures adequate power to ABC during construction period and also makes it necessary for SEB to provide all necessary equipment and interconnection at the sub station for the evacuation and full utilisation of power generated by ABC, at their own cost.

Fertiliser Sale and Waste Disposal

The project envisages generation of 100 TPD of organic wastes from its plant, with 60% solids, which must be sold as organic manure. While the composition of the organic waste has NPK values which are acceptable as organic manure but the quantum of waste amounting to over

35,000 TPA has to be sold in the market as the economics of the project hinges on the revenue from the sale of wastes.

The plant generates solid and liquid wastes like inorganics separated from MSW, grit from pulpers, sludge from the de-watering station, engine cooling wafer, blow down water from boiler; DM plant wash water and others. While the inorganics and grit are to be dumped at the approved landfill site, at the cost of ABC, wastewater from de-watering station is contemplated to be used for the dilution of the feed. However, blow down water and DM plant wastewater are to be discharged as effluent after proper neutralisation. As the biogas will contain very little sulphur or particulate matter, air pollution problems will be negligible.

Project Management

ABC can complete the project and commission the plant within 24 months after the taking-over of land. ABCWI can act as project managers for the whole project, since they have extensive experience in the design and execution of anaerobic digestion and co-generation systems. They will be responsible for making all detailed engineering drawings including specification of civil, mechanical, piping, instrumentation and electrical installations.

The project can accommodate the following separate agencies for execution

1. Material handling and waste segregation,
2. All civil works in the plant
3. Co-generation system, including supply of gas engines and electricity generation.
4. Power generation from waste heat of plant.
5. Dewatering, drying and packaging station

Each of the above work would be entrusted to suppliers who would also be executing the project under the supervision of ABCIPL and ABCWI and third party inspection agencies.

The project is on Build Own and Operate (BOO) basis. The company should get all its staff trained during initial commissioning and later on appoint other technical staff, who will get trained in operation of plant. Information technologies can be used to facilitate automatic transmission of relevant and key data regarding plant operation such as the quantity of waste collected and treated, biogas generated, power generated, residue dewatered and other key data relevant to the digester performance to the Head Office. This would help ABC to keep a check on the plant performance and ensure that the plant is operated at the designed efficiency.

All detailed engineering drawings can be prepared by ABCWI in consultation with various sub-vendors and the relevant drawings can be prepared according to their requirements. All drawings pertaining to material handling, waste segregation, power and dewatering station would be forwarded to the respective vendor for their comments, which would be incorporated in the final drawings. The drawings should be made available to reputed contractors who would be asked to satisfy the specification and guarantee the performance within the fixed price. The technical and financial capability of the contractor would be evaluated before entrusting the work.

The contractor's scope would be to provide the manpower and material required for the construction of all relevant civil works. ABCIPL's civil engineer could be stationed at site to ensure the quality and progress of the work.

The entrepreneur has provided appropriate mitigation measures at the various stages of project implementation against the following potential risk factors: change in waste characteristics, reduction in digester performance, performance of gas engines, cancellation of fertilizer contact and residuals management.

Approvals and Clearances

The following are the various approvals and clearances to be taken by ABCIPL before the execution of the project:

1. Agreement for supply of MSW
2. Land Lease
3. Power Purchase Agreement
4. Water Availability
5. Chimney height clearance
6. RBI Approval

Cost of the MSW power project

The estimated cost of the MSW based power project is given in Table 5.1:

Means of finance

The break up of proposed means of finance towards meeting the cost of project is shown in Table 5.2.

Promoters' Equity

The promoters equity as a percentage of total project cost works out to 20%. The promoters contribution with the addition of MNES subsidy works out to 26.7% of project cost.

Debt Equity Ratio

The value of Debt Equity Ratio works out to 2.75 : 1, considering MNES subsidy as part of equity for this purpose.

Plant and Machinery

The entire plant, machinery and equipment will be provided on a lease by WTE Inc.,. The machinery and equipment include both imported and indigenous machinery. The total cost of plant and machinery works out to Rs. 12000 lakhs. The cost escalation due to fluctuations in foreign currency and inflation during the project period could be absorbed by the leasing company and hence there is no need to have any contingency provision in this regard.

Preliminary and pre-operative expenses

Preliminary and pre-operative expenses of both the power projects is as follows. The total preliminary and pre-operative expenses works out to Rs.2000.00 lakhs. (Table 5.3)

Working Capital

The total working capital requirements for the first year operation is Rs. 400 lakhs. Of which Rs.100 lakhs is considered as margin money for working capital and the balance will be sought from a bank as working capital finance. The company is yet to approach a commercial bank for sanctioning working capital.

Lease finance

WTE Inc can sanction the lease finance amount of Rs.55 crores under the following terms and conditions:

1. The period of lease could be 10 years inclusive of 2 years moratorium.
2. The lease rental could be paid in quarterly installments.
3. At the end of leasehold period the lessor can transfer the leasehold assets to the lessee.

MNES subsidy

The MSW power projects are eligible for a investment subsidy of 50% of direct equity stake in the project cost limited to Rs.1.00 crore per MW payable through the lead financial institutions or authorised / designated agency by MNES, in installments linked with progress of implementation. Thus, the investment subsidy for the 10 MW power project will be Rs.l0 crores. The total MNES subsidy for the project is Rs.1000.00 lakhs.

Further, a financial analysis must be done to estimate the cost of operation, profitability, break-even point, internal rate of return (IRR), Pay back period and a sensitivity analysis to identify the potential risks.

5.3 Summary

This Chapter examines several factors to accelerate the financial closure of waste-to-energy projects and provides : (a)guideline to the project proponents to arrive at cost-effective investment options. (b) compendium of innovative financing techniques that could be used to overcome the traditional barriers to conventional financing.

A financial closure model consisting of five sequential stages: DPR, Project Clearances, Project appraisal- Technical and Financial and Financial Package (closure) is presented to serve as a management tool to promote MSW WTE projects.

A case study of MSW Biomethanation project to generate 10 MW power incorporating a check list of various activities towards project financing is given as an example.

Finally, it must be emphasized that while preparing the project proposal and subsequent documentation for financial assistance, it must be appreciated that

- Each project is tailor made;
- Each banker has its own guidelines;
- Each project has to be financially structured taking into account factors such as
  - Ability of promoters to raise funds;
  - Financial strength of the company to borrow funds;
  - Adequacy of assets for security cover; and so on
- Each project has its own revenue models and sensitivities;

Consequently, no two projects are comparable for arriving at an appropriate financial structure or package and each project is weighed on its individual merits and funded.

Table 5.1. Estimated cost of a typical MSW to Power Project

Description	(Rs. lakhs)
Land	On Lease
Civil works	*500.00*
Plant and Machinery	12000.00
Miscellaneous fixed assets	300.00
Contingencies	100.00
Preliminary and pre-operative expenses	2000.00
Margin money for working capital	100.00
Total	15000.00

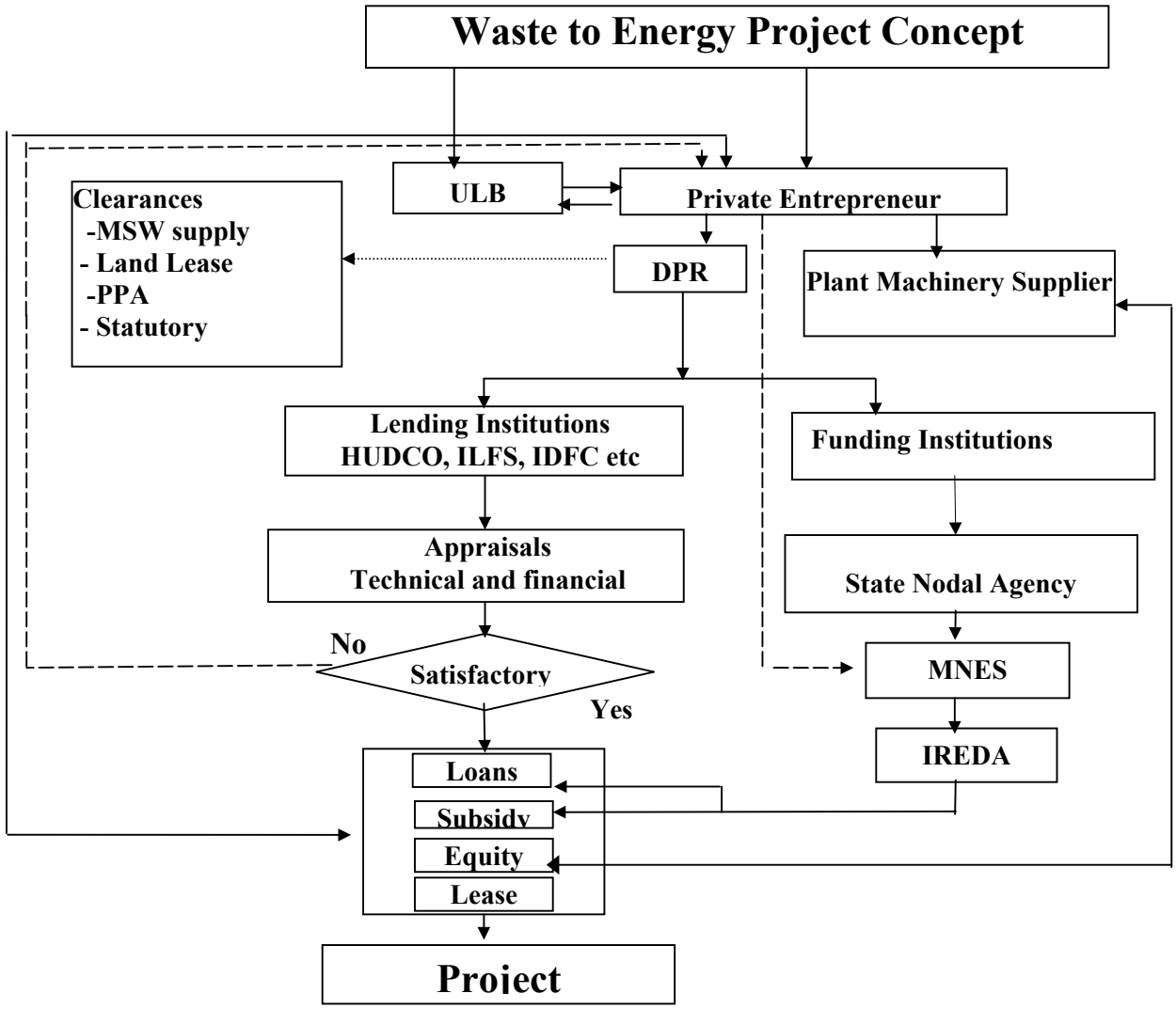
Table: 5.2.Example of Project Finance Pattern

1.	Equity	(Rs. Lakhs)
	ABCI Pvt. Ltd. (26%)	780.00
	ABCWI, USA (74%)	2220.00
		3000.00
2	Bank Loan	5500
3	Lease finance from WTE Inc	5500
4.	MNES Subsidy	1000.00
	Total	15000.00

Table 5.3.Typical Breakup of Preliminary and pre-operative expenses

Description	Total
Preliminary Expenses	
Feasibility study expenses	10.00
Other expenses incl. consultancy expenses	7.50
Preparative expenses	80.00
Detailed engineering and project management by ABCWI	140.00
Detailed engineering and project management by ABCIPL	120.00
Pre-operative Expenses	
Interest on construction period	1715.00
Training Expenses	20.00
Travelling expenses (Overseas and India)	14.00
Erection expenses	120.00
Printing and stationery expenses	1.00
Administrative and salary expenses	30.00
Power for two months (during commissioning)	40.00
Market development expenses (for Organic Fertiliser)	10.00
Statutory deposits	50.00
Total	2000.00

Figure 5.1 Model of Financial Closure for MSW to EnergyProjects



Appendix 4-A

Brief Description and Contact Information on Funding/Lending Institutions in India

4.A.1. Industrial Credit and Investment Corporation of India Limited (ICICI)

ICICI Bank Limited (erstwhile The Industrial Credit and Investment Corporation of India Limited) is a leading provider of financial services in the country. The range of ICICI business activities include medium-term and long-term project financing for the infrastructure and manufacturing sectors, corporate finance as well as a comprehensive range of financial and advisory services.

ICICI has three lines of credit for supporting industrial pollution prevention, control and urban infrastructure projects:

- Industrial Pollution Prevention Project (World Bank)
- Industrial Pollution Control (Japan Bank for International Cooperation)
- Urban Environmental Infrastructure Facility (Asian Development Bank)

ICICI provides funds primarily for industrial waste-to-energy projects; commercially, financially and technically viable urban waste-to-energy projects are also considered for funding.

Contact Address:

Industrial Credit and Investment Corporation of India Limited (ICICI)
C-23, G Block,
Bandra Kurla Complex,
Bandra (East),
Mumbai 400051.

Tel. No.: 022-26531414
Fax No.: 022-26531122
Website: http://www.icici.com

4.A.2. Industrial Development Bank of India (IDBI)

Industrial Development Bank Of India (IDBI) primarily provides finance to large and medium industrial enterprises. IDBI's financing schemes include Equipment Finance, Asset Credit, Working Capital Loan, Refinance, Project Finance, etc.

IDBI provides finance for the establishment of new industrial projects as well as for expansion, diversification and modernisation of existing industrial enterprises. It also undertakes wide-ranging promotional activities including entrepreneurship development programmes, provision of consultancy services for small and medium enterprises and upgradation of technology.

IDBI funds pollution control and prevention projects of industries. IDBI has also financed common effluent treatment plants and industrial wastewater recycling plants. It also provides assistance for setting up demonstration projects based on clean technologies.

Contact Address:

IDBI Tower,
WTC Complex,
Cuffe Parade,
Colaba,
Mumbai - 400005.

Tel: 91-22-22189111, 22189117.
Fax: 91-22-22181294.
Telex: 118-2193/4812.
Telegram: INDBANKIND
e-mail: pro@idbi.co.in
Website: www.idbi.com

4.A.3. Infrastructure Development Finance Corporation (IDFC)

The Infrastructure Development Finance Corporation (IDFC), established in 1997, is a specialized financial institution, set up to provide credit enhancement to infrastructure projects, and to extend long term loans and guarantees that existing institutions may not be able to offer.

IDFC has established a separate Environmental Management Group (EMG) to administer its environmental management initiatives. IDFC is also working on various initiatives to address the environmental and social issues of development at a policy level. Some of the activities of IDFC are listed below:

- Providing technical inputs for environmental studies and management plans to address risks that may impair the project viability
- Providing inputs on issues associated with land acquisition and income restoration in areas where public sensitivities exist
- Helping develop terms of reference for studies to meet requirements of foreign lenders.
- Assisting projects in identifying suitable professional consulting organizations to address specific requirements
- Providing inputs on regulatory requirements to enable projects to better understand and address the risks involved

Presently, IDFC's sectors for funding include energy, integrated transport, telecom and information technology, urban infrastructure, food and agriculture and decentralised infrastructure.

The three factors that merit any infrastructure project for consideration by IDFC, are that the project (i) should fall into one of the above-mentioned sectors, (ii) should be developed in the private sector, and (iii) should be commercially viable.

IDFC prefers to consider projects with costs above Rs. 10 crores. The extent and type of funding depends on project requirements, type of project and its financials. On a case to case basis, depending upon the risks and returns of the projects, IDFC determines its mode of funding, extent of exposure and the lending rates.

IDFC has extended support for energy recovery from a MSW project being developed at Lucknow on private basis. The project is scheduled for commissioning in 2002. The project has secured the Uttar Pradesh government guarantee for payments by the Uttar Pradesh Power Corporation Ltd., the power purchaser. The ministry of non-conventional energy sources has also approved the project as a national demonstration project, thereby, providing a capital subsidy of Rs 15 crores. IDFC has sanctioned Rs. 20 crores (Rs. 2.5 crores for participation in equity and Rs. 17.5 crores to meet part of the debt requirement) to the Rs. 76 crores project to generate about 5 MW power from municipal solid waste (approx. 300 tonnes per day) through biomethanation.

Contact Address:

Ramon House,
H.T Parekh Marg,
169, Backbay Reclamation,
Mumbai 400020.

Tel: 91-22-22339100
Website: www.idfc.com
Email: info@idfc.com

4.A.4. Infrastructure Leasing & Financial Services (IL&FS)

Infrastructure Leasing & Financial Services (IL&FS) was incorporated in India in 1987. Current shareholders include national and international banks and financial institutions. After achieving success in its mandated areas of operations - commercialisation of infrastructure projects and financial services, IL&FS has now moved into the related spheres of asset management and retail operations. IL&FS is involved in all the basic areas of infrastructure.

Generally, municipal solid waste-to-energy projects are considered for funding by IL&FS besides some industrial waste-to-energy projects which are technically feasible and commercially, financially viable. Eligibility criteria include:

- Full scale commercial plant
- Minimum power output of 5 MW (capital cost above Rs. 50 crores)
- Agency requiring funds has to be a corporate body (registered company)

Repayment schedule is project specific and is dependent on the financial proposal submitted for the project, according to which IRR (Internal Rate of Return), DSCR (Debt Servicing Coverage Ratio), etc. are assessed.

Type of loan	-	Commercial loan
Amount of loan	-	10-60 Crores
Interest rate	-	Project specific

Extent of financing - 25-30% of total project cost

Repayment period - maximum 10 years (inclusive of moratorium period)

Mortgage of assets and guarantees are required as security

Some of the important issues considered during appraisal of project proposal are:

- Commercial viability of project
- Availability of raw material (waste) and arrangements for regular assured supply
- Availability of market for finished products (electricity and compost)
- Technological soundness

Technical, financial and legal appraisal of the project proposal is carried out by a team of experts. Appraisal involves site visits and discussions with project promoters. After appraisal of the proposal, it is forwarded to the Board of Directors. The proposal is not forwarded, if any statutory/government approvals or clearances are not obtained. Time taken for appraisal can range from 2 weeks to 2 months, depending on co-operation from the promoter.

Documents required with project proposal include Detailed Project Report (DPR) and all other project related contracts (e.g. Construction agreement, local body agreement, financial model, technology contract, technology transfer contract, etc.). Depending on the DPR, other requirements are delineated.

Contact Address:

The IL&FS Financial Centre,
Plot C-22, G Block,
Bandra Kurla Complex,
Bandra East,
Mumbai 400051.

Tel: 91-22-26533232, 26533333

4.A.5. Small Industrial Development Bank of India (SIDBI)

Small Industries Development Bank of India (SIDBI) functions as the principal financial institution for financing, developing and promoting the small-scale industrial sector.

The environment management initiative of SIDBI aims at increasing awareness on the important issues of environment and supporting the setting of demonstration projects for a cluster of SSI units to reduce pollution levels.

The bank has supported 49 awareness programmes with the SSI units paying a token participation fee. The bank partially subsidises the charges of consultants and also provides the beneficiary units with financial assistance to meet the cost of equipment.

Some demonstration projects supported by SIDBI include the following:

□ Treatment of wastewater from dyeing units at Tirupur.

- Recycling of municipal solid waste in to organic fertiliser in Andhra Pradesh for demonstration projects.

The bank has supported NEERI for taking up suitable environment management measures as demonstration projects for the starch and sago industry clusters in Salem and Dharmapuri districts in Tamil Nadu.

Contact Address:

10/10 Madan Mohan Malviya Marg
Lucknow - 226 001

Tel. – (0522) 2209517 -2209519, 2209527, 2209565, 2209528
Fax - (0522) 2209513-14
Website: www.sidbi.com

4.A.6. Winrock International India (WII)

Winrock International India (WII) is a non-governmental organization registered under the Indian Societies Act and is an affiliate of Winrock International (WI), a global non-profit organization with headquarters in Arkansas, USA. WII generates external funding and work independently or in collaboration with research institutions, industry, government, NGOs, and bilateral and multilateral development agencies.

WII focuses on three principal thematic areas: Energy and Environment, Natural Resources Management, Agriculture and Enterprise Development. In all these three areas WII plans, monitors and executes both in-house and field projects, emphasizing the development of local institutions, leadership and working skills at all levels.

WII's services include (i) Project planning and monitoring, from inception to execution, (ii) Training and capacity building of institutions, organizations, grassroot NGOs, (iii) Technology transfer facilitation within the country and between countries, (iv) Technical and financial advisory services, and (v) Matching global resources to local requirements.

The Energy and Environment (E&E) programme is actively involved in finding solutions to the impact that energy production and consumption leaves on the environment. To coordinate activities under the E&E program, the Renewable Energy Project Support Office (REPSO) was formed in 1995 with aid from USAID.

The objectives of the E&E projects are to achieve commercialization of renewable energy products and services, specifically in rural areas. WII offers management and technical support services to plan, implement, monitor and evaluate the projects. Information dissemination and capacity building activities in different aspects of energy and environment are important components of these services.

RECOMM Project (Renewable Energy Commercialization)

The RECOMM project was launched in October 1995 supported by the USAID. The project's objective is to increase India's capacity so that it can meet its present and future energy needs in an environmentally sustainable manner, with special focus on the rural consumption. The objective had to be achieved by lending financial and technical support to renewable energy (RE) promotional efforts. The process had to be accelerated by introducing and using commercially viable RE technologies developed through commercial networks.

The five specific aims were to:

1.Commercialize high-potential technologies

2.Develop renewable energy projects

3.Improve access to financing and capital

4.Facilitate renewable energy partnerships

5.Strengthen environment for renewable energy

WII found that two technologies, Cogeneration in the sugar industry and Solar Photovoltaic (PV) systems for rural areas, carried the greatest near-term commercial potential. Initial activities were, hence specifically targeted at developing these two. Subsequently, Hydro Power, Biomass and Wind Energy were also focussed on. Other programs such as emerging technologies, financial advisory services and outreach activities were adopted to commercialize all types of renewable energy systems.

The implementation phase of the RECOMM project concluded in 1999.

Some highlights of the project are:

- A diversity of institutional and financial models were created, such as Energy Service Companies (ESCOs), rural cooperatives, and rural enterprises, which were supported as location-specific institutions to promote entrepreneurship in the RE sector
- Sixty individual projects in various RE technologies were supported, over half of them being commercial ventures. More than 50 per cent of the funding under sub-agreements was disbursed as conditional grants, which shall be returned to Renewable Energy Project Support Office (REPSO) fully or partially and will be used to fund new investments
- The financial package comprised working capital assistance, leasing options, micro-credit, revolving funds, etc

Operational Procedures

The RECOMM officer will review the project brief submitted by the eligible applicant in accordance with the operational procedures, described below, and make appropriate recommendations to the Investment Committee. The RECOMM officer will customize a financial package for approved projects based on the specific needs of the renewable energy entrepreneur and the project.

The review process will aim to provide efficient and thorough scrutiny of each opportunity through the following steps:

1. The RECOMM officer works with the applicant to structure a project brief on the opportunity in accordance with the submission guidelines. The RECOMM officer will assist the applicant with documentation if required. If the opportunity is ready for review, the RECOMM officer proceeds with the next step.
2. The RECOMM officer proceeds with a full due diligence review of the project brief.
3. The RECOMM officer prepares a detailed project memorandum and submits the memo along with the brief to the Investment Committee for review.

4. The Committee convenes on a quarterly basis to review investment opportunities presented by the RECOMM officer. The Committee can give three decisions in regards to a submission. First, outright approval; second, approval based on resolution of outstanding issues; and third, denial of the loan.
5. Upon approval, the RECOMM officer provides the applicant with a Commitment Letter containing all the terms and conditions of the loan. The letter must be signed and returned to the RECOMM officer and the appropriate securities must be in place before funds can be disbursed. Upon denial, the RECOMM officer provides the applicant with a letter that indicates that the Committee has denied the loan.
6. Once all contracting conditions have been met, financing is disbursed per the *Terms and Conditions*.

Portfolio Management: The RECOMM officer will closely monitor the progress of projects that receive investments. Like most financings, RECOMM investing will likely require ongoing input and technical assistance to subject projects. WII will provide technical assistance as necessary in cases where WII has the in-house expertise and resources to support requisite assistance and will contract consultants to provide requisite services where in-house capability does not exist (within the scope of the budget). Technical assistance may range from the provision of engineering services for efficiency improvements in bagasse co-generation facilities to accounting and strategic input in a high-growth photovoltaic company serving productive use applications in rural areas.

Portfolio Valuation: The RECOMM officer will provide the Investment Committee with an annual brief on the performance of each loan. The report will detail the nature of the business, summary of loan, description of the loan performance, and other pertinent information.

Reports*:* RECOMM will issue unaudited financial statements, an overview of each loan, and summaries on each portfolio company on an annual basis.

Selection Criteria

The RECOMM officer will evaluate each project proposal against the following illustrative criteria:

1. The renewable natural resource or project "fuel source" (sunlight, wind, biomass, biogas, water) must be available in predictable and sufficient quantity and quality.
2. Innovative approaches to service delivery, financing, management, or technical application (i.e. new productive use) will be given preference. However the applicant must prove that the specific renewable-energy technology proposed has either converted the resource into energy in a commercially-viable manner in a number of previous projects, or has the potential to do so.
3. Evidence has been provided indicating that the energy produced can be transmitted and sold to credit-worthy customers and that the price is competitive with conventional alternatives.
4. The permits and clearances needed to design, build, and operate the project have been clearly identified and evidence has shown that they can be obtained in a timely manner.
5. The project is compatible with the economic, commercial, political, and social setting, and must offer clear social and environmental benefits.

6. Qualified suppliers, contractors, and consultants are available and have expressed interest in meeting the requirements of the project.
7. Reasonable estimates have been made of all revenue, capital, and operating costs, including contingency allowances and taxes, and project revenues are sufficient to pay operating costs, repay loans, and provide adequate returns to investors.
8. The team launching the project has the right skill set to succeed in the project.
9. The project is replicable and makes a good investment as a pilot to seed a market or catalyze a scale-up.
10. Applicants have illustrated that there is interest from investment institutions in financing future stages of the project.

Each project will be rated in accordance with the *Selection Criteria*. The project rating will help the RECOMM officer decide if the project merits recommendation to the Investment Committee.

Terms and Conditions

Terms and conditions are negotiable and will depend upon the credit worthiness of the borrower and the proposed investment opportunity. However some general baseline conditions for a loan under the proposed facility are outlined below.

Eligibility: Loans will be considered for small and medium sized entities in the private sector and NGOs registered in India proposing a commercially-viable renewable energy (solar, wind, and small hydro) project, that has borrowing powers and powers to take up such enterprises as per their charter, except for the following:

1. Government entities and individuals.
2. Entities with accumulated losses as per Audited Annual Accounts of the last financial year.
3. Loss-making entities as per Audited Annual Accounts of the immediate last year of operation.
4. There is an erosion of paid-up equity share capital of the submitting entity as per the latest Annual Report.
5. Entities whose existing debt/equity ratio exceeds 3:1 after taking into account the proposed borrowings from the fund.
6. Trust/societies with accumulated revenue deficit or revenue deficit immediately during the past year.
7. Entities who are in default of dues to financial institutions, banks, Non-Bank Financial Companies (NBFCs) at the time of submission.
8. Entities classified as willful defaulters.
9. Entities re-financing financial assistance availed of/from other financial institutions, banks, or NBFCs.
10. Entities seeking cost over-run financing.
11. Entities and/or managers of the entity convicted for criminal/economic offences or under National Security laws.

Lending Terms and Conditions: The loan amount will be limited to up to 50% of the project cost, and range from the Rupee equivalent of $10,000 to $50,000. The RECOMM officer may recommend extension of the upper loan limit based up the merits of specific cases.

Loan repayment will commence no later than six months after the last disbursement of loan installment or first commercial sale.

The repayment period will be a maximum of ten years.

The rate of interest will be negotiated on a case by case basis but will most probably be 1% - 3% below the prime lending rate. A penalty rate of 2% is to be charged for overdue loans. If the loan continues beyond the repayment period of ten years, interest at 3% to 5% above the commercial rate has to be recovered from the party.

The loan will not exceed 50% of the total project cost. The RECOMM Officer will proactively seek out investment opportunities where the exposure limit is lower and where the loan represents an initial seed capital investment in the project designed to leverage other sources of second stage debt and equity. In addition, the applicant will be required to make a commitment of equity in the project equal to or greater then the loan amount.

Security: The team will require hypothecation of all moveable and immovable assets acquired/to be acquired out of the facility's loan. All loans will have to be secured by collateral, including a personal guarantee from the applicant.

Final decision for accepting a particular type of security shall rest with the RECOMM officer. The team may stipulate one or more additional securities taking into account the risk perception, nature of industry, and background of each case.

Disbursement: The facility will disburse the loan in two or three installments to be determined by the RECOMM officer on a case-by-case basis. The borrower will be able to draw up to 50% of the loan as a mobilization advance after signing the loan agreements and creation of security, and balance disbursed after evidence of proper utilization of mobilization advance already released.

Procedure for Application: The eligible applicant will submit an application in the prescribed format (see *Submission Guidelines*). The RECOMM team will review the Project Brief in accordance with the operational procedures and sanction the line of credit based on the qualification criteria, or reject the application if found not suitable.

Submission Guidelines

At the initial phase, applicants are requested to submit a brief summary of the proposed project. The summary should include the project title, information regarding the contact person, a brief discussion of the project, the present state of commercialization of the project, the total estimated cost of the project, the applicant's contribution in meeting the cost, the amount of financial assistance requested, expected time required for the completion of the project, and forecasted annual sales over the next five years.

The RECOMM officer will review these documents, and request additional information from applicants proposing attractive opportunities. The content and format of the additional information is outlined below.

General Guidelines

The project brief should be presented in English, and should be restricted to discussion of one discreet project opportunity.

To expedite the evaluation process, WII requires that project briefs be submitted in the following format:

The cover page (on company letterhead) should give information about Company name, Address, telephone and fax numbers, and e-mail address, Contact person, Proposal date, and Financing sought from RECOMM [specify the amount of the loan (in Rs.) requested and the preferred terms and conditions].

Table of Contents

Executive Summary: Summarize the project approach

Company Information: Company activities, mission, and objectives, History and track record, Management team bios, Structure and general operating principles, Audited annual accounts for last two years, Overview of alliances, resumes of key personnel

Technical Structure: Site specific technical description of generation unit and/or product, Performance of the technology and/or product, Generation technology or product's applicability in target market, Training, O&M, and monitoring support, Quality control

Regulatory Treatment: Indicate licenses, permits, and third-party approvals necessary to execute the project. Discuss how these clearances can be obtained, and the expected time involved in the process.

Financing Sought: Project cost structure, Expected interest rate, Projected cash flows, profit and loss projections, and indicative Internal Rate of Return (IRR) on equity, Investment type and amount required at each stage beyond the RECOMM investment, Prior sources of financing requested and obtained, Use made of financing received, Identification of partners.

Marketing, Sales, and Distribution Strategy: Power purchase agreements, Product positioning and differentiation, Brand equity, Sales and distribution strategy, Pricing strategy and promotion, Forecast of discounted sales, After-sales customer service and maintenance, and guarantees, Export potential.

Competition Analysis: Barriers to entry, Price of substitutes, Major competitors, Product pricing, Market share targeted for the coming 3-5 years

Risk Factors: Details of how the project will mitigate risks (Management of growth, Dependency on key personnel, Sources of supply, Competition, Regulatory issues, Other risk factors, Contingency plan) and outline the company's contingency plan.

Annexes

- Resumes of key managers
- Letter of Interest
- Letter of Intent
- Product catalogues

- Market studies
- Patents
- Company-specific media coverage
- Other significant document

Contact Address:

Winrock International India,
7, Poorvi Marg,
Vasant Vihar,
New Delhi 110057.

Website: www.winrockindia.org/

4.A.7. Indian Renewable Energy Development Agency Limited (IREDA)

IREDA

The Indian Renewable Energy Development Agency Limited (IREDA) was incorporated as a public limited government company in March 1987 under the Ministry of Non-Conventional Energy Sources (MNES), Government of India. The primary objective of IREDA is to accelerate the momentum of development and large scale utilisation of renewable energy sources and primarily for promoting, developing and financing New and Renewable Sources of Energy (NRSE) technologies.

IREDA promotes, develops and finances waste-to-energy projects for urban municipal solids waste as well as industrial wastes (solids and liquids).

The World Bank has mobilised a line of credit of US $ 195 million to IREDA for the "India: Renewable Resources Development" Project for the installation of a capacity of 187.5 MW in three renewable energy sectors:

- Small Hydro (100 MW)
- Windfarms (85 MW) and
- Solar Photovoltaics (2.5 MW).

The Asian Development Bank (ADB) line of credit of US $ 150 Million is also expected for IREDA under the Renewable Energy Development Project in the following sectors of renewable Energy:

- Wind Energy (US $ 60 Million)
- Co-Generation (US $ 65 Million)
- Biomethanation (US $ 20 Million)
- Solar Thermal Energy (US $ 5 Million)

IREDA's Waste to Energy Scheme aims at promoting and assisting biomass based power generation projects. Only those applicants who as on date of tendering the loan application,

have no accumulated losses (without taking into account effect of revaluation of assets, if any) and with profitable working on the last year of operation are considered eligible for assistance. Other applicants that do not fulfill either of these two conditions are ineligible for loans. It is necessary to furnish printed Annual reports and Accounts for the immediately preceding financial year.

The eligibility of Trusts/Societies/Co-operative Societies will be judged on the basis of net cash flow, i.e. these institutions should not have either accumulated cash deficit immediately during the past year. The information about cash/fund flow would be provided by these institutions in prescribed forms duly certified by a firm of Chartered Accountants for IREDA's further examination. The eligible capacities vary depending on the fuel. For example, for solid fuel, the minimum output expected is 15 tonnes/day whereas the same for gaseous fuel, electricity and combined forms is 1200 M^3/day, 100 Kwe, and 100 KWe Equivalent respectively.

The financing norms of IREDA for loan assistance are as follows:

Direct users / Financing Scheme Project	Urban and Municipal Solid Waste		Industrial Waste
	Electricity through any technology	Solid Fuels (pelletisation) upto 250 TPD	
Interest rate * (exclusive of interest tax)	@ 12.5% p.a.	@ 12.5% p.a.	14.0%
Promoter's contribution (min.)	25% of project cost	25%	25%
IREDA Term loan	Upto 75% of project cost	75%	75%
Moratorium	3 years	2 years	2 years
Repayment period (incl. Moratorium)	10 years	10 years	8 years

** MNES interest subsidy, if any will be passed on to the borrower.*

IREDA disburses loan in one or more installments depending on the progress of the project, satisfactory utilisation of installments already advanced and proportionate to the promoters contribution.

IREDA's specific requirements for companies (both public and private) include:

- The company has been duly registered and certificate of Incorporation obtained. In the case of Public Limited Companies, certificate of Commencement of Business is necessary.
- An in built provision is contained in the Main Objects to be pursued by a Company – clause A of the Memorandum of Association (MoA) to set up project for which loan has been applied for and in clause B of MoA, objects incidental to the attainment of main object to borrow loan; if the power to be produced under the project is to be used for captive consumption, the power to take up the project is not necessarily required in clause A of MoA.
- To ensure that borrowings are within limits as stipulated by shareholders under Section 293(1)(d) of the companies act: required in case of Public Limited Companies or in the case of private Companies where provisions of section 43(A) of the company are attracted.

- To furnish to IREDA latest certified copy of the Memorandum of Articles of association of the company.
- To furnish latest annual report of the company.

IREDA's other requirements are:

- In case security proposed to be offered is bank Guarantee in principle willingness letters from Guarantor Bank who should be scheduled bank should be obtained.
- In case the security is mortgage of assets the borrower has acquired lands and is in possession of the same and title thereto is good and marketable and free from encumbrances/litigations as all consents and approvals have been obtain for creating a mortgage
- In case security offered is exclusive charge on the project being financed by IREDA to obtain and furnish to IREDA, no objection letter from the existing charge holders/banks that IREDA will have exclusive charge on the assets/projects being financed by IREDA
- In case security offered is pari-passu basis to obtain no objection/consent of existing charge holders ceding pari-passu charges as per pattern of security agreed
- To furnish other securities as per condition of loan if applicable viz. to deposit post dated cheques for installment of loan and interest to create second charge on other assets including unencumbered assets to arrange pledge of shares, to furnish revolving bank guarantee for two installments of loan and interests and to provide mortgage of land owned by promoters etc.

IREDA's requirements after the sanction of the loan but before signing the loan agreement include:

- To Pass Board/Governing Council Resolutions at a regularly convened meeting authorising the borrowing of loans and execution of loan documents therefor in the case of companies, cooperative societies registered nude the Societies Registration Act.
- In case of companies to satisfy IREDA that its existing borrowings together with proposed borrowings from IREDA and others are within the limits stipulated by the shareholders under section 293(1)(d) of the companies act, by producing Auditor's certificate to that effect.
- To deposit Front-end fee with IREDA
- To furnish certificate from advocate that the borrower has acquired the land

Whereas IREDA's requirements after signing of the loan agreement but before disbursement of the loan are:

- To pass shareholder's Resolutions under Section 293(1)(a) of the Companies Act. (this is not required under in case of private limited companies)
- Wherever corporate guarantees have been stipulated to ensure that the Guarantor Company can issue/give guarantees in terms of its MoA and the guarantor Company have passed Board Resolutions authorising issue of guarantee under common seal as per draft resolutions prescribed by IREDA.

IREDA has launched the Renewable Energy-Energy Efficiency Umbrella Financing Scheme for those organizations who have good existing network to serve individual customers, who do not fulfil IREDA's legal eligibility criteria and are scattered over large rural/semi-urban areas.

The objectives of the Scheme are to supplement IREDA's current lending operations by spreading the customers/user base through the development of an appropriate Micro Financing Network and to facilitate the Micro Lending capabilities of IREDA.

State Financial Corporations (SFCs), Industrial Development Corporation (IDCs), Technical Consultancy Organisations (TCOs), State Nodal Agencies (SNAs), Business Development Associates (BDAs), Scheduled banks and Non-Governmental Organisations (NGOs) which are otherwise legally eligible to borrow from IREDA and fulfil the other eligibility norms are eligible for the Renewable Energy-Energy Efficiency Umbrella Financing Scheme.

The Line of Credit for the Scheme is a minimum Rs. 25.00 lakhs and maximum Rs. 1 Crore. The interest rate (exclusive of interest tax) is 10.50%. The maximum repayment period including moratorium is 10 years. The maximum moratorium is 2 years. As per the lending norms, IREDA can give 50% of total sanctioned line of credit as mobilisation advance and the balance 50% after evidence of proper utilisation of mobilization advance. If the borrower conducts no business (submits no evidence of utilisation of mobilisation advance to IREDA) within a period of 12 months from the date of disbursement of mobilisation advance, then the line of credit sanctioned would automatically be cancelled. In that event, mobilisation advance drawn from IREDA along with interest is required to be refunded within 30 days of expiry of said one year.

The eligible applicant has to submit an application in the prescribed format of IREDA along with business plan and other enclosures. Applications for a line of credit are appraised based upon the criteria prescribed by IREDA. IREDA reviews application and sanctions the line of credit based on the qualification criteria or rejects the application, if not found suitable.

Request for loan assistance is to be made in the prescribed Application Form along with necessary enclosures and the specified fee towards initial processing and documentation charges, wherever applicable.

As security, IREDA accepts a bank guarantee from a scheduled bank, or a state government guarantee, or fixed deposit receipts maturing at the end of each quarter equivalent to the quarterly installment of principal and interest.

IREDA will disburse 50% of the line of credit as mobilisation advance after signing of Loan Agreement and creation of security. Balance 50% will be disbursed after evidence of proper utilisation of mobilisation advance already released.

Within the initial 9 years of operation, till 31st January 1996, IREDA sanctioned 647 NRSE projects pledging resources to the tune of Rs. 92,088 Lakhs (over US $250 million).

In the waste-to-energy sector, IREDA has sanctioned 64 methane recovery projects covering industries like Distilleries (54), Food Processing (1), Pulp and Paper (1), Pharmaceutical & drugs (2) and abattoir waste (1), miscellaneous (5) located in 16 different states of the country. In addition, 4 projects for municipal solid waste-to-energy have been sanctioned. The total sanctioned loan amounts to Rs. 64 Crores.

Contact Address:

India Habitat Centre Complex
Core 4A,East Court,
1st Floor, Lodi Road,
New Delhi – 110003

Fax: 011- 24682202, 24682204, 24682207
Website: www.ireda.nic.in

MNES

MNES also provides financial incentives, such as interest subsidy and capital subsidy.

The Ministry has issued a set of guidelines to all the States for the creation of attractive environment for evacuation and purchase, wheeling and banking of electrical energy generated from renewable energy sources. The Ministry has suggested that States should announce general policies for purchase, wheeling and banking of electrical energy generated from all renewable energy sources. Fourteen States have so far announced such policies in respect of various renewable energy sources.

The Ministry also provides financial incentives for various renewable energy programmes. Financial Incentives/Subsidies available for Energy from Urban, Municipal and Industrial Wastes are summarised below:

Capitalized Interest Subsidy	For reducing rate of interest to 7.5 subject to a maximum of Rs. 2.0 crore/MWe for waste to power project, Rs. 1.0 crore/MWe for fuel to power project and Rs. 0.50 crore/MWe for waste to fuel project.
Financial support for the preparation of Detailed Project Report (DPR)/ Techno-Economic Feasibility Report (TEFR).	50% of the cost, subject to a maximum of Rs.2 lakh
Incentive to Municipal Corporation/ Urban Local Bodies for site clearance / facilitation/ coordinated actions.	Rs.15.00 lakh per MWe.
Incentive to State Nodal Agencies for their coordinated actions/ monitoring etc.	Rs. 5.00 lakh per Mwe.
Financial Support for Demonstration Projects.	Upto 50% on cost sharing basis subject to a maximum of Rs. 3.0 crore per MW for specified projects.

The MNES also provides various types of fiscal incentives to promote renewable energy technologies in the country, which include direct taxes -100% depreciation in the first year of the installation of the project, exemption/reduction in excise duty, exemption from central sales tax, and customs duty concessions on the import of material, components and equipment used in renewable energy projects.

Contact Address:

Ministry of Non-Conventional Energy Sources,
Block-14, C.G.O. Complex,
Lodhi Road, New Delhi 110003, India.

Phone: 91 - 11 - 24361604
Fax: 91 - 11 - 24361604
Website: www.mnes.nic.in

4.A.8. Ministry of Environment and Forests (MOEF)

Ministry of Environment and Forests (MOEF) is a nodal agency in the administrative structure of the Central Government, for planning, promotion and co-ordination of environmental and forestry programmes.

Of the funding schemes offered by MOEF, the program for Environmental Research Promotion funds projects for research and development in various environmental fields, while the Industrial Pollution Control Project funds projects for pollution control in industries.

The Ministry of Environment and Forests supports research in various universities, institutions and recognized non-governmental scientific organizations. The environmental research in the Ministry is being supported under various sub-schemes. The scheme relevant to waste-to-energy sector is the Environmental Research Programme (ERP) which specifically deals with brown agenda i.e. problems related to pollution, hazardous waste management, agro-chemicals, waste minimisation and reuse, carrying capacity studies and development of eco-friendly and cleaner technologies.

The Industrial Pollution Control Project has been prepared by the Ministry of Environment and Forests to utilise the support of the World Bank to prevent and alleviate environmental degradation caused by industrial operations in our country. The Project involves a line of credit of US $ 155.6 million and counterpart funds of about US $ 108 million to be provided by the GOI, State Governments, financial institutions (IDBI & ICICI) and by industrial units availing the loan.

The objectives of the project include:

- To strengthen the monitoring and enforcement abilities of the Pollution Control Boards of the heavily industrialised States in the Country, viz, Gujarat, Maharashtra, Tamil Nadu and Uttar Pradesh.
- To get individual units to install appropriate pollution control devices.
- To assist the establishment of Common Effluent Treatment Plants (CETPs) for the combined treatment of effluents from clusters of small-scale units.
- To introduce clean technologies which would have a minimum generation of wastes through demonstration projects and studies.
- To support a training programme of the staff of the Pollution Control Boards and of the financial institutions involved in the Project.

Details of the project are available in Appendix 3-B.

Relevant funding schemes of MOEF

A. Environmental Research Promotion

Eligibility

Research proposals can be submitted by a Scientist who is a permanent employee of the organisation where he works and where basic facilities exist for conducting the Environmental Research. The selection of projects will be based, wherever possible, on the fulfillment of certain basic criteria regarding their objectives, approach and competence available.

Grant disbursement pattern

Projects will be sanctioned for a specified period (maximum three years), the grant will be payable in two installments each year on submission of financial statements and progress reports. The authorities of the institution where the research activities are to be carried out would be responsible for the administration of the scheme and maintenance of accounts. The investigator will arrange with the institution to receive and make payments on his behalf. The grant shall be exclusively utilised for the purpose for which it is sanctioned.

Terms and conditions

The grantee organisation is not permitted to seek or utilise funds from any other organisation (Government, Semi-government, Autonomous or private) for the same research project.

For permanent, semi-permanent assets acquired solely or mainly out of the grant, an audited record has to be maintained by the grantee.

The grantee organisation would furnish to the Ministry of Environment and Forests a Utilisation Certificate within sixty days from the close of the each financial year, i.e. by 31st May, of each year for the grant released during the previous financial year. The grantee organisation will be required to furnish six monthly expenditure statements.

The Government of India in the Ministry of Environment and Forests reserves the right to terminate the grant at any stage if convinced that the grant has not been properly utilized or appropriate progress is not being made.

B. Industrial Pollution Control Project

The Project components

1. Institutional component

Administered by Ministry of Environment & Forests (MOEF), GOI, to strengthen the four State Pollution Control Boards of Gujarat, Maharashtra, Tamil Nadu and Uttar Pradesh.

2. Investment component

To support

i. existing industrial units to comply with regulations;

ii. setting up of common effluent treatment facilities; and

iii. demonstration projects for promoting pioneering uses of novel/ clean techniques or setting-up of prototype innovative units in the field of waste minimisation, resource recovery or pollution abatement.

3. Technical assistance component

To channel specialised technical assistance for evaluation of environmental problems and assessment of their solutions.

IDBI has been entrusted with the responsibility of administering part of the Investment Component and Technical Assistance Component aggregating US $ 91.5 mn. The balance funds out of Technical Assistance Component and Investment Component are to be administered by MOEF and ICICI.

Areas of Financial Assistance

Areas of financial assistance under the Industrial Pollution Control Project are:

1. Assistance to pollution control boards
2. Assistance for pollution control projects of industrial units
3. Assistance for setting up common effluent treatment plants (CETP)
4. Assistance for setting up demonstration projects
5. Scheme for assistance to Research Institutions and Industrial units for pollution prevention

1. Assistance to pollution control boards

Financing of this component will be through US $ 12.6 million International Development Association (IDA) credit to cover the procurement of equipment and provide for facilities at the Pollution Control Boards (PCBs) of the States of Gujarat, Maharashtra, Tamil Nadu and Uttar Pradesh; and to cover the cost of training of PCB personnel. The State governments are providing the counterpart funds for the following works:

(i) recurring costs of staffing the laboratories,

(ii) reducing cost in O & M of the equipment,

(iii) acquisition of land for construction of laboratories,

(iv) major part of the construction works,

(v) customs duty on imported equipment and

(vi) contingencies.

2. Assistance for pollution control projects of industrial units

Eligibility

Assistance is provided to large and medium scale units. The project aims at waste minimisation, resource recovery and pollution abatement.

Extent of Assistance

Assistance is available for financing equipment, civil works and where necessary, consultancy services. A total of US $ 100 million is available as loan from the World Bank, which would be disbursed to industrial units through the financial institutions, viz., IDBI & ICICI.

Promoter's contribution

A minimum promoter's contribution of 25% of the project cost is envisaged. In the case of an existing company, internal accruals deployed on the project are reckoned as promoter' contribution.

Terms of Assistance

The loans would carry concessional rate of interest of 15.5% p.a. (including interest tax) as also an up-front fee of 1% on the sanctioned loan amount. It will be repayable by the units within a period not exceeding 15 years including a maximum grace period of 4 years.

Application for assistance

Specific application forms to be filled in and forwarded by the industrial concerns, can be obtained from IDBI and ICICI.

3. Assistance for setting up common effluent treatment plants (CETP)

Eligibility

A company or society constituted specifically to own, operate and maintain common facilities for treatment and disposal of solid, liquid and gaseous wastes generated by small and medium scale units located in industrial estates/ clusters, will be eligible for assistance under the Scheme. State infrastructural / industrial development agencies promoting CETPs will also be eligible.

Procedure for sanction of assistance

The State Pollution Control Board consent is sufficient for the company to approach IDBI / ICICI or any other financial institution for obtaining the loan component for CETP. The company would obtain the commitment from IDBI / financial institution for the loan component and the company / financial institution would approach the State Government / State Board for the release of the State's share into the Company's bank account.

Based on the release of funds by the State Government, the Central Government would release its matching share to the Company's bank account.

4. Assistance for setting up demonstration projects

Eligibility

i. The projects have to be sponsored by an industrial concern within the meaning of Section 2 (c) of IDBI Act, 1964.

ii. The installed gross fixed assets of the sponsoring industrial concern shall not exceed US $ 5 Millions.

iii. The project shall represent pioneering uses of clean / novel technologies or consist of prototype units for dealing with pollution abatement, waste minimisation or resource recovery in industry and should have potential for widespread replication.

iv. The sponsoring enterprise should be currently efficient and financially sound, but require comparatively large investment for pollution control, in relation to its existing gross capital cost.

v. The financial rate of return and/or the risks involved in the project proposals do not enable it to be financed on commercial terms.

Application for assistance

Application forms for availing both loans and grants under the scheme can be obtained from IDBI and ICICI.

5. Scheme for assistance to Research Institutions and Industrial units for pollution prevention

The impact of industrial waste on the environment is a major issue of concern and there is need for ever higher standards for waste minimisation ranging from good operating practices to modification of the production process. Even though it pays substantial dividends not all such opportunities are obvious. The scheme aims to assist these efforts by providing assistance for precompetitive industrial research in the environmental field.

Assistance is available for two kinds of projects:

i) Collaborative projects which prove the feasibility of adapted or new techniques.

ii) Projects which illustrate best practice based on proven techniques.

Aim of the scheme

The main aim of the scheme is to promote adoption of technologies and 'best practice' techniques for environmental benefits amongst industrial units, preference will be given to technologies for small scale industrial units. The scheme provides assistance for development and demonstration projects.

Eligibility

Organisations eligible for support include research and technology organisations, government research establishments and higher education institutions, as well as

i. A Company involved in environmental technology as a supplier or a user to develop innovative solutions,

ii. A company with problem for which there is no "off-the shelf" technical solution,

iii. A private recognised research organisation with an interest in practical solutions to environmental problems.

Terms for assistance

i. Project costs for which a grant of upto 50% subject to a maximum of Rs. 25 lakhs can be made available. Single companies proposing projects will be assisted upto 25% of eligible project costs. It is normally not expected to support any one project for more than three years. Projects, which have already started cannot normally be funded under this scheme.

ii. The projects will need to be economically feasible, and innovative to establish the concept of the innovative technology; the extent to which the project offers value for money also be major criteria in selection.

iii. Priority will be given to projects, which benefit a number of organisations.

The assistance includes grant support from other government departments, and local authorities.

Coverage of scheme

The scheme covers three main areas within the environmental field:

i. Cleaner Technologies – reduction of waste and pollution from manufacturing processes or production of less-pollution and less wasteful products.

ii. Recycling – collecting, sorting and processing industrial and household waste for re-use.

iii. Waste or Effluent Treatment and Disposal

These are not exclusive and any project in the general environmental technology field will be considered for funding. All projects must involve research of an innovative application of existing technology. In addition, within these three broad categories priority areas will be designated to anticipate a need for higher regulatory standards. If a project falls within a priority area and has the potential to lend to the setting of a higher standard it will be classified as a special project. Such a project will be eligible for single company funding as an alternative to consortium funding.

Research programmes can also be organised through an apex organisation to which a number of industrial companies or research bodies contribute for a wide dissemination of results leading to the development of effective environmental solutions.

Terms and Conditions for partnership

i. Priority will be given to funding for projects which involve three companies or organisations, and where one of the partners should be able to exploit the results of the research commercially.

ii. For single company projects where one partner is a higher education institution or government research establishment, only industrial partner is required.

iii. Where one of the partners is a University, polytechnic or government research establishment, the research body must be a genuine partner, not a subcontractor.

Application Procedure

Application procedure requires a short, first stage application in which a preliminary evaluation will normally be carried out within four weeks. The time taken to process an application will depend upon how well it has been prepared and the level of commitment behind it.

Financing Pattern

In general all directly attributable costs, properly incurred in carrying out the project will be supported. These include:

i. the appropriate part of the salaries of personnel working directly under the project.
ii. reasonable allowance for overheads directly attributed to the project.
iii. materials consumed in the course of the project.
iv. capital equipment purchased or constructed for the project, less its estimated market value at the end of the project
v. sub-contract charges for consultancy fees e.g. for monitoring
vi. project management costs such as travel, accommodation, hire of meeting or office facilities which are associated with project management training that is specific to the project.
vii. fees for trials and testing e.g. third party cost for testing sampling and analysis.

Examples of projects eligible for funding

Examples of collaborative projects include:

i. projects to assess the feasibility or economics of an industrial recycling scheme by a consortium consisting of local industrial firm, a research and technology organization;
ii. projects to assess the feasibility or economics of a domestic recycling scheme;
iii. project to assess the feasibility of a newly developed waste treatment or waste reduction process with a common waste disposal problem together with a supplier of the relevant technology;
iv. projects to disseminate information on new and emerging techniques in clean process by technology by producing state-of-the-art-reviews;
v. projects for new and innovative users for material that would otherwise be disposed off as waste.

Examples of projects involving single companies include

i. an unit installing equipment involving new technology rather than a conventional alternative;
ii. an unit wishing to demonstrate an example of good environmental management practice to wider audience;
iii. a unit using biotechnological processes & biodegradable adducts to prevent pollution.

Where currently available technology is involved application can be considered from single companies who must be users rather than suppliers.

Implementation

Implementation of the scheme will be the responsibility of the Central Pollution Control Board and the State Pollution Control Boards. Industry Departments and scientific & research institutions will also help applicants with initial advice and consultancy by putting potential collaborators in touch with each other and to manage project development.

Contact Address:

Ministry of Environment & Forests,
Paryavaran Bhavan, CGO Complex,
Lodhi Road, New Delhi - 110003

Phone: 91-11-24361896, 24360721
E-mail : secy@menf.delhi.nic.in
Website: www.envfor.nic.in

4.A.9. Ministry of Urban Development & Poverty Alleviation (MoUD & PA)

The Ministry of Urban Development & Poverty Alleviation (MoUD and PA) is the apex authority of Government of India at the National level to formulate policies, sponsor and support programmes, coordinate the activities of various Central Ministries, State Governments and other nodal authorities and monitor the programmes concerning all the issues of urban development and housing in the country.

The Department of Urban Development working under the Ministry is responsible for urban development. The department has its own policies and schemes through which Waste-to-Energy projects can be funded. Waste-to-Energy projects can also be undertaken through cost sharing mechanism with the MNES. Two of the schemes available in the Department of Urban Development are 'Integrated Development of Small and Medium Towns' and 'Infrastructure Development in Mega Cities'.

The centrally sponsored scheme for infrastructural development in mega cities was initiated during 1993-94. The primary objective of the scheme is to enable the mega cities to build a revolving fund by the end of the Ninth Plan for sustained investment in urban infrastructure through adoption of direct and indirect cost recovery measures.

The main features of the scheme are:

- The scheme is applicable to Mumbai, Calcutta, Chennai, Bangalore and Hyderabad.
- The funds under the scheme are channelised through a specialised institution/nodal agency at the state level.
- The share of Central and State Govt. is 25% each and the balance 50% is to be met from institutional finance/capital market.
- The projects under the scheme consist of a suitable mix/basket of remunerative, user charge-based and basic services projects.
- The nodal agencies of this scheme are required to provide project-related finance for urban infrastructure including water supply, sewerage, drainage, sanitation, city

transport networks, land development, slum improvement, solid waste management, etc.

Funds flow as grants from the Central and State Governments to the nodal agencies. However, the amounts flowing from the nodal agencies to the implementing agencies for projects, or a mix of loans and grants shall be such that 75% of the Central and state shares are recovered back into a revolving fund at the level of the nodal agencies. The objective is to create and maintain a special fund for the development of infrastructural assets on a sustained basis.

The projects under the mega city scheme are sanctioned by a Sanctioning Committee constituted at the State level with three members of the State Government and one member each from the Planning Commission and the Ministry of Urban Development and Poverty Alleviation. The State Level Project Sanctioning Committee in all the mega cities have so far approved 238 projects amounting to Rs. 2340 crores for implementation. Upto September 1998 an amount of Rs. 682 crores has been spent on approved projects. The mega city nodal agencies are also making efforts for mobilising institutional finance and an amount of Rs. 530 crores has so far been mobilised from HUDCO/other sources.

The Centrally sponsored scheme of Integrated Development of Small & Medium Towns (IDSMT) was initiated in the year 1979-80 and is continuing with periodic amendments and modifications. One of the principal objective of the scheme is to improve the infrastructural facilities and helping in the creation of durable public assets in small and medium towns. Solid waste management is one component of the scheme. IDSMT Scheme will be applicable to towns with population upto 5 lakhs subject to the stipulation that 1/3 of the total amount available each year for the Scheme as a whole will be allocated to towns with less than 50,000 population. The identification of towns shall be left to the State Govt., Union Territories according to their Urban Development Strategy, within the framework of guidelines. While selecting the towns, preference will be given to headquarters of districts followed by Mandi towns and industrial growth centres, tourist places, pilgrim centres etc.

The sharing pattern between the Central and State Governments and the Financial Institution/ Other sources is as follows:

Category of Town (Population)	Project Cost (Rs. lakhs)	Central Assistance (Grant)	State Share (Grant)	HUDCO/Financial Institution Loan/ Other Sources
A (< 20000)	100	48	32	20(20%)
B (20000 – 50000)	200	90	60	50(25%)
C (50000 – 100000)	350	150	100	100(29%)
D (1 – 3 Lakhs)	550	210	140	200(36%)
E (3 – 5 Lakhs)	750	270	180	300(40%)

The State Government / Union Territories have to prepare Detailed Project Report in the prescribed format and send the same to Town and Country Planning Organisation (TCPO) for scrutiny and appraisal for further consideration of the Sanctioning Committee at the State level. A Sanctioning Committee at the State level chaired by the Secretary Urban Development/Local Government in charge of IDSMT scheme will approve the projects. The recommendations of the Sanctioning Committee along with consent letters from HUDCO/Financial Institutions regarding making the Institutional Finance component available will be submitted by the State

Government to the Ministry of Urban Development and Poverty Alleviation through TCPO for consideration of release of Central assistance.

The monitoring and evaluation of projects under IDSMT scheme is carried out by TCPO. Quarterly progress reports should be submitted by the State/Union Territories/Nodal agencies to TCPO which in turn will keep the Ministry informed about the progress of the scheme. TCPO will prepare a Status Report on the IDSMT in consultation with MoUD & PA every year. The total release of central assistance under this scheme amounts to Rs.318 crores, which has benefited 920 towns till 1998.

Contact Address:

Ministry of Urban Development & Poverty Alleviation
Government of India
Nirman Bhawan, Maulana Azad Road,
New Delhi - 110011 India
E mail : muae@urban.delhi.nic.in

4.A.10. Housing and Urban Development Corporation (HUDCO)

HUDCO extends assistance benefiting the masses in urban and rural areas under a broad spectrum of programmes, which include Housing, Urban Infrastructure, Consultancy Services, Building Technology and Research & Training. Amongst these, Urban Infrastructure Programmes include waste-to-energy (waste management) projects.

HUDCO began financing urban infrastructure, with a view to give specialised attention to the critical segments of infrastructure development in cities and towns. A significant aspect of HUDCO'S infrastructure finance has been its emphasis on ecologically appropriate infrastructure projects. HUDCO's assistance for Urban Infrastructure includes utility infrastructure, social infrastructure and economic and commercial infrastructure; solid waste management falls under utility infrastructure.

In sanctions of loan for its urban infrastructure projects, priority is given to small and medium towns. Priority is also given to unserviced areas, rehabilitation projects and augmentation of existing supply. The thrust is to promote ecologically appropriate and environmentally sensitive infrastructure development with initiatives on recycling, generation of non-conventional and renewable sources of energy.

HUDCO's financial assistance to Water Supply, Sewerage, Drainage, Solid Waste Management projects comes in with an interest rate of 13.50-13.75% with a repayment period of 10-15 years. The same for Co-generation projects comes in with 14.00-14.50% rate of interest with a repayment period of 10-15 years (except under MNES for public agencies).

The interest rates increase by additional 0.5% in respect of those agencies who do not provide security. (The security can be Government Guarantee, bank guarantee, or mortgage of assets. In addition, collateral security package consisting of corporate guarantee, personal guarantee, escrow accounts, post-dated cheques etc. is worked out to cover the loan). Agencies can also opt for telescopic repayment before execution of agreement for which the agency is charged an additional interest rate of 0.5%. An additional 2% p.a. is charged as penal interest in all default cases.

HUDCO gives priority to integrated waste management projects for cities, suburbs and other human settlements. Individual components of integrated waste management may be financed on a case to case basis. Components considered for financing are:

- Overall management of municipal solid and liquid waste (storage, collection, treatment, resource recovery and disposal)
- Hazardous waste and industrial waste generated within municipal/urban/semi urban areas.
- Resource recovery
- Recycling which forms part of an integrated waste management project

HUDCO gives special consideration to the following aspects:

- Cost effective technology, optimum use of manpower and resources, recycling and energy recovery
- Beneficial environmental impact including pollution control measures
- Use of standard/reliable equipment and field tested technology
- Proposed system should be best option for site conditions and particular population density
- Treatment and disposal systems compatible with concerned laws.

Agencies eligible for HUDCO's assistance are:

- Urban local body
- Development authority
- Private sector company (registered)
- Health care establishment in the public/private sector
- Cooperative Sector Organisation
- Joint sector Organisation
- Non Governmental Organisation (registered)

In HUDCO's financing pattern for solid waste management schemes, typical extent of financing is upto 70% with the rate of interest (net) for 10 years repayment as 14% for Government guaranteed schemes and 14.5% for Non Government guarantee schemes. Failure for timely repayment attracts 0.5% additional interest. Interest rate is the current applicable interest rate and linked to the reset based on the cost of the capital.

Since HUDCO can finance upto 70% of project cost, the balance has to be met by the borrowing agency from its resources like State Government funds or its own funds. While submitting the project to HUDCO, the borrowing agency has to furnish adequate proof to this effect. The financing pattern for solid waste management schemes is given in further detail in Appendix 3-B. A list of waste-to-energy projects supported by HUDCO is also given in Appendix 3-B.

Financing pattern for solid waste management schemes

Terms of repayment

Additional interest is chargeable for emergent situations e.g. excess requirement of loan over and above the loan ceilings prescribed by HUDCO.

The interest is payable quarterly on 30th June, 30th September, 31st December and 31st March each year, the first installment of interest (for a proportionate period, if required) becoming due and payable on the due date immediately following the date of disbursement of the loan.

In the event of default of payment of the loan installment and/or interest on the due dates, additional compound interest at the penal rate of 2-1/2 percent is payable on such overdue amount.

HUDCO reserves the right at any particular time to vary the interest rate(s) on the loan amount or a part thereof yet to be released depending on its borrowing interest rate(s) for these urban infrastructure schemes at the time of release of such amounts by giving prior written notice to the borrower of such variations.

The loan has to be repaid within a maximum period of 10 to 15 years (including installation period) depending on the nature of the project and the request of the borrowing agency. No moratorium is permissible and the construction period may be deemed as moratorium period. The repayment period is reckoned from the date of release of first installment of the loan and includes construction period which should normally not exceed 3 to 5 years. However, this will depend on the merits of each case.

It would be open to the state agencies to channelise HUDCO loan at varying mixes of loan and grants or at varying interest rates according to the nature of the project by combining grants available in the State budget, provided HUDCO is satisfied that the funds are channelised to local bodies according to an integrated financing plan for urban areas and that long term financial viability of local bodies is not adversely affected.

As escrow account with dedicated flow of funds should be opened in a bank of HUDCO's choice.

Other charges

1. Documentation Charge

Documentation charge of Rs. 10,000 is to be submitted for each project. 50 percent of the Documentation charge should be submitted along with the Planning and Financial Proposal (RFP)/the Feasibility Report / the Flash Report. The balance 50 per cent should be submitted along with the Detailed Project Report (DPR) and/or the Loan Application. If the DPR is submitted at the initial stage, then the full documentation charge should be submitted with it.

2. Front End Fee

One-time Front-end Fee @ 1.25% of the total loan amount shall be leviable on all the urban infrastructure schemes as per details given below:

Loan Amount	No. of installments for front-end fee recovery
Upto Rs. 2 crores	One installment at the time of 1st release
Rs. 2-5 crores	Two installments i.e. at the time of 1st and 2nd release
More than 5 crores	Four installments commencing from 1st release

Front-end Fee cal also be included in the project cost, if required by the borrowing Agency.

3.Interest Tax

Interest Tax @ 2% on the amount of interest shall also be payable by the borrowing agency in addition to the interest, front-end fee etc. This interest tax shall be payable quarterly on the due dates together with interest to be paid. However, interest tax shall be subject to variation as per Government notification from time to time.

Security

The loans advanced by HUDCO under the scheme have to be secured by either an unconditional and irrevocable bank guarantee (in HUDCO's prescribed proforma) from a scheduled bank, acceptable to HUDCO or a State Govt. Guarantee or by a security package that may be worked out on case to case basis from the following components:

- Mortgage of land in favour of HUDCO with the approval of the concerned authority with a commitment that the authority would inform HUDCO 180 days in advance in case the lease is revoked.
- Hypothecation of plant and machinery
- Corporate guarantee of the Promoter Group of Companies
- Lien on Escrow Account
- Post dated cheques
- Personal guarantee to the Promoter Directors backed by mortgage of their personal properties
- Revolving Bank Guarantee of an amount equivalent to the interest and principal for two quarters of loan repayment installment for the entire pay back period.
- Cash deposit of 25% of the loan component for the full pay back period.

If the borrowing agency is not in a position to furnish the security of mortgage of its properties, HUDCO may secure the repayment of its loan and other amount becoming due and payable by a Negative Lien to be replaced by mortgage of properties of the value of not less than 133-1/3% of the loan amount coupled with an irrevocable Power of Attorney in favour of HUDCO. In case the borrowing agency submits the Negative Lien as security, then it will pay Risk Charge of 1% on the loan amount outstanding from time to time.

Waste-to-energy projects financed by HUDCO

A list of Waste-to-Energy projects financed by HUDCO is given below

Sr. No	Title of Scheme	Project cost (Rs. In lakhs)	Loan amount (Rs. In lakhs)	Component of SWM financed	Year of sanction
1	Bagasse Based Co-generation project at Mudhol, Karnataka	2495.00	1219.00	• Boiler • Turbine • Pollution Control Equipment	1998
2	Bagasse Based Co-generation project at Vadodara, Gujarat	2375.75	1281.81	• Boiler • Turbine • Pollution Control Equipment	1998
3	Bagasse Based Co-generation project at Satara, Maharashtra	7835.57	3494.38	• Boiler • Turbine • Pollution Control Equipment	1998
4	Bagasse Based Co-generation project at Sangli, Maharashtra	4005.47	1647.82	• Boiler • Turbine • Pollution Control Equipment	1999
5	Power production from Municipal solid waste at Nagpur	4730.00	1170.00	• Boiler • Turbine • Pollution Control Equipment	1999
6	Kamarhati Waste Processing, Energy and Allied Products Recovery Projects	837.53	586.27	• Boiler • Turbine • Pollution Control Equipment	1999
7	Bagasse Based Co-generation project at Sankili, Andhra Pradesh	209.39	143.15	• Boiler • Turbine • Pollution Control Equipment	1999
8	Bagasse Based Co-generation project at Madhya Pradesh	7634.88	5726.16	• Boiler • Turbine • Pollution Control Equipment	2000
9	Bagasse Based Co-generation project at Chagullu, Andhra Pradesh	2707.82	1895.47	• Boiler • Turbine • Pollution Control Equipment	2000
10	Bio-mass based power project at Ongole, Andhra Pradesh	1286.08	771.65	• Boiler • Turbine • Pollution Control Equipment	2000
	Total	**34117.49**	**17936.61**		

Contact Address:

Housing & Urban Development Corporation Ltd
HUDCO Bhawan, India Habitat Center,
Lodhi Road, New Delhi 110003

Tel: 91-11-24649610-27(18 lines)
Fax: 91-11-24625308
Voice Mail : 4648160-63-64

E-mail: hudco@vsnl.com
Website: www.hudco.org

4.A.11. National Bank for Agriculture and Rural Development (NABARD)

National Bank for Agriculture and Rural Development (NABARD) is an apex institution, accredited with all matters concerning policy, planning and operations in the field of credit for agriculture and other economic activities in rural areas in India.

NABARD's refinance is available to State Land Development Banks (SLDBs), State Co-operative Banks (SCBs), Regional Rural Banks (RRBs), Commercial Banks (CBs) and other financial institutions approved by RBI. While the ultimate beneficiaries of investment credit can be individuals, partnership concerns, companies, State-owned corporations or co-operative societies, production credit is generally given to individuals.

NABARD provides refinance support to banks against their investment credit for financing pollution control devices/ measures (as per pollution control norms/ regulations), as an integral part of the project outlays for approved purposes under both farm and non-farm sectors, provided the cost of such devices is not unduly high, it is within the ceiling, if any, stipulated on outlays for refinance and the projects are technically feasible and financially viable.

It also provides refinance support for the installation of common pollution control devices such as Common Effluent Treatment Plants (CETPs), waste recycling, waste minimization processes, etc. for approved agricultural and non-agricultural purposes. The agencies eligible for assistance for common pollution control measures would be individuals, groups / associations of persons, partnership firms, cooperative societies, public limited companies, industrial houses, public sector organisations, promotional bodies, other corporate bodies, NGOs, etc.

Grant assistance is provided to well working and committed NGOs, research institutions and other similar institutions including universities on very selective basis for the following activities:

- Demonstration / replication of eco-friendly / pollution control measures / technology.
- Operating common pollution control devices / measures.
- Providing training, organising publicity campaigns / awareness workshops / capacity building, etc. relating to both farm and non-farm sectors.

  Developing 'simple' and cleaner eco-technologies such as use / re-use, recycling, resource recovery, waste minimisation, treatment of effluents and wastes, etc.

  Contact Address:

  The Managing Director
  National Bank for Agriculture and Rural Development
  First Floor, Sterling Centre
  Dr.A.B. Road, Worli
  Mumbai 400 018, India

  E-mail :contact@nabard.org
  Website: www.nabard.org

4.A.12. State Financial Corporations (SFCs)

Legislation was promoted by the Government of India for the setting up of financial corporations and the State Financial Corporation Act 1951 came into force on August 1, 1952. The State Financial Corporations (SFCs) were closely modeled on the line of IFCI, but were intended to serve the financial requirements of small and medium sized enterprises. Financing pattern of some SFCs is discussed below.

Maharashtra State Financial Corporation (MSFC)

The main function of MSFC is to provide term loan assistance to small and medium scale industries (new as well as existing) for acquisition of fixed assets like land, building, plant & machinery.

Eligible Activities include industrial activities, small nursing homes, hotels, restaurants, tourism related activities; medical practitioners, qualified professionals.

Loan limits for limited companies is upto Rs. 2.40 crore and upto Rs. 1.20 crore for Proprietary / Partnership firms.

Project cost limit is upto Rs.10 crore (Cost of the fixed assets, margin money for working capital, preliminary & pre-operative expenses and contingencies).

Net worth limit is upto Rs.10 crore (Paid-up capital + free reserves excluding share premium amount)

Interest Rates range between 13.50% and 18% p.a., depending upon scheme, quantum of loan, rate of refinance, eligibility for refinance, covered under line of credit etc.

The loan amount is worked out considering the debt - equity ratio and minimum promoters' contribution norms also ensuring that at least 10 per cent security margin is maintained in the value of fixed assets eligible for loan. Higher security margin and /or collateral security may also be insisted depending upon nature of assets and risk perception.

For loan amount upto Rs.10 Lakh, debt to equity ratio (DER) at 3:1 (75% loan, 25% equity) is observed. For loan amount over Rs.10 Lakh, DER depends upon the scheme, loan amount, nature of assets and risk perception and ranges between 2:1 to 1.5:1 but may even extend to 1:1, keeping in mind viability and collateral security.

Processing fee (for long term loans) for loans (Rs.50,000 - Rs.10 Lakh) is 0.7% of the amount sanctioned and for loans above Rs. 10 Lakh, it is 1% of the amount sanctioned subject to a maximum of Rs.1 Lakh.

Repayment period is maximum 8 years with moratorium upto 2 years from the date of first disbursement during which only interest payment commences.

Some of special features pertaining to MSFC include:

- No separate Interest Tax, D.I.C.G.C Fee, Service Charge, Inspection Fee, Compulsory Purchase of Shares, etc.
- Facility to pay the quarterly interest within 15 days from the date of calculation

- Decentralisation of sanctioning and disbursement powers.
- Need - based additional loans and facilities for deserving units.
- Longer moratorium and repayment periods.

Madhya Pradesh Financial Corporation (MPFC)

Madhya Pradesh Financial Corporation, incorporated in the year 1955, is the premier institution of the state, engaged in providing financial assistance and related services to small to medium sized industries. Their fund-based schemes are available for setting up business within the state of Madhya Pradesh and non-fund based schemes are available throughout India.

MPFC grants assistance to "Industrial Concerns" located in the state of Madhya Pradesh and as defined in clause (c) of section 2 of "State Financial Corporations Act 1951". However, fee based services can be extended to units located in any part of the country.

As per the provisions of the "State Financial Corporation Act. 1951", MPFC can grant assistance to only those concerns whose paid-up capital and fee reserves taken together do not exceed Rs. 10.00 crores. This limit is not applicable to non- fund based activities. Subject to the limits prescribed under the various schemes, MPFC's total exposure to a single concern under all the schemes taken together shall not exceed Rs. 90.00 lakhs in case of partnership and proprietary concerns, and Rs. 240.00 lakhs in case of corporate entities.

MPFC can grant loans against security and the primary security is usually a first charge on land, building, plant and machinery etc. acquired / proposed to be acquired. In case of loan under consortium arrangements, pari-passu charge is accepted along with the other participating institutions.

Generally MPFC takes collateral security of land and / or building of the borrower or any third party in addition to primary security. MPFC also has a floating charge on all the remaining assets of the borrower, subject to the charge in favour of the bankers for working capital.

The minimum promoter's contribution envisaged in the project is worked out on the basis of Debt-Equity norm and the security margin norm applicable at the time of sanction of the loan. The maximum amount of assistance shall be lower of the two amounts worked out on the basis of Debt-Equity norm and the security margin norm. The normal lending norm for debt- equity is 1.5:1, however in some specific schemes this norm may be flexible.

The entire promoter's contribution envisaged in the project is desired to be raised by way of capital before first disbursement of the loan installment. However in case the promoters are short of own capital, some amount ascertained during the appraisal of loan proposal, may be raised as unsecured loans in the form of quasi-capital.

The period of repayment of loan is 5 - 8 years and decided on the merits of each case. The principal amount of loan is payable normally in half yearly installments with an initial moratorium period of 6 months to two years depending upon the size of the project and the stage of the implementation. Interest is also normally charged on half yearly basis and the months of payment of interest and principal are kept different to even out the liability of the borrowers.

Rajasthan Financial Corporation (RFC)

Rajasthan Financial Corporation (RFC) was constituted in 1955 for providing long term financial support to tiny, small scale and medium scale industries in the State of Rajasthan.

The Corporation grants term loan upto Rs. 500 lakhs to limited companies and Co-operative societies and upto Rs. 200 lakhs to proprietary and partnership concerns having total project cost upto 12.00 crores. Existing industries having net worth upto Rs. 10.00 Crores (paid up capital + Free reserve) are eligible for financial assistance under the provisions of the SFC's Act. The Corporation also provides short-term line of credit facilities to good borrowers for acquiring fixed assets and to meet out their working capital requirements. Industrial concerns are eligible for finance from RFC.

Financial assistance is also made available by the Corporation for the activities which have been approved by IDBI under the provisions of Section 2(c) (XIII) of the SFC's Act.

Kerala Financial Corporation (KFC)

Kerala Financial Corporation (KFC) plays a major role in the development and industrialisation of Kerala by extending credit assistance to suit individual requirements.

KFC not only offers term loans, but also schemes like leasing, hire purchase, bill discounting, working capital finance, short term, and schemes focused at the weaker sections of the society extending equity type assistance (National Equity Fund).

Principal objective of the Kerala Financial Corporation is to extend term loan assistance for establishing new industrial units or to extend credit assistance for meeting part cost of expansion / diversification / modernisation of existing units, in small scale or medium sectors. Schemes have been introduced for applications ranging from short term to long term and equity type assistance. The repayment span varies from 2 to 10 years. Service sectors like tourism, transport, hospital etc. and industrial sectors are also eligible for assistance. Term loans, project finance (for SSIs and MSIs), asset finance, working capital finance, etc. are offered by KFC.

Contact Addresses:

Maharashtra ate Financial Corporations (MSFC)
New Excelsior Building.,
A.K. Nayak Marg,
Fort, Mumbai - 400 001 (India)

Phone: 91-22-22077711 / 12, 22077786 / 87
Fax: 91-22-22070113 / 22079902
E - Mail : msfcho@bom7.vsnl.net.in

Madhya Pradesh Financial Corporation (MPFC)
"Finance House"
Agra Bombay Road,
Indore - 452 001.
Tel. : 91-0731-2522921.
Fax : 91-0731-2522905.
email: finance@mpfc.org

Rajasthan Financial Corporation (RFC)
Rajasthan Financial Corporation (RFC)
Udyog Bhawan
Tilak Marg
Jaipur 302 005

Phone: 91-141-2406240-52, 2380231-33, 2382062
Fax : 91-141-2401200
email: info@rfconline.org, cmd@rfc.ernet.in
Web Site: www.rfconline.org

Kerala Financial Corporation (KFC)
Vellayambalam,
Thiruvananthapuram –695033.

Telephone: 0471 - 2318319
Fax: 0471 - 2318541/2311750
e-mail : kerfinco@md2.vsnl.net.in

4.A.13. Industrial Development Corporations (IDCs)

Industrial Development Corporations (IDCs) were established with the objective of promoting industrial growth in the various states. Only a few IDCs finance projects in the areas of renewable sources of energy, energy efficient and waste reduction technologies, pollution control equipment and devices, waste utilisation and recycling, etc. Financing pattern of some of these Industrial Development Corporations (IDCs) is discussed below.

Andhra Pradesh Industrial Development Corporation Limited (APIDC)

APIDC currently does not have any specific program addressing financing needs of industry for adaptation of pollution control, pollution prevention or clean technologies. However, the Corporation undertakes joint financing with other financial institutions viz. APSFC, IFCI, ICICI, IDBI and commercial banks.

The new equity policy of APIDC proposes to give special impetus to industrial development and has identified some sectors for investment; Renewable sources of energy; Energy saving devices, appliances etc.; Energy efficient and waste reduction technologies; Pollution control equipment and devices; Waste utilisation and recycling.

APIDC accepts applications for financing as per the standard loan application format within in the state of Andhra Pradesh only. APIDC extends term loan and equipment financing schemes for long term financial assistance for project implementation, acquiring identifiable items of plant and machinery / other equipment / including energy saving systems for modernisation / expansion balancing / replacement.

Existing well performing small and medium scale units are eligible. The units should be in operation for atleast 4 years from the date of commercial production and preferably earned profits/declared dividends, during immediate preceding 2 years. First generation entrepreneurs do not typically qualify for assistance.

Loan amount is generally up to Rs 2.50 Crores. APIDC looks for a maximum Debt Equity ratio of 2:1 for projects less than Rs 10 lakhs investment and 1.5:1 for projects above Rs. 10 lakhs. The maximum loan repayment period allowed is upto 8 years for long term and 3 years for short term. The recovery schedule is generally on quarterly basis.

All assets financed by APIDC are mortgaged/hypothecated to the corporation as primary security for the loan. Further the corporation requires collateral security based on the risk perception of the line of activity/type of scheme such as personal guarantees.

The rate of interest is the prevailing rate. (For non-conventional sources a subsidy of 10% is provided). Recovery schedule is quarterly. Service charges are 40% of the loan amount. Up front fee is 0.5% of the loan amount payable. Processing time generally does not exceed 3 months.

Karnataka State Industrial Investment and Development Corporation (KSIIDC)

KSIIDC was established with the objective of promoting industrial growth in the state of Karnataka, especially in the medium and large sectors.

The institution does not have any specific program addressing financing needs of industry for adaptation of pollution control, pollution prevention or clean technologies. However, KSIIDC has extended financing assistance in these areas under its medium and long-term loans, equipment financing and direct equity participation programs. Recently KSIIDC participated in an equity program for setting up a CETP in the leather industry.

The institution accepts applications for financing as per the standard loan application format within the state of Karnataka only.

KSIDC's Equipment Finance Scheme makes assistance available for purchase of identifiable items of new plant and machinery for modernisation/expansion/balancing/ replacement or for any other purpose except for setting up a new project.

Assistance is available to existing industrial concerns with a good performance record and sound financial position. They should have been in operation for atleast four years, have earned profits and/or declared dividends on equity shares during the preceding two financial years. They should also not be in default to institutions/ banks in the payment of their dues.

The period of loan repayment ranges from two to five years. Moratorium could be granted for a one-year period.

Exclusive hypothecation of the capital goods proposed / financed, with or without first/second charge on other existing fixed assets is taken as security.

KSIDC participates in the direct equity share capital mainly in respect of assisted/joint sector companies. The participation is upto 11% of the paid-up equity capital depending upon the merit of the project. In certain sectors, the participation is expected to be disinvested by the corporation within a maximum period of three to five years on a mutually agreed disinvestment formula entered into at the time of investment.

Contact Address:

Andhra Pradesh Industrial Development Corporation Limited (APIDC)
'Parisrama Bhavanam',
5-9-58/B, Feteh Maiden Road,
Post Box No.25, Hyderabad - 500 004.

Phone : 91-40- 2235253 / 4 / 5 / 6, 2230225, 2237123, 2242312, 2242320, 2237087, 2243118
Fax : 91-40-2235516, 2236756
email : apidc@ap.gov.in

Karnataka State Industrial Investment and Development Corporation (KSIIDC)
MSIL House, #36,
Cunningham Road,
Bangalore 52, Karnataka.

Tel : 91-80-22258131, 33
Fax : 91-80-22255740
email : ksiidc@bir.vsnl.net.in
Website : www.ksiidc.com

Appendix 4 -B

Project Funding Information for Funding/Lending Institutions in India

4.B.1. Winrock International India (WII)

RECOMM Project (Renewable Energy Commercialization)

The RECOMM project was launched in October 1995 supported by the USAID. The project's objective is to increase India's capacity so that it can meet its present and future energy needs in an environmentally sustainable manner, with special focus on the rural consumption. The objective had to be achieved by lending financial and technical support to renewable energy (RE) promotional efforts. The process had to be accelerated by introducing and using commercially viable RE technologies developed through commercial networks.

The five specific aims were to:

1.Commercialize high-potential technologies

2.Develop renewable energy projects

3.Improve access to financing and capital

4.Facilitate renewable energy partnerships

5.Strengthen environment for renewable energy

WII found that two technologies, Cogeneration in the sugar industry and Solar Photovoltaic (PV) systems for rural areas, carried the greatest near-term commercial potential. Initial activities were, hence specifically targeted at developing these two. Subsequently, Hydro Power, Biomass and Wind Energy were also focussed on. Other programs such as emerging technologies, financial advisory services and outreach activities were adopted to commercialize all types of renewable energy systems.

The implementation phase of the RECOMM project concluded in 1999.

Some highlights of the project are:

- A diversity of institutional and financial models were created, such as Energy Service Companies (ESCOs), rural cooperatives, and rural enterprises, which were supported as location-specific institutions to promote entrepreneurship in the RE sector
- Sixty individual projects in various RE technologies were supported, over half of them being commercial ventures. More than 50 per cent of the funding under sub-agreements was disbursed as conditional grants, which shall be returned to Renewable Energy Project Support Office (REPSO) fully or partially and will be used to fund new investments
- The financial package comprised working capital assistance, leasing options, micro-credit, revolving funds, etc

Operational Procedures

The RECOMM officer will review the project brief submitted by the eligible applicant in accordance with the operational procedures, described below, and make appropriate recommendations to the Investment Committee. The RECOMM officer will customize a financial package for approved projects based on the specific needs of the renewable energy entrepreneur and the project.

The review process will aim to provide efficient and thorough scrutiny of each opportunity through the following steps:

1. The RECOMM officer works with the applicant to structure a project brief on the opportunity in accordance with the submission guidelines. The RECOMM officer will assist the applicant with documentation if required. If the opportunity is ready for review, the RECOMM officer proceeds with the next step.
2. The RECOMM officer proceeds with a full due diligence review of the project brief.
3. The RECOMM officer prepares a detailed project memorandum and submits the memo along with the brief to the Investment Committee for review.
4. The Committee convenes on a quarterly basis to review investment opportunities presented by the RECOMM officer. The Committee can give three decisions in regards to a submission. First, outright approval; second, approval based on resolution of outstanding issues; and third, denial of the loan.
5. Upon approval, the RECOMM officer provides the applicant with a Commitment Letter containing all the terms and conditions of the loan. The letter must be signed and returned to the RECOMM officer and the appropriate securities must be in place before funds can be disbursed. Upon denial, the RECOMM officer provides the applicant with a letter that indicates that the Committee has denied the loan.
6. Once all contracting conditions have been met, financing is disbursed per the *Terms and Conditions*.

Portfolio Management: The RECOMM officer will closely monitor the progress of projects that receive investments. Like most financings, RECOMM investing will likely require ongoing input and technical assistance to subject projects. WII will provide technical assistance as necessary in cases where WII has the in-house expertise and resources to support requisite assistance and will contract consultants to provide requisite services where in-house capability does not exist (within the scope of the budget). Technical assistance may range from the provision of engineering services for efficiency improvements in bagasse co-generation facilities to accounting and strategic input in a high-growth photovoltaic company serving productive use applications in rural areas.

Portfolio Valuation: The RECOMM officer will provide the Investment Committee with an annual brief on the performance of each loan. The report will detail the nature of the business, summary of loan, description of the loan performance, and other pertinent information.

Reports*:* RECOMM will issue unaudited financial statements, an overview of each loan, and summaries on each portfolio company on an annual basis.

Selection Criteria

The RECOMM officer will evaluate each project proposal against the following illustrative criteria:

1. The renewable natural resource or project "fuel source" (sunlight, wind, biomass, biogas, water) must be available in predictable and sufficient quantity and quality.
2. Innovative approaches to service delivery, financing, management, or technical application (i.e. new productive use) will be given preference. However the applicant must prove that the specific renewable-energy technology proposed has either converted the resource into energy in a commercially-viable manner in a number of previous projects, or has the potential to do so.
3. Evidence has been provided indicating that the energy produced can be transmitted and sold to credit-worthy customers and that the price is competitive with conventional alternatives.
4. The permits and clearances needed to design, build, and operate the project have been clearly identified and evidence has shown that they can be obtained in a timely manner.
5. The project is compatible with the economic, commercial, political, and social setting, and must offer clear social and environmental benefits.
6. Qualified suppliers, contractors, and consultants are available and have expressed interest in meeting the requirements of the project.
7. Reasonable estimates have been made of all revenue, capital, and operating costs, including contingency allowances and taxes, and project revenues are sufficient to pay operating costs, repay loans, and provide adequate returns to investors.
8. The team launching the project has the right skill set to succeed in the project.
9. The project is replicable and makes a good investment as a pilot to seed a market or catalyze a scale-up.
10. Applicants have illustrated that there is interest from investment institutions in financing future stages of the project.

Each project will be rated in accordance with the *Selection Criteria*. The project rating will help the RECOMM officer decide if the project merits recommendation to the Investment Committee.

Terms and Conditions

Terms and conditions are negotiable and will depend upon the credit worthiness of the borrower and the proposed investment opportunity. However some general baseline conditions for a loan under the proposed facility are outlined below.

Eligibility: Loans will be considered for small and medium sized entities in the private sector and NGOs registered in India proposing a commercially-viable renewable energy (solar, wind, and small hydro) project, that has borrowing powers and powers to take up such enterprises as per their charter, except for the following:

1. Government entities and individuals.
2. Entities with accumulated losses as per Audited Annual Accounts of the last financial year.

3. Loss-making entities as per Audited Annual Accounts of the immediate last year of operation.
4. There is an erosion of paid-up equity share capital of the submitting entity as per the latest Annual Report.
5. Entities whose existing debt/equity ratio exceeds 3:1 after taking into account the proposed borrowings from the fund.
6. Trust/societies with accumulated revenue deficit or revenue deficit immediately during the past year.
7. Entities who are in default of dues to financial institutions, banks, Non-Bank Financial Companies (NBFCs) at the time of submission.
8. Entities classified as willful defaulters.
9. Entities re-financing financial assistance availed of/from other financial institutions, banks, or NBFCs.
10. Entities seeking cost over-run financing.
11. Entities and/or managers of the entity convicted for criminal/economic offences or under National Security laws.

Lending Terms and Conditions: The loan amount will be limited to up to 50% of the project cost, and range from the Rupee equivalent of $10,000 to $50,000. The RECOMM officer may recommend extension of the upper loan limit based up the merits of specific cases.

Loan repayment will commence no later than six months after the last disbursement of loan installment or first commercial sale.

The repayment period will be a maximum of ten years.

The rate of interest will be negotiated on a case by case basis but will most probably be 1% - 3% below the prime lending rate. A penalty rate of 2% is to be charged for overdue loans. If the loan continues beyond the repayment period of ten years, interest at 3% to 5% above the commercial rate has to be recovered from the party.

The loan will not exceed 50% of the total project cost. The RECOMM Officer will proactively seek out investment opportunities where the exposure limit is lower and where the loan represents an initial seed capital investment in the project designed to leverage other sources of second stage debt and equity. In addition, the applicant will be required to make a commitment of equity in the project equal to or greater then the loan amount.

Security: The team will require hypothecation of all moveable and immovable assets acquired/to be acquired out of the facility's loan. All loans will have to be secured by collateral, including a personal guarantee from the applicant.

Final decision for accepting a particular type of security shall rest with the RECOMM officer. The team may stipulate one or more additional securities taking into account the risk perception, nature of industry, and background of each case.

Disbursement: The facility will disburse the loan in two or three installments to be determined by the RECOMM officer on a case-by-case basis. The borrower will be able to draw up to 50% of the loan as a mobilization advance after signing the loan agreements and creation of security,

and balance disbursed after evidence of proper utilization of mobilization advance already released.

Procedure for Application: The eligible applicant will submit an application in the prescribed format (see *Submission Guidelines*). The RECOMM team will review the Project Brief in accordance with the operational procedures and sanction the line of credit based on the qualification criteria, or reject the application if found not suitable.

Submission Guidelines

At the initial phase, applicants are requested to submit a brief summary of the proposed project. The summary should include the project title, information regarding the contact person, a brief discussion of the project, the present state of commercialization of the project, the total estimated cost of the project, the applicant's contribution in meeting the cost, the amount of financial assistance requested, expected time required for the completion of the project, and forecasted annual sales over the next five years.

The RECOMM officer will review these documents, and request additional information from applicants proposing attractive opportunities. The content and format of the additional information is outlined below.

General Guidelines

The project brief should be presented in English, and should be restricted to discussion of one discreet project opportunity.

To expedite the evaluation process, WII requires that project briefs be submitted in the following format:

The cover page (on company letterhead) should give information about Company name, Address, telephone and fax numbers, and e-mail address, Contact person, Proposal date, and Financing sought from RECOMM [specify the amount of the loan (in Rs.) requested and the preferred terms and conditions].

Table of Contents

Executive Summary: Summarize the project approach

Company Information: Company activities, mission, and objectives, History and track record, Management team bios, Structure and general operating principles, Audited annual accounts for last two years, Overview of alliances, resumes of key personnel

Technical Structure: Site specific technical description of generation unit and/or product, Performance of the technology and/or product, Generation technology or product's applicability in target market, Training, O&M, and monitoring support, Quality control

Regulatory Treatment: Indicate licenses, permits, and third-party approvals necessary to execute the project. Discuss how these clearances can be obtained, and the expected time involved in the process.

Financing Sought: Project cost structure, Expected interest rate, Projected cash flows, profit and loss projections, and indicative Internal Rate of Return (IRR) on equity, Investment type

and amount required at each stage beyond the RECOMM investment, Prior sources of financing requested and obtained, Use made of financing received, Identification of partners.

Marketing, Sales, and Distribution Strategy: Power purchase agreements, Product positioning and differentiation, Brand equity, Sales and distribution strategy, Pricing strategy and promotion, Forecast of discounted sales, After-sales customer service and maintenance, and guarantees, Export potential.

Competition Analysis: Barriers to entry, Price of substitutes, Major competitors, Product pricing, Market share targeted for the coming 3-5 years
Risk Factors: Details of how the project will mitigate risks (Management of growth, Dependency on key personnel, Sources of supply, Competition, Regulatory issues, Other risk factors, Contingency plan) and outline the company's contingency plan.

Annexes

- Resumes of key managers
- Letter of Interest
- Letter of Intent
- Product catalogues
- Market studies
- Patents
- Company-specific media coverage
- Other significant document

Ministry of Environment and Forests (MOEF)

Relevant funding schemes of MOEF

A. Environmental Research Promotion

Eligibility

Research proposals can be submitted by a Scientist who is a permanent employee of the organisation where he works and where basic facilities exist for conducting the Environmental Research. The selection of projects will be based, wherever possible, on the fulfillment of certain basic criteria regarding their objectives, approach and competence available.

Grant disbursement pattern

Projects will be sanctioned for a specified period (maximum three years), the grant will be payable in two installments each year on submission of financial statements and progress reports. The authorities of the institution where the research activities are to be carried out would be responsible for the administration of the scheme and maintenance of accounts. The investigator will arrange with the institution to receive and make payments on his behalf. The grant shall be exclusively utilised for the purpose for which it is sanctioned.

Terms and conditions

The grantee organisation is not permitted to seek or utilise funds from any other organisation (Government, Semi-government, Autonomous or private) for the same research project.

For permanent, semi-permanent assets acquired solely or mainly out of the grant, an audited record has to be maintained by the grantee.

The grantee organisation would furnish to the Ministry of Environment and Forests a Utilisation Certificate within sixty days from the close of the each financial year, i.e. by 31st May, of each year for the grant released during the previous financial year. The grantee organisation will be required to furnish six monthly expenditure statements.

The Government of India in the Ministry of Environment and Forests reserves the right to terminate the grant at any stage if convinced that the grant has not been properly utilized or appropriate progress is not being made.

B. Industrial Pollution Control Project

The Project components

1. Institutional component

Administered by Ministry of Environment & Forests (MOEF), GOI, to strengthen the four State Pollution Control Boards of Gujarat, Maharashtra, Tamil Nadu and Uttar Pradesh.

2. Investment component

To support

i. existing industrial units to comply with regulations;

ii. setting up of common effluent treatment facilities; and

iii. demonstration projects for promoting pioneering uses of novel/ clean techniques or setting-up of prototype innovative units in the field of waste minimisation, resource recovery or pollution abatement.

3. Technical assistance component

To channel specialised technical assistance for evaluation of environmental problems and assessment of their solutions.

IDBI has been entrusted with the responsibility of administering part of the Investment Component and Technical Assistance Component aggregating US $ 91.5 mn. The balance funds out of Technical Assistance Component and Investment Component are to be administered by MOEF and ICICI.

Areas of Financial Assistance

Areas of financial assistance under the Industrial Pollution Control Project are:

1. Assistance to pollution control boards
2. Assistance for pollution control projects of industrial units

3. Assistance for setting up common effluent treatment plants (CETP)
4. Assistance for setting up demonstration projects
5. Scheme for assistance to Research Institutions and Industrial units for pollution prevention

1. Assistance to pollution control boards

Financing of this component will be through US $ 12.6 million International Development Association (IDA) credit to cover the procurement of equipment and provide for facilities at the Pollution Control Boards (PCBs) of the States of Gujarat, Maharashtra, Tamil Nadu and Uttar Pradesh; and to cover the cost of training of PCB personnel. The State governments are providing the counterpart funds for the following works:

(i) recurring costs of staffing the laboratories,
(ii) reducing cost in O & M of the equipment,
(iii) acquisition of land for construction of laboratories,
(iv) major part of the construction works,
(v) customs duty on imported equipment and
(vi) contingencies.

2. Assistance for pollution control projects of industrial units

Eligibility

Assistance is provided to large and medium scale units. The project aims at waste minimisation, resource recovery and pollution abatement.

Extent of Assistance

Assistance is available for financing equipment, civil works and where necessary, consultancy services. A total of US $ 100 million is available as loan from the World Bank, which would be disbursed to industrial units through the financial institutions, viz., IDBI & ICICI.

Promoter's contribution

A minimum promoter's contribution of 25% of the project cost is envisaged. In the case of an existing company, internal accruals deployed on the project are reckoned as promoter' contribution.

Terms of Assistance

The loans would carry concessional rate of interest of 15.5% p.a. (including interest tax) as also an up-front fee of 1% on the sanctioned loan amount. It will be repayable by the units within a period not exceeding 15 years including a maximum grace period of 4 years.

Application for assistance

Specific application forms to be filled in and forwarded by the industrial concerns, can be obtained from IDBI and ICICI.

3. Assistance for setting up common effluent treatment plants (CETP)

Eligibility

A company or society constituted specifically to own, operate and maintain common facilities for treatment and disposal of solid, liquid and gaseous wastes generated by small and medium scale units located in industrial estates/ clusters, will be eligible for assistance under the Scheme. State infrastructural / industrial development agencies promoting CETPs will also be eligible.

Procedure for sanction of assistance

The State Pollution Control Board consent is sufficient for the company to approach IDBI / ICICI or any other financial institution for obtaining the loan component for CETP. The company would obtain the commitment from IDBI / financial institution for the loan component and the company / financial institution would approach the State Government / State Board for the release of the State's share into the Company's bank account.

Based on the release of funds by the State Government, the Central Government would release its matching share to the Company's bank account.

4. Assistance for setting up demonstration projects

Eligibility

i. The projects have to be sponsored by an industrial concern within the meaning of Section 2 (c) of IDBI Act, 1964.

ii. The installed gross fixed assets of the sponsoring industrial concern shall not exceed US $ 5 Millions.

iii. The project shall represent pioneering uses of clean / novel technologies or consist of prototype units for dealing with pollution abatement, waste minimisation or resource recovery in industry and should have potential for widespread replication.

iv. The sponsoring enterprise should be currently efficient and financially sound, but require comparatively large investment for pollution control, in relation to its existing gross capital cost.

v. The financial rate of return and/or the risks involved in the project proposals do not enable it to be financed on commercial terms.

Application for assistance

Application forms for availing both loans and grants under the scheme can be obtained from IDBI and ICICI.

5. Scheme for assistance to Research Institutions and Industrial units for pollution prevention

The impact of industrial waste on the environment is a major issue of concern and there is need for ever higher standards for waste minimisation ranging from good operating practices to modification of the production process. Even though it pays substantial dividends not all such

opportunities are obvious. The scheme aims to assist these efforts by providing assistance for precompetitive industrial research in the environmental field.

Assistance is available for two kinds of projects:

i) Collaborative projects which prove the feasibility of adapted or new techniques.

ii) Projects which illustrate best practice based on proven techniques.

Aim of the scheme

The main aim of the scheme is to promote adoption of technologies and 'best practice' techniques for environmental benefits amongst industrial units, preference will be given to technologies for small scale industrial units. The scheme provides assistance for development and demonstration projects.

Eligibility

Organisations eligible for support include research and technology organisations, government research establishments and higher education institutions, as well as

i. A Company involved in environmental technology as a supplier or a user to develop innovative solutions,

ii. A company with problem for which there is no "off-the shelf" technical solution,

iii. A private recognised research organisation with an interest in practical solutions to environmental problems.

Terms for assistance

i. Project costs for which a grant of upto 50% subject to a maximum of Rs. 25 lakhs can be made available. Single companies proposing projects will be assisted upto 25% of eligible project costs. It is normally not expected to support any one project for more than three years. Projects, which have already started cannot normally be funded under this scheme.

ii. The projects will need to be economically feasible, and innovative to establish the concept of the innovative technology; the extent to which the project offers value for money also be major criteria in selection.

iii. Priority will be given to projects, which benefit a number of organisations.

The assistance includes grant support from other government departments, and local authorities.

Coverage of scheme

The scheme covers three main areas within the environmental field:

i. Cleaner Technologies – reduction of waste and pollution from manufacturing processes or production of less-pollution and less wasteful products.

ii. Recycling – collecting, sorting and processing industrial and household waste for re-use.

iii. Waste or Effluent Treatment and Disposal

These are not exclusive and any project in the general environmental technology field will be considered for funding. All projects must involve research of an innovative application of existing technology. In addition, within these three broad categories priority areas will be designated to anticipate a need for higher regulatory standards. If a project falls within a priority area and has the potential to lend to the setting of a higher standard it will be classified as a special project. Such a project will be eligible for single company funding as an alternative to consortium funding.

Research programmes can also be organised through an apex organisation to which a number of industrial companies or research bodies contribute for a wide dissemination of results leading to the development of effective environmental solutions.

Terms and Conditions for partnership

i. Priority will be given to funding for projects which involve three companies or organisations, and where one of the partners should be able to exploit the results of the research commercially.
ii. For single company projects where one partner is a higher education institution or government research establishment, only industrial partner is required.
iii. Where one of the partners is a University, polytechnic or government research establishment, the research body must be a genuine partner, not a subcontractor.

Application Procedure

Application procedure requires a short, first stage application in which a preliminary evaluation will normally be carried out within four weeks. The time taken to process an application will depend upon how well it has been prepared and the level of commitment behind it.

Financing Pattern

In general all directly attributable costs, properly incurred in carrying out the project will be supported. These include:

i. the appropriate part of the salaries of personnel working directly under the project.
ii. reasonable allowance for overheads directly attributed to the project.
iii. materials consumed in the course of the project.
iv. capital equipment purchased or constructed for the project, less its estimated market value at the end of the project
v. sub-contract charges for consultancy fees e.g. for monitoring
vi. project management costs such as travel, accommodation, hire of meeting or office facilities which are associated with project management training that is specific to the project.
vii. fees for trials and testing e.g. third party cost for testing sampling and analysis.

Examples of projects eligible for funding

Examples of collaborative projects include:

i. projects to assess the feasibility or economics of an industrial recycling scheme by a consortium consisting of local industrial firm, a research and technology organization;
ii. projects to assess the feasibility or economics of a domestic recycling scheme;
iii. project to assess the feasibility of a newly developed waste treatment or waste reduction process with a common waste disposal problem together with a supplier of the relevant technology;
iv. projects to disseminate information on new and emerging techniques in clean process by technology by producing state-of-the-art-reviews;
v. projects for new and innovative users for material that would otherwise be disposed off as waste.

Examples of projects involving single companies include

i. an unit installing equipment involving new technology rather than a conventional alternative;
ii. an unit wishing to demonstrate an example of good environmental management practice to wider audience;
iii. a unit using biotechnological processes & biodegradable adducts to prevent pollution.

Where currently available technology is involved application can be considered from single companies who must be users rather than suppliers.

Implementation

Implementation of the scheme will be the responsibility of the Central Pollution Control Board and the State Pollution Control Boards. Industry Departments and scientific & research institutions will also help applicants with initial advice and consultancy by putting potential collaborators in touch with each other and to manage project development.

4.B.2. Housing and Urban Development Corporation (HUDCO)

Financing pattern for solid waste management schemes

Terms of repayment

Additional interest is chargeable for emergent situations e.g. excess requirement of loan over and above the loan ceilings prescribed by HUDCO.

The interest is payable quarterly on 30th June, 30th September, 31st December and 31st March each year, the first installment of interest (for a proportionate period, if required) becoming due and payable on the due date immediately following the date of disbursement of the loan.

In the event of default of payment of the loan installment and/or interest on the due dates, additional compound interest at the penal rate of 2-1/2 percent is payable on such overdue amount.

HUDCO reserves the right at any particular time to vary the interest rate(s) on the loan amount or a part thereof yet to be released depending on its borrowing interest rate(s) for these urban infrastructure schemes at the time of release of such amounts by giving prior written notice to the borrower of such variations.

The loan has to be repaid within a maximum period of 10 to 15 years (including installation period) depending on the nature of the project and the request of the borrowing agency. No moratorium is permissible and the construction period may be deemed as moratorium period. The repayment period is reckoned from the date of release of first installment of the loan and includes construction period which should normally not exceed 3 to 5 years. However, this will depend on the merits of each case.

It would be open to the state agencies to channelise HUDCO loan at varying mixes of loan and grants or at varying interest rates according to the nature of the project by combining grants available in the State budget, provided HUDCO is satisfied that the funds are channelised to local bodies according to an integrated financing plan for urban areas and that long term financial viability of local bodies is not adversely affected.

As escrow account with dedicated flow of funds should be opened in a bank of HUDCO's choice.

Other charges

1. Documentation Charge

Documentation charge of Rs. 10,000 is to be submitted for each project. 50 percent of the Documentation charge should be submitted along with the Planning and Financial Proposal (RFP)/the Feasibility Report / the Flash Report. The balance 50 per cent should be submitted along with the Detailed Project Report (DPR) and/or the Loan Application. If the DPR is submitted at the initial stage, then the full documentation charge should be submitted with it.

2. Front End Fee

One-time Front-end Fee @ 1.25% of the total loan amount shall be leviable on all the urban infrastructure schemes as per details given below:

Loan Amount	**No. of installments for front-end fee recovery**
Upto Rs. 2 crores	One installment at the time of 1st release
Rs. 2-5 crores	Two installments i.e. at the time of 1st and 2nd release
More than 5 crores	Four installments commencing from 1st release

Front-end Fee cal also be included in the project cost, if required by the borrowing Agency.

3.Interest Tax

Interest Tax @ 2% on the amount of interest shall also be payable by the borrowing agency in addition to the interest, front-end fee etc. This interest tax shall be payable quarterly on the due dates together with interest to be paid. However, interest tax shall be subject to variation as per Government notification from time to time.

Security

The loans advanced by HUDCO under the scheme have to be secured by either an unconditional and irrevocable bank guarantee (in HUDCO's prescribed proforma) from a scheduled bank, acceptable to HUDCO or a State Govt. Guarantee or by a security package that may be worked out on case to case basis from the following components:

- Mortgage of land in favour of HUDCO with the approval of the concerned authority with a commitment that the authority would inform HUDCO 180 days in advance in case the lease is revoked.
- Hypothecation of plant and machinery
- Corporate guarantee of the Promoter Group of Companies
- Lien on Escrow Account
- Post dated cheques
- Personal guarantee to the Promoter Directors backed by mortgage of their personal properties
- Revolving Bank Guarantee of an amount equivalent to the interest and principal for two quarters of loan repayment installment for the entire pay back period.
- Cash deposit of 25% of the loan component for the full pay back period.

If the borrowing agency is not in a position to furnish the security of mortgage of its properties, HUDCO may secure the repayment of its loan and other amount becoming due and payable by a Negative Lien to be replaced by mortgage of properties of the value of not less than 133-1/3% of the loan amount coupled with an irrevocable Power of Attorney in favour of HUDCO. In case the borrowing agency submits the Negative Lien as security, then it will pay Risk Charge of 1% on the loan amount outstanding from time to time.

Waste-to-energy projects financed by HUDCO

A list of Waste-to-Energy projects financed by HUDCO is given below

Sr. No	Title of Scheme	Project cost (Rs. In lakhs)	Loan amount (Rs. In lakhs)	Component of SWM financed	Year of sanction
1	Bagasse Based Co-generation project at Mudhol, Karnataka	2495.00	1219.00	• Boiler • Turbine • Pollution Control Equipment	1998
2	Bagasse Based Co-generation project at Vadodara, Gujarat	2375.75	1281.81	• Boiler • Turbine • Pollution Control Equipment	1998
3	Bagasse Based Co-generation project at Satara, Maharashtra	7835.57	3494.38	• Boiler • Turbine • Pollution Control Equipment	1998
4	Bagasse Based Co-generation project at Sangli, Maharashtra	4005.47	1647.82	• Boiler • Turbine • Pollution Control Equipment	1999

Sr. No	Title of Scheme	Project cost (Rs. In lakhs)	Loan amount (Rs. In lakhs)	Component of SWM financed	Year of sanction
5	Power production from Municipal solid waste at Nagpur	4730.00	1170.00	• Boiler • Turbine • Pollution Control Equipment	1999
6	Kamarhati Waste Processing, Energy and Allied Products Recovery Projects	837.53	586.27	• Boiler • Turbine • Pollution Control Equipment	1999
7	Bagasse Based Co-generation project at Sankili, Andhra Pradesh	209.39	143.15	• Boiler • Turbine • Pollution Control Equipment	1999
8	Bagasse Based Co-generation project at Madhya Pradesh	7634.88	5726.16	• Boiler • Turbine • Pollution Control Equipment	2000
9	Bagasse Based Co-generation project at Chagullu, Andhra Pradesh	2707.82	1895.47	• Boiler • Turbine • Pollution Control Equipment	2000
10	Bio-mass based power project at Ongole, Andhra Pradesh	1286.08	771.65	• Boiler • Turbine • Pollution Control Equipment	2000
	Total	**34117.49**	**17936.61**		

Appendix 4-C

Brief Description and Contact Information on International Financial Institutions

4.C.1. E & Co

E & Co was established in 1994 as an independent non-profit organization with the aim of influencing the transfer of capital from fossil fuel energy production to renewable and efficient sources of energy production.

E & Co provides early stage investment ($25,000 - $250,000) in the form of debt or equity to enable an entrepreneur to further develop the approach or begin implementation or construction of a project. These investments typically reflect near market terms and conditions, with the exception that E & Co will tolerate a relatively high level of risk without seeking classic venture capital returns. Loans or equity investments range from $25,000 to $250,000. Duration of financing is project-specific. Repayment terms are project specific.

E & Co considers providing energy enterprises, with support if the following conditions are met:

- New Money for New Energy: Will the project/energy enterprise utilise renewable energy or energy efficiency technologies in a commercial fashion and attract new sources of investment?
- Social and Environmental Elements: Does the energy enterprise or project improve the quality of life through the provisions of energy services? For example, will it target under-served communities to create employment opportunities? Will the project improve or protect the local, national, and global environment? Will it displace harmful energy sources such as diesel, kerosene, candles or firewood?
- Technology: Does the energy enterprise utilize an appropriate technology when compared on the basis of cost, affordability and environmental impact?
- Businesslike: Does the energy enterprise/project have the technical and managerial experience required to ensure that the venture is profitable and sustainable? Has the project/energy enterprise secured collaboration with applicable third parties such as equipment suppliers, engineers, site owners, etc? Does a second stage of the project or potential for replicability exist?
- Reasonable Risk: Has the project/energy enterprise considered the market in which it will operate? Has a clear assessment been completed on the national risk – inflation, devaluation, taxation, and political uncertainty – as well as at the project level – competition, energy purchase/sale agreements, environmental and land regulations, and permitting. Are the risks reasonable and consistent with the charitable purpose of E & Co?
- "But For": Is the intervention by an entity such as E & Co necessary to advance the enterprise? "But for" the participation of E & Co, would the project succeed?
- Policy Framework: Does the energy enterprise/project influence policy makers and decision makers to support renewable energy and energy efficiency initiatives ?

- Human Capability: Does the energy enterprises/project improve national or local capacity to promote renewable energy and energy efficiency initiatives?

The application formats and procedures and appraisal procedures of E & Co are discussed in Appendix 4-B. A list of previously supported projects is also given in Appendix 4-B.

Application Formats and Procedures

The Proposal should be structured in the following way :

I. General Information :

- Project Title
- Geographic Location
- A brief description of the organization, company or person responsible, including its history, goals and structure. Resumes of chief management personnel.
- Contact person
- Complete address and/or PO Box
- Telephone, Fax and E-mail.
- Project summary, including the opportunity, the applicability of the technology, and the local need. The source of energy, the generation scale, and the end-users served should also be identified. Describe the sponsors' previous experience in the project area and any innovative aspects and non-commercial benefits of the project.

II. Technical Information :

- Describe the technology or process used, the fuel supply or resource availability as appropriate and quality control guidelines.
- Emphasize any innovative technologies, applications or approaches to energy provision.
- Describe previous applications of the technology or delivery approach.
- Detail existing and proposed agreements for concessions and energy sales.

III. Financial/Economic Information :

- Information about any previous studies (pre-feasibility, feasibility, marketing) made, including their costs and companies involved.
- Information about the structure of project costs.
- Sources of capital, including identified and proposed investment partners and lenders. Proposed investment structure (debt/equity). Include documentation of all interested investors.
- Requested terms and conditions for funding from E&Co.

IV. Local Market Conditions :

- The overall energy market and investment climate of the project country, including information on tax policies, currency convertibility, profit repatriation, and other relevant legal issues.

V. Risk Assessment :

- Identify the potential risks borne by the project and outline risk mitigation strategies.

Evaluation and Appraisal Procedures

The initial evaluation of proposals will be done on the basis of the following criteria :

- The project must be well defined and involve capable people. Local, in-country developers, sponsors or partners are preferred.
- The project should employ innovative approaches to energy production, use or finance using established renewable or efficiency technologies.
- The project must offer clear social and environmental benefits, while being competitive with conventional alternatives.
- The project must have the potential to be economically self-sufficient in order to attract private investment in the next stages of development.
- The project proposal should be written in English.

As a general policy, E&Co does not provide general or administrative support to energy enterprises, nor does it fund research and development, policy analysis, pre-feasibility studies, the publication of papers, meetings or conferences, or technical demonstrations of new technologies.

Previously supported projects

- **Asia** : KBAL Treadle Pumps (Bangladesh), Grameen Shakti (PV) (Bangladesh), Xaingtan Bergey Wind Turbine Production (People's Rep of China), Electric Rickshaws (India), SELCO PV Co. (India), SST Fresnel Solar Concentrators (India), Palm Oil Biomass (Malaysia), Lotus Energy PV (Nepal), LEDCO Hydro (Nepal), Annapuram Hydro (Nepal), Philippines Bio-Sciences & Engineering Co. (Philippines), Bubunawan Mini Hydro (Philippines), Solar Laterns (Sri Lanka), Vacvina Biogas (Vietnam), and SELCO Vietnam PV Co (Vietnam).
- **Eastern European Projects and Regional Initiatives**: HPA Energy Efficiency (Poland), SELF (Regional), and Pico Hydro (Regional).
- **Africa** : Gam-Solar Renewable Energy Services Co. (The Gambia), Bethel (Lesotho), Noor Holdings PV (Morocco), TAQA PV (Morocco), RAPS Energy Stores (South Africa), and Briquetting of Saw-Dust for Energy Use (Zimbabwe).

Latin America : Energy Efficiency Investment Fund (Costa Rica), Andar PV Electrification Program (Costa Rica), Petrogas (Costa Rica), Soluz Dominicana PV (Dominican Republic), EEN 5 MW Biomas (E1 Salvador), Genesis (Guatemala), Geoteca Geothermal (Guatemala), Selmeca Hydro (Guatemala), Credieegsa PV (Guatemala), Rio Hondo Hydro (Guatemala), Atlantis Small Hydro (Honduras), Bamboo to Electricity (Honduras), Prolena Efficient

Woodstoves (Honduras), Soluz Honduras PV (Honduras), Solar Ocean Energy (Jamaica), Cerro Prieto Biphase Turhine (Mexico), Integrated Solar Combined Cycle system (Mexico), Vehizero Electric Hybrid Vehicles (Mexico), E1 Hoyo-Monte Galan Geothermal (Nicaragua), Hidropantasma Hydro Electric (Nicaragua), VENSa 30 MW Wind (Nicaragua), Kanata Hydro (Bolivia), Red Ceramics Fuel Substitution (Bolivia), Riberalta 1 MW Biomass (Bolivia), FTV PV and Water Pumping (Brazil), and Quitaracsa (Peru).

Contact Address:

E & Co,
Energy House, 383, Franklin Street,
Bloomfield, NJ 07003.

Tel: 973-6809100
Fax: 973-680-8066
e-mail: eco@energyhouse.com;
Website: http://www.energyhuse.com

4.C.2. Environmental Enterprises Assistance Fund (EEAF)

Environmental Enterprises Assistance Fund (EEAF) implements sustainable development by investing in smaller, private sector businesses in emerging markets. Established as a non-profit organisation in 1990, EEAF brings hands-on venture capital experience to the sustainable development movement

EEAF invests in businesses engaged in agriculture, forestry, aquaculture, tourism, renewable energy, energy efficiency, pollution abatement and recycling. It offers finance of $100,000 to $2 million in either debt, equity or a combination. EEAF syndicates for investments in excess of these amounts. It normally prefers later stage of the project for investment but considers start-up investing also. Entrepreneurs must however, have their own capital at risk, a proven track record, and near term profitability. Through its managed funds, EEAF is active in developing countries globally. Funds are available for all industry sectors within Central America, and within the rest of Latin America for energy and biodiversity linked companies. Capital is available for energy projects in all emerging markets countries. Repayment terms are case specific.

A list of EEAF's preciously supported projects is given in Appendix 4-B.

Previously Supported Projects

- Solar PV distributor – Domician Republic (1992),
- Independent hydro developer and efficiency services provider – Costa Rica (1992),
- Charcoal exporter – Indonesia (1992),
- Activated carbon manufacturer – Indonesia (1993),
- Ecotourism company – Costa Rica (1993),
- Small hydro developer – Costa Rica (1994),
- Water Pollution Control Company – Indonesia (1994),

- Producer of horticultural growing medium from coconut husk waste – Philippines (1992),
- Organic apple production and processing – Poland (1995),
- Private tree plantation expansion – Costa Rica (1995),
- Private sewage treatment and drinking water utility expansion – Costa rica (1995),
- Photovoltaic ("PV") leasing company – Dominican Republic (1995 and 1997),
- Assembly and sale of household solar photovoltaic products – Indonesia (1995),
- Construction of water treatment and recycling facility for coffee processor cooperative – Costa Rica (1995),
- Environmental tourism lodges – Indonesia (1996),
- Solar water heater leasing company – Costa Rica (1996),
- Small hydro developer – Costa Rica (1996),
- Environmental Fund for Central America – Costa Rica (1996),
- Soil Erosion Control Company – E1 Salvador (1996),
- Sustainable oyster growing – Mexico (1997),
- Water Treatment for Tannery – Costa Rica (1997),
- Air Pollution Monitoring Company – Philippines (1997),
- Energy Services Company – Mexico (1998),
- Organic Berry Exporter and Processor – Chile (1998),
- International Energy Services company – Mexico (1998),
- Certified Sustainable Hardwood Charcoal Company – Mexico (1999).

Contact Address:

Environmental Enterprises Assistance Fund
1655 N. Fort Myer Drive, Suite 520
Arlington, VA 22209

Tel: 703-522-5928
Fax: 703-522-6450
e-mail: eeaf@igc.org

4.C.3. Renewable Energy and Energy Efficiency Fund (REEF)

Launched in February 2000, the Renewable Energy and Energy Efficiency Fund for Emerging Markets, Ltd., (REEF) is the first global fund organised to tap sizable opportunities to invest in emerging markets of renewable energy and efficiency. REEF actively seeks to make minority equity and quasi-equity investments in profitable, commercially viable private companies and projects in sectors that include, on or off-grid electricity generation primarily fueled by renewable energy sources, energy efficiency and conservation, and renewable energy/efficiency product manufacturing and financing.

Sectors for funding include Low-impact Hydro, Wind, Solar/PV, Biomass, Geothermal and Energy Conservation and Efficiency.

REEF's geographic focus is on emerging market countries worldwide that are eligible for IFC financing, including markets in Africa, Mexico and Latin America, the Caribbean, Asia, and Central and Eastern Europe. REEF considers investment in projects with total capitalization requirements between $1,000,000 and $100,000,000. REEF's investments may take a variety of forms including common and preferred stock, partnership and limited liability company interests, and convertible or subordinated debt with equity warrants/options. REEF may also make loans to projects or project sponsors on a bridge or permanent basis. Equity transactions are typically structured so that the entrepreneur retains the majority of shares and/or management of the company.

Contact Address:

New Delhi Office
Hans-Georg Hansmann
2, Nyaya Marg, Chanakyapuri
New Delhi – 110 021, India

Tel: (+91-11) 26114352, 26876914
Telefax: (+91-11) 26886921
e-mail : deligips@giasd101.vsnl.net.in

4.C.4. Triodos Bank, The Netherlands

Triodos Bank NV was founded in 1980 in the Netherlands and is a fully licensed independent bank, owned by public shareholders. Triodos Bank is a social bank lending only to organisations and business with social and environmental objectives. The Bank has also become an active fund manager.

Triodos Bank offers secured loans to clients. Through its Nature & Environment section, Triodos Bank invests in sustainable energy (sun and wind), organic agriculture, environmental technology and nature conservation.

Details of Application Formats and Procedures are given in Appendix 4-B.

The Bank generally lends between £20,000 and £5 million. Smaller amounts are considered in some instances. The Bank tries to tailor the terms of a loan to the specific needs of the borrower, and hence it may be able to provide an arrangement outside those listed below.

- Long term loans : repayment period up to 25 years
- Short to medium term loans : generally for periods of 1 to 10 years
- Overdraft facilities : usually reviewed annually
- Target loans : for projects with strong support groups who wish to invest into the project through a special savings account targeted to the project
- Borrowing community loans : usually a 4-year loan to groups who want to make a joint capital gift to a charity

- Bank guarantees: generally only available for existing customers, guarantees are given to support grant applications and similar requirements.

Triodos Bank always take security and expect loans to be 100% secured. It uses conventional security where it is available as well as less conventional means, such as Group Guarantees.

Triodos Bank normally charges a 1% administration fee on loan offers which are accepted. In addition, the costs of obtaining a professional valuation and solicitor's fees and disbursements will usually be paid direct by the borrower.

The Bank aims to charge borrowers a stable, sustainable rate of interest which takes account of any direct support for the project. Triodos rates do vary with market conditions but attempt is made to limit this wherever possible. The interest rate is also calculated as agreed on margins above the base rate as set by the Bank of England.

Application Formats and Procedures

Loan application is simple and follows several basic steps:

- Make initial contact by phone. Have ready a brief summary of what is intended.
- Alternatively, send a brief written summary, typically about 3 pages. Focus on what you want to do so Triodos can decide whether it can support your loan application in principle.
- Triodos will then discuss your application with you by phone and ask you to send your detailed business plan if appropriate. This needs to cover all the key aspects of your project.
- If appropriate Triodos will arrange to meet you, usually at your premises, for a more detailed discussion.
- Triodos comes to a decision about applications at its loan committee meeting held on Monday mornings. If it is a positive decision, it will make you an offer, including any terms and conditions attaching to the loan.
- If the offer is acceptable to you, you will need to send Triodos a written acceptance.
- The formalities of putting the loan security in place are completed and the loan is advanced.

Contact Address:

Triodos Bank NV
Utrechtseweg 60
3700 AB Zeist
The Netherlands

Tel: 31 30 693 65 00
Fax: 31 30 693 65 55
Website: http://www.triodos.com

4.C.5. Export Import Bank of the United States (Ex-Im Bank)

Ex-Im Bank supports the sales of U.S. exports worldwide. In recent years, its focus has shifted to the developing nations whose economies are growing at twice the rate of the industrial nations. Ex-Im Bank is not an aid or development agency, but a government held corporation, managed by a Board of Directors.

It provides guarantees of working capital loans for U.S. exporters, guarantees the repayment of loans or makes loans to foreign purchasers of U.S. goods and services. Ex-Im Bank also provides credit insurance that protects U.S. exporters against the risks of non-payment by foreign buyers for political or commercial reasons.

Ex-Im Bank provides a level playing field for U.S. exporters by countering the export credit subsidies of other governments. It also provides financing to creditworthy private and sovereign foreign buyers when private financing is unavailable. To qualify for Ex-Im Bank support, the product or service must have at least 50 percent U.S. content and must not affect the U.S. economy adversely.

Ex-Im Bank finances the export of all types of goods or services, including commodities, as long as they are not military-related (certain exceptions exist). Two of its major goals are to increase the export of environmental goods and services, which are in strong demand among the developing nations, and to expand the number of U.S. small businesses using Ex-Im Bank programs.

The application procedure is given in Appendix 4-B.

Ex-Im Bank has designed a special "Environmental Exports Program" that provides enhanced levels of support for a broad range of environmental exports. This program affords exporters a special level of support in conjunction with either Ex-Im Bank`s Insurance Program or with Ex-Im Bank`s loan and guarantee programs. The major features of the program are:

- A short-term Environmental Export Insurance Policy will provide enhanced short term, multi buyer and single buyer insurance coverage for small business environmental exporters. Features of the program include policies which deliver 95% commercial coverage and 100% political coverage with no deductible.
- Enhanced medium and long-term support for environmental projects, products and services. These enhancements, which are reflected in Ex-Im Bank loan and guarantee programs, include:
- Local cost coverage equal to 15% of the U.S. contract price.
- Capitalization of interest during construction.
- Maximum allowable repayment terms permissible under OECD guidelines.

Exports which qualify for support under the Programme are:

- Exports of products and services specifically used to aid in the abatement, control or prevention of air, water and ground contamination or pollution, or which provide protection in the handling of toxic substances will be considered eligible for support, subject to a final determination by Ex-Im Bank. The following are examples of the types of exports generally considered eligible:

- Instruments to measure or monitor air or water quality
- Emission control devices
- Effluent pollution control devices
- Equipment for systems for waste disposal, refuse collection and waste water treatment
- Services to upgrade environmental regulations: environmental assessments, design and training
- Ecological studies; ecological monitoring equipment
- Toxic material handling devices
- Certain renewable and alternative energy equipment

- Exports of products and services for foreign environmental projects entirely dedicated to the prevention, control or cleanup of air, water or ground pollution, including facilities to provide for control or cleanup, and the retrofitting of facility equipment for the sole purpose of mitigating, controlling or preventing adverse environmental effects will be considered eligible, subject to final determination by Ex-Im Bank. Exports for the following types of projects are generally considered eligible:

- Air or water (river) pollution cleanup
- Ecology or forestry management
- Certain renewable or alternative energy projects (photovoltaic, wind, hybrid, biomass)
- Water treatment or waste treatment projects
- Toxic waste or substance cleanup projects

These examples are illustrative and are not all-inclusive, and eligibility is subject to existing Ex-Im Bank foreign content guidelines.

The Ex-Im Bank's Charter, revised by Congress in October 1992, requires the establishment of environmental review procedures consistent with Ex-Im Bank's overall export promotion objectives. The Charter also authorizes the Board of Directors to grant or withhold financing support after taking into account the beneficial and adverse environmental effects of proposed transactions.

To provide guidance to exporters, environmental guidelines are available for assessing potential environmental impacts in the following areas: air quality, water use and quality, management of hazardous and toxic materials and waste, natural hazards, socioeconomic and socio-cultural effects, ecological effects and noise. Applicants are required to provide environmental information satisfactory to Ex-Im Bank in support of their applications.

Application Procedure

- Application for Ex-Im Bank financing for medium- and long-term loans and guarantees can be made using the Letter of Interest (LI) Application or the Preliminary Commitment (PC)/Final Commitment (AP) Application. Application should be made after determining
- that you are facing competition supported by foreign export credit agencies or

- that financing from the private sector is either unavailable or the amount and/or terms offered are inadequate to win the export sale. In most cases, either the LI or AP will be appropriate.
- The Business Development Division should be contacted for information about applying for Ex-Im Bank export credit insurance and working capital guarantees.
- Applications received without the processing fee are not reviewed.

The private banking sector plays a major role in facilitating U.S. exports by providing financial services independently and in conjunction with Ex-Im Bank. Ex-Im Bank encourages U.S. exporters to establish a relationship with a commercial financing institution.

Applying for a Letter of Interest

The Letter of Interest (LI) is an indication of Ex-Im Bank's willingness to consider financing a given export transaction. Application for a LI should be made during the bidding or negotiating stage of an export sale when the following conditions exist:

- An indication from Ex-Im Bank is needed on the general eligibility of the transaction participants and the goods and services to be exported.
- The repayment terms and other program guidelines in the LI are sufficient for the bid.

An LI is generally issued within seven business days after Ex-Im Bank receives the application. The terms and conditions in the LI are valid for six months. At the request of the applicant, the LI can be renewed for a maximum of three six-month extensions of the LI Expiry Date, which, if approved by Ex-Im Bank, would extend the validity of the LI for a total term of two years. However, the terms are subject to change.

The review of the LI application includes comparing the transaction information to Ex-Im Bank's cover policy and identifying any potential issues that may need to be analyzed in more detail when an AP application is reviewed.

Any responsible party may apply for an LI. The applicant for an LI is usually the U.S. exporter or a financial advisor representing the exporter. A financial advisor acting on behalf of a foreign buyer may also apply for an LI, but the LI will be issued directly to the foreign buyer. A foreign buyer or borrower may also apply. The non-refundable processing fee for an LI is $100.

LIs are not available for credit guarantee facilities or exports of items to be used for nuclear power plants, nuclear fuel research reactors and related facilities.

Where to Apply for a Letter of Interest

Ex-Im Bank offers a secure, Internet-based, online Letter of Interest Application. Applicants can submit, save and/or edit a LI application and make credit card payment online.

To mail or fax an application and make payment by check or money order, completed and signed LI application with the required attachments and a check or money order made payable to the Export-Import Bank of the U.S. should be mailed to the Export-Import Bank of the U.S.

If payment has to be made by credit card (not online), completed and signed LI application with the required attachments and credit card information should either be mailed to the address above, or faxed to the Export-Import Bank of the U.S.

Applying for a Final Commitment

The AP is an authorization of financing by Ex-Im Bank. Application for an AP should be made when the export contract has been awarded. Ex-Im Bank will perform a comprehensive evaluation of the transaction and any related issues. The AP will specify the exposure fee which can be financed by Ex-Im Bank. It is not necessary to have an LI or PC before applying for an AP.

The applicant for an AP is responsible for payment of Ex-Im Bank's commitment fee for a loan or guarantee or facility fee for a credit guarantee facility. If the applicant is the lender, the lender may require the borrower to accept this responsibility in writing prior to submitting the AP application.

Only the foreign borrower may apply for an AP for an Ex-Im Bank direct loan. The foreign borrower or guaranteed lender may apply for an AP for a guarantee. If the lender has not been selected, only the borrower may apply for an AP for a guarantee. In cases where the borrower is a special purpose vehicle, the applicant must be the guarantor, if there is one. If there is no guarantor, the applicant must be the company obligated to make payments to the special purpose vehicle.

While the PC/AP Application is used to apply for limited recourse project financing, other types of financing commitments are offered and a separate fee arrangement applies.

Where to Apply for a Final Commitment

Completed and signed AP Application with the required attachments should be mailed to the Export-Import Bank of the U.S.

Applying for a Preliminary Commitment

The PC is an offer of Ex-Im Bank financing subject to the award of the export contract and Ex-Im Bank's review of an AP application. Ex-Im Bank reserves the right to determine when a request for a PC is justified and has established the following three criteria for the appropriate use of a PC.

- If the award of the export contract is subject to a formal competitive bid process in which there is clear evidence that an actual quote of the definitive rates, fees, terms, and conditions of Ex-Im Bank support must be presented, then Ex-Im Bank will accept an application for a PC.
- If the exports are items to be used for nuclear power plants, nuclear fuel research reactors and related facilities, Ex-Im Bank will require a PC application. An LI is not available.
- If the applicant requests resolution of significant financial, technical, environmental, or policy issues which would have a critical impact on the availability of Ex-Im Bank support, Ex-Im Bank will accept an application for a PC only if it determines that the issues are significant enough to warrant Ex-Im Bank's review prior to the award of the export contract.

In order for Ex-Im Bank to perform the necessary review of program and credit issues required to issue a PC and specify an exposure fee, the PC/AP Application requires more detailed

information pertaining to the transaction than the LI Application. Examples of case-specific issues include: economic impact on U.S. production; eligibility of military-related products; environmental impact of the project; and credit review of the borrower (and guarantor, if any). Ex-Im Bank will issue a PC subject to final review of outstanding issues when information is not available at the PC stage. However, Ex-Im Bank will require sufficient information on the borrower (and guarantor, if any) in order to establish a specific exposure fee.

The applicant has two PC options: a four-month PC with a cap on Ex-Im Bank's direct loan interest rate or a six-month PC with no interest rate cap. The terms and conditions of the PC are valid for four months or six months, depending on the option selected. At the request of the applicant, the PC can be renewed at four-month or six-month intervals, but the terms are subject to change. Large aircraft transactions are not eligible for the four-month PC option with the interest rate cap. All PCs for large aircraft transactions will continue to be valid for six months and can be renewed at six-month intervals, but the terms are subject to change. PCs are not available for credit guarantee facilities.

Any responsible party may apply for a PC. The applicant for a PC is usually the U.S. exporter or a financial advisor representing the exporter. A foreign buyer or borrower may also apply for a PC.

The processing fee for a PC is equivalent to 1/10 of one percent of the requested amount of the financing (excluding the exposure fee), up to a maximum of $25,000. If the foreign buyer or borrower applies for a PC, the processing fee may be paid by the U.S. exporter.

The higher processing fee for the PC is intended to cover the additional transaction processing costs associated with issuing a PC and to encourage appropriate use of the LI. Exceptionally, if the Board approves a PC with a tied aid offer, Ex-Im Bank will immediately refund the PC processing fee regardless of whether the exporter eventually wins or loses the export contract.

Where to Apply for a Preliminary Commitment

Completed and signed AP Application with the required attachments should be mailed to the Export-Import Bank of the U.S.

Contact Address:

Export-Import Bank of the U.S.
811 Vermont Avenue, N.W.
Washington, D.C. 20571

Website: http://www.exim.gov

4.C.6. The United States Agency for International Development (USAID)

USAID is the independent government agency that provides economic development and humanitarian assistance to advance U.S., economic and political interests overseas. For nearly 50 years, USAID has played an important role in India's development successes.

USAID's energy and industry related activities include promoting clean energy development, efficient energy use, and pollution reduction in key industries (textiles, cement, fertiliser and steel), especially with regard to greenhouse gases.

USAID/India provides funding on a government-to-government basis. USAID does not have mechanisms whereby it can provide direct support to non-governmental organisations or individuals. Its bilateral programs with India are implemented by partners approved by the Indian government. USAID-funded activities in India are carried out through contracts and grants to American, Indian, and international NGOs and contractors.

A list of previously supported projects by USAID is given in Appendix 4-B.

Trade in Environment Services and Technologies Project (TEST)

USAID's Trade in Environment Services and Technologies project (TEST) in collaboration with ICICI was initiated in 1992 for a 5-year period. The original TEST project purpose was to assist Indian industries to adopt environmentally sound practices. The second phase of TEST, the Clean Technology Initiative (CTI) extended the project completion date to an additional 5 years until 2002. The third phase of the test project will constitute the industrial and green house gas emissions/global climate change. TEST provides loans, conditional grants and involvement of consultancy firms and experts in the environment field.

Loans under the TEST program are provided for

- Purchase of US environmental services and technologies
- Establishment of facilities in India for manufacture of pollution control or abatement
- Equipment and analytical and testing facilities with US collaboration.
- Enhancing the capabilities of consulting firms offering services in the field of environment with US linkages

Conditional grants under TEST are provided on a case to case basis where the US technology has significant commercial potential, but needs adaptation to the Indian environment.

The United States Asia Environmental Partnership (USAEP)

The United States Asia Environmental Partnership (USAEP) is an interagency and public private partnership programme led by USAID. USAEP activities focus on promoting an Asian 'clean revolution' - the continuing development and adoption of less polluting and more resource efficient products, processes and services in the Asia regions.

USAEP's activities fall under atleast one of the programme's four major activities :

- Fostering and disseminating clean technology and environment management
- Developing urban environmental infrastructure

- Establishing a policy framework to sustain a clean revolution
- Stimulating transfer of US environment technologies and services.

USAEP has opened offices of Technology Cooperation in Asian cities. Environmental Technology Representatives who serve as commercial officers for local environment markets staff these offices. In India these USAEP's Tech Representatives (Tech Reps) are situated at Delhi, Mumbai, Chennai and Calcutta.

For US businesses USAEP "Tech Reps" serve as local experts who can identify market opportunities, assist in making key contacts, and advocate US environment technology and services. For Asians looking to solutions to environmental needs, Tech Reps act as environment experts and a link to US-AEP programs and partners.

USAEP-Environmental Technology Fund

The objective of the USAEP-Environmental Technology Fund is to provide grant to US companies for the purpose of facilitating transfer of environmentally responsible and energy efficient technologies to the Asia Pacific region.

US multiplier and their small sized /medium sized businesses that need resources to assist in demand creation in selected countries are eligible. Environmental activities eligible for the grant include engineering /technology workshops or seminars, focused business development missions, technology equipment development demonstrations.

The grant size is normally up to a maximum of USD 20000. Grants match from 20 to 50% of total project cost

Previously Supported Energy Projects

1. In the State of Haryana, USAID identified and developed projects worth $40 million for the World Bank to improve low-tension electricity distribution.
2. USAID technical assistance in the states of Punjab, Haryana, and West Bengal is helping establish State Electricity Regulatory Commissions (SERC) to improve power sector efficiency.
3. USAID recommendations have led to the reduction of 2 million metric tons of carbon dioxide emissions by power plants of the National Thermal Power Corporation (NTPC) and by the Gujarat Electricity Board (GEB).
4. The signing of a new partnership agreement between leading Indian and U.S. power utilities and regulatory agencies provides a long-term mechanism for the transfer of U.S. technology and experience. The Energy Training Program also provides training for ongoing regulatory reform and energy efficiency.
5. USAID’s support for renewable energy technologies has resulted in the installation of nearly 200 MW of sugar cogeneration plants, (using sugarcane waste for power) that will offset approximately one million tons of carbon dioxide annually.
6. USAID credit assistance to the Indian Solar Electric Light Company helped establish a multi-million credit line for the company to bring power for pumping water, lighting and communication to 2500 rural homes.
7. Zero-emission electric vehicles, to replace the heavily polluting three-wheelers, are being introduced to India through an Indo-U.S. joint venture brokered by USAID.

8. USAID's Clean Technologies Initiative providing assistance to Indian industries to adopt certified environmental management systems and to enhance the capacity of industry to incorporate best technologies and practices for enhanced productivity and profitability. Energy intensive sectors of cement, thermal power and steel are targeted for assistance. Nine firms will achieve ISO 14000 certification under a pilot phase.
9. USAID's Urban and Environmental Credit Loan Guarantee of up to $25 million helped launch South Asia's first municipal bond for improvement of water, sewerage and waste collection systems. This bond, for the city of Ahmedabad in Gujarat state, has encouraged thirteen other Indian cities seek credit ratings for future bonds or other debt instruments.
10. USAID technical and capital assistance is making a $200 million infrastructure project in Tirupur in Tamil Nadu a reality. Negotiations for the first build-own-transfer water supply and sewer project have been completed, with construction to commence in 1999.
11. Responding to the needs of both city governments and NGOs working on community-based environmental initiatives. USAID provided technical assistance to develop a tool kit of improved environmental management approaches and helped five cities prepare environmental status reports/workbooks, comparative risk assessments, and environmental action plans.
12. Through its Trade in Environmental Services and Technologies (TEST) program, USAID has collaborated with FICCI's Business Information Services Network and ICICI Limited to establish an online Environmental Information Center. The website is dedicated to facilitating and promoting Industry Actions for environmental protection and addressing key issues such as global climate change, adoption of clean technologies, waste management and energy efficiency.
13. The United States Asia Environmental Partnership (USAEP) is an interagency and public private partnership programme led by USAID. USAEP activities focus on promoting an Asian 'clean revolution' - the continuing development and adoption of less polluting and more resource efficient products, processes and services in the Asia regions.

    Contact Address:

    American Embassy
    Chanakyapuri, New Delhi – 110 021

    Tel: (91 11) 2419 – 8000
    Fax: (91 11) 2419 – 8454
    Website: http://www.usaid.gov/in

4.C.7. Canadian International Development Agency (CIDA)

The Canadian International Development Agency (CIDA) has many programs in environment-energy sector.

Canada's Official Development Assistance (ODA) program

Canada's Official Development Assistance (ODA) program concentrates resources on six priorities. One of the six priorities is 'Environment' - to help developing countries to protect their environment and to contribute to addressing global and regional environmental issues.

The CIDA Industrial Cooperation Program

The CIDA Industrial Cooperation Program can provide financial support and advice to Canadian businesses planning sustainable business activities in developing countries in a variety of sectors. It reduces the risks to Canadian firms by sharing the costs unique to doing business in developing countries and those associated with providing training, the participation of women, and a clean environment.

Financial support can be provided through one of CIDA-INC's three mechanisms :

- Investment mechanism
- Professional services mechanism
- Private participation in infrastructure projects

Under the Investment Mechanism, in case of Joint Venture, CIDA-INC can share in the costs at the viability study stage and contribute to reducing the costs of the developmental components of the project at the implementation stage.

Under the Professional Services Mechanism, in case of professional services being provided by a Canadian firm in a developing country, the CIDA-INC can share in the costs at the feasibility stage and contribute to reducing the costs of complementary activities including training, environmental, social, and gender-equality management plans to increase the project's benefits for the host country.

In case of private infrastructure projects (eligible sectors include transportation, power, water and sanitation, telecommunications, gas distribution, etc.), the applicant must be an equity investor and only new projects with significant rehabilitative or expansionary components are considered. In this case CIDA-INC can share in the costs of developing the project from the preliminary feasibility study to the financial close and contribute to reducing the costs of complementary training, social/gender and environmental management plans.

Contact Address

Canadian International Development Agency (CIDA)
200 Promenade du Portage
Hull, Quebec
K1A 0G4

Tel: (819) 997-5006
Toll free: 1-800-230-6349
Fax: (819) 953-6088
e-mail: info@acdi-cida.gc.ca
Website: http://www.acdi-cida.gc.ca

4.C.8. Kreditanstalt fur Wiederaufbau (KfW)

KfW was established in Frankfurt am Main in 1948 as a corporation under public law. KfW offers loan programmes and export and project finance activities. Clients of KfW's investment finance, environmental and innovation finance are mainly small and medium-sized enterprises.

KfW also offers advisory and other services in Germany and abroad and operates as a development bank for the developing countries on behalf of the German Government. KfW promotes the German economy by extending long-term loans at favourable interest rates.

Many German enterprises have recognized their opportunities abroad, investing outside Germany to open up new markets or to make use of the advantages of other production locations. KfW supports

- Small and medium-sized enterprises and their foreign subsidiaries,
- Joint ventures with German participation and
- Members of certain professions in Germany who make business investments outside Germany.

It offers long-term loans at favourable fixed interest rates, providing investors with reliable financing. Loans for investments outside Germany are available not only in DEM but also in a number of foreign currencies. Advantages are:

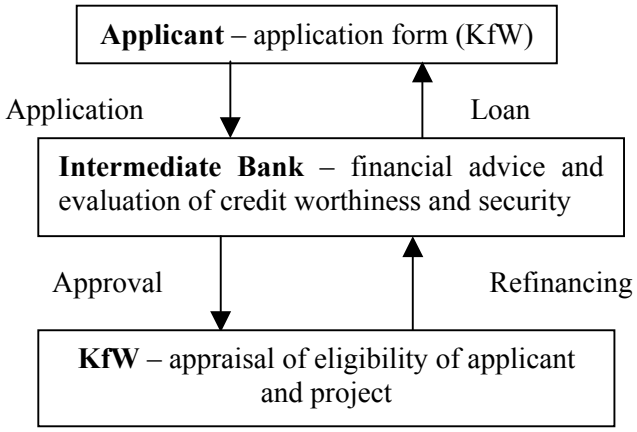
- Long-term loans in DEM and foreign currencies with a maturity of 10 to 20 years
- Favourable interest rates, which may be fixed for 10 years or remain variable at your request
- Simple application, loan commitment and loan handling through intermediate banks
- Partial exemption of the on-lending bank from its liability for projects throughout the world

The application procedure is given in Appendix 4-B.

KfW loan programmes available to promote business investment outside Germany are (i) KfW SME Programme for business investments outside Germany and (ii) KfW Environmental Protection Programme for projects which significantly improve the environment in Germany.

Application Procedure

Application for a KfW promotional loan can be made with any bank or savings bank. KfW also cooperates with a number of foreign banks which handle its programme loans.



The intermediate bank, frequently the investor's principal bank, appraises the financial and business situation of the applicant and collect in the security for the loan. In most cases KfW and the intermediate bank share the liability. It generally takes 3 to 4 weeks to decide on a loan.

Contact Address:

In India:
KfW Office New Delhi
21, Jor Bagh,
New Delhi 110 003

Tel: 011- 2464 12 02 / 011- 2464 71 13
Fax: 011-2464 12 03
e-mail: kfwindia@vsnl.com

4.C.9. German Agency for Technical Cooperation (GTZ)

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH has been operating as a service company in international development cooperation since 1975. Priority sectors of GTZ include, Land Use, Land Management, Desertification Control; Agriculture, Agricultural Research; Environmental Management; Climate Control; Energy; Health; Conservation of Tropical Forests, Ecology; Infrastructure; etc.

Of the various programmes in Energy Sector, 'Sustainable Energy Systems' is relevant to waste-to-energy. Of the sectors included in 'Sustainable Energy Systems', 'Renewable Energy Sources' is relevant to waste-to-energy.

In light of the problems besetting the developing countries and pursuant to the energy-sector objectives of the German Ministry for Economic Cooperation and Development, the priorities for promoting renewable energy sources lie in areas where energy policy meets policies that address climate change:

- Dissemination of RE-technologies in rural areas.
- Promotion of grid-connected RE-plants reducing the CO2-emissions of the power sector.
- Measures focusing on the rational use of energy and the utilization of renewable energy in urban areas.

In India, the GTZ (German Agency for Technical Cooperation) has almost forty years experience in executing Technical Cooperation projects and programmes on behalf of the Federal Republic of Germany.

Priority areas of co-operation are:

- Technical training, higher education and industrial research
- Protection of the environment and conservation of natural resources and utilisation of domestic resources
- Strengthening the competitiveness of Indian industry
- Poverty alleviation and social sector

For the year 2000, GTZ has provided project funding of Euro 16,5 million (DM 32,2 million) whereas the total funding for all projects in Asia is Euro 205,1 million (DM 401,2 million).

GTZ has supported projects in four areas, of which, projects supported in the 'Protection of the Environment and Conservation of Natural Resources and Utilisation of Domestic Resources' category are listed.

- Assistance to Regional Research Laboratory, Bhubaneshwar
- Industrial Energy Efficiency
- Industrial Pollution Control Project at the National Productivity Council, New Delhi
- Environmental Quality Assessment and Control
- The Ecofrig Project
- Centre for Environmental Studies, Anna University, Chennai
- Promotion of Self-help Approaches in Watershed Management Programmes
- The Changar Eco-development Project
- Assistance for the Ministry of Agriculture in Integrated Watershed Management

Contact Address:

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH
Dag-Hammarskjöld-Weg 1-5
65760 Eschborn
Germany

Tel +49 (0)6196 79-0
Telefax +49 (0) 6196 79-1115
Website: www.gtz.de/english/

4.C.10. Japan Bank for International Cooperation (JBIC)

On October 1, 1999, Overseas Economic Cooperation Fund (OECF) of Japan merged with the Export-Import Bank of Japan to form the new Japan Bank for International Cooperation (JBIC).

The Bank applies Environmental Guidelines to International Finance Operations and Overseas Economic Cooperation Operations.

OECF provided Official Development Assistance (ODA) loans and private sector investment finance. All ODA loans were made according to the agreements between the Japanese Government and the Government of the recipient country.

The Japanese Government had introduced most-concessional interest rates with regard to certain environmental projects. The range of eligible environmental projects under this initiative were:

- Projects for dealing with global environment problems as represented by global warming (e.g. afforestation, energy conservation and the development of alternative resources);
- Projects dealing with pollution (e.g. air pollution, water pollution, waste disposal);
- Hydro electric power generating projects, natural gas power generating projects, geo thermal power generating projects,
- rehabilitation projects for energy and resource conservation.

The loan conditions for such projects were eased to an interest rate of 0.75% and repayment period of 40 years (including 10 years moratorium).

In India, OECF had been supporting afforestation projects involving local residents and had provided 71.428 billion yen in loans for seven projects in Rajasthan, Gujarat and other states.

JBIC supports Japanese corporate activities overseas and international economy through financing Japan's economic interactions with the rest of the world. International Finance Operations include Export Loans, Import Loans, Project Finance, Support To Small-and medium-size enterprises, Refinancing, Equity participation, etc.

In Japan, assistance for the economic development of developing countries is referred to as "economic cooperation." In terms of the flow of financial resources, economic cooperation is divided into four categories: official development assistance (ODA); other official flows (OOF); private flows (PF); and grants by private non-profit agencies.

ODA comprises the funding flows which meet the following conditions:

- Provided by official agencies or by their executive agencies;
- Administered with promotion of economic development and welfare of developing countries as its main objective; and
- Concessional in character to avoid severe burdens on developing countries and conveys a grant element (G.E.) of at least 25%.

Grant element is an indicator of the "softness" of lending conditions. The lower the interest rate and the longer the repayment period, the greater the "grant element," and the more advantageous the loan is for the recipient country (developing countries). In the case of grant aid, the grant element is equal to 100%. Loans must exhibit a grant element of at least 25% to be counted as ODA.

Contact Address:

3131,31st Floor,China World Trade Center
No.1 Jian Guo Men Wai Avenue
Beijing 100004,The People's Republic of China
Tel.86-10-6505-8989,38258,1196,1197
Fax.86-10-6505-3829,1198
Website: www.jbic.go.jp/english

4.C.11. Netherlands Development Finance Company (FMO)

The Netherlands Development Finance Company (FMO) is the Dutch development bank specialised in financing the private sector in Africa, Asia, Latin America and Central and Eastern Europe. FMO was founded in 1970 as a joint venture between the State of the Netherlands and the Dutch private sector.

Some of the sectors for funding are Energy, Transport and storage, Investment funds, Agribusiness, Industry, Wood and paper industry, etc.

The FMO finances only companies. It cushions the related risks with its large funds and reserves, and special status as bilateral development bank. This special status is partly founded on the support of the Dutch government, which owns 51% of the FMO's shares and makes an annual contribution to the bank's own funds.

The FMO's focus is on the financial sector and on all types of companies, large, small and medium-sized. Only large companies are financed directly. Medium-sized and smaller companies enjoy the bank's services through co-operation with local financial institutions such as banks and lease companies. The FMO works closely with commercial banks and comparable institutions such as the International Finance Corporation (IFC), the European Bank for Reconstruction and Development (EBRD) and the members of EDFI.

The FMO provides financing as Loans or Participations. In addition, the FMO handles a number of special Dutch government programmes:

- On behalf of the Ministry of Foreign Affairs:
- Small Scale Enterprise Fund
- Seed Capital programme
- IPTA-DC (Investment Promotion Technical Assistance for Developing Countries)
- On behalf of the Ministry of Economic Affairs:
- IPTA-EE (Investment Promotion Technical Assistance for Central and Eastern Europe)

The FMO issues loans to companies in emerging markets in Dutch guilders (NLG), US Dollars or Deutschmarks. The minimum loan is NLG 4 million, the average is around NLG 10.5 million. The minimum term is three years with or without grace period. Loans are issued at normal market interest rates. In response to the growing need for larger investments in business in developing countries, the FMO plays an active role in syndicated loans. For these loans FMO acts as a loan provider, while other financial institutions participate under FMO's supervision.

The FMO can also decide to participate in the share capital of companies in emerging markets. In this case the FMO never takes more than a minority interest and is never the biggest shareholder. In general the participation covers an average term of five years. The average amount of a participation is some NLG 3 million.

Small Scale Enterprise Fund

The Small-scale Enterprise Fund is intended for small companies in developing countries. The FMO reaches these companies exclusively via local financial institutions, which receive FMO financing. The finances are long term, and are mostly supplied in local currencies. These

monies may only be lent to small companies with no more than 30 employees and a maximum of USD100,000 of total assets (excluding land and buildings). For this fund the FMO receives an annual contribution from the Ministry of Foreign Affairs (Development Co-operation).

Seed Capital Programme

The Seed Capital Programme aims at financing new companies and financial institutions, especially in the low-income countries in Africa. The programme is carried out by the FMO, while most financial resources come from the Ministry of Foreign Affairs (Development Co-operation). FMO supplies venture capital directly or via a local partner, either as share participations or unsecured loans.

IPTA-DC

The programme Investment Promotion and Technical Assistance in Developing Countries focuses on the promotion of investment, international business partnerships and the improvement of the business operations in companies in Africa, Asia, and Latin America. The FMO undertakes the programme by contributing subsidies, interest-free loans, with annual financial contributions from the Ministry of Foreign Affairs (Development Co-operation).

The principal activities qualifying for donations and interest-free loans are feasibility studies, temporary management and technical assistance projects, and job-specific training and education.

IPTA-EE

For the Ministry of Economic Affairs, the FMO runs the programme ‘Investment Promotion and Technical Assistance’ focusing on Central and Eastern Europe. This promotes Dutch investment and the improvement of business operations in Central and Eastern European countries. The FMO contributions for this consist of donations.

Similar to the IPTA Developing Countries Programme, applications for contributions may include feasibility studies, pilot projects, temporary management, technical support and educational projects.

Only companies in countries which the World Bank has designated 'low and middle income countries', which in addition must not have been excluded by the Dutch government for political reasons qualify for financing. Candidate companies must comply with the investment criteria set by the FMO. The FMO seeks to place 70% of its financing in low and lower-middle income countries. In consultation with the Dutch government the FMO gives special attention to Sub-Sahara Africa.

Finance provided by the FMO needs to comply with three criteria which are laid down in the Criteria Memorandum. The Criteria Memorandum is an annex to the Agreement between the Dutch State and the FMO, which was signed on 16 November 1998. The Criteria Memorandum is given in Appendix 2-D.

Criteria Memorandum

Introduction

Since FMO's object according to its Articles of Association is the basis of its financing policy, it is appropriate to restate that object in full here:

The object of the company is to contribute to the advancement of productive enterprises in developing countries, to the benefit of economic and social advancement of those countries, in accordance with the aims pursued by their governments and the policy of the Netherlands government on development cooperation, by:

- providing finance to or on behalf of natural persons and legal entities engaged or intending to engage in a business or profession in a developing country by taking equity interests, advancing loans and providing subsidies;
- acting as intermediary in raising finance on behalf of the natural persons and legal entities referred to under a above;
- providing appropriate forms of finance for technical assistance, training, investment, promotion activities and other activities which may be conducive to the advancement of productive enterprises in developing countries;
- engaging in any other activity, in the widest sense, which is conducive to the advancement of productive enterprises in developing countries.

To facilitate the identification and selection of projects and the implementation of appropriate financial services, a number of policy principles and criteria have been defined by the Board of Directors and approved by the Supervisory Board to serve as a guideline and ensure consistency with the current policy of the Netherlands government on development cooperation. These criteria are updated to reflect changing circumstances, partly on the basis of the regular semi-annual policy meetings between the State and FMO.

Policy principles

The operational policy is based on the following principles:

- ***catalysis***: maximizing the flow of finance to FMO's target group. This requires FMO to maximize the growth in and utilization of its equity and the leverage provided by its financing activities;
- ***additionality***: only providing financial services which the market does not provide, or does not provide on an adequate scale or on reasonable terms;
- ***good governance***: adherence to the principles of good governance in the widest sense. FMO sets the standard in several areas of its operations, including social policy and environmental policy.

Choice of country

"Developing countries" are countries which were classified by the World Bank in its recent World Development Report as low-income economies, lower middle-income economies or upper middle-income economies, or countries which were classified as such when the finance was approved and countries or regions expressly designated as such by the Netherlands

government. If one of the countries as defined above fails to meet the political criteria against which they are tested from time to time by the Netherlands government, the government will notify FMO and FMO will refrain from any new business in that country. It should be noted that existing investments in countries which fall into political disfavour will not be withdrawn as a matter of course. FMO will, whenever possible, wind these investments down.

FMO also applies the following principles:

- no finance is to be provided in a country which is in a state of war or armed conflict with another country;
- it attempts to ensure that low-income and lower middle-income economies account for approximately 70% of investments, approximately half (35%) of which being accounted for by low-income economies;
- where possible, additional manpower should be deployed and specific programmes and/or instruments should be developed and implemented for countries or groups of countries for which the Netherlands government from time to time requests FMO's particular attention, to the extent that this is consistent with the policy framework. Agreements in this regard will be recorded in "side letters".

Choice of sector

Activities qualifying for finance are commercial enterprises in agriculture and fisheries, mining, agribusiness, manufacturing industry, the service sector (including utilities) and banking and insurance in the widest sense. The emphasis is on development of the financial sector. Excluded are activities and institutions which are in conflict with statutory provisions or government regulations or measures or which offend against public morals in the Netherlands and/or the developing country or are in conflict with imperative rules of international law. Activities in the field of or relating to armaments and munitions are similarly excluded.

Other criteria

- FMO's clients or counterparties are natural persons, partnerships and/or legal entities associated with or engaged in productive enterprises; proprietors and managers must be of irreproachable business integrity, having due regard for the standards and conventions of the country concerned;
- the continuity of the client/counterparty should be assured by reasonable prospects of earning a positive return on investment;
- the client/counterparty must have the support of one or more entrepreneurs of good financial standing, who are themselves able to assume a substantial financial risk, and must be headed by capable – preferably local - managers. Financial institutions must be adequately regulated. If the local regulatory regime is unsatisfactory, FMO will seek to make good this deficit itself. It should be possible to demonstrate on the basis of a thorough analysis of all potential risks that the risks can be managed and are therefore acceptable;
- jobs created directly within the client/counterparty's operation should be sustainable. The terms of employment and social provisions should be of good standard relative to the local situation. Entrepreneurs and managers must demonstrate awareness of the importance of good terms of employment and social provisions;

- where applicable, FMO's clients/counterparties must as a minimum comply with the local environmental legislation. If possible, they should also comply with international standards, taking the standards of the World Bank group as a benchmark;
- the technology employed should be proven technology; innovative technologies are only considered if they are implemented by highly experienced clients/counterparties;
- although the selection of clients/counterparties does not depend on whether Dutch interests are involved, Dutch interests will be promoted in so far as this is practical, feasible, effective and advantageous to the client/counterparty.

Conclusion

Internal policy documents, guidelines and procedures have been prepared, based on these policy principles and criteria, which are updated from time to time to reflect the changes in FMO's sphere of operations and services.

Contact Address:

P.O.Box 93060
2509 AB The Hague

Tel +31 70-314 96 96
Telefax + 31 70-324 61 87
E-mail:info@fmo.nl

4.C.12. The World Bank

The Bank Programmes can be categorized as:

- Financial Services
- Analytical & Advisory
- Capacity Building

The Bank has two basic types of lending instruments: investment loans and adjustment loans. Investment loans have a long-term focus (5 to 10 years), and finance goods, works and services in support of economic and social development projects in a broad range of sectors. Adjustment loans have a short-term focus (1 to 3 years), and provide quick-disbursing external financing to support policy and institutional reforms. Both investment and adjustment loans are used flexibly to suit a range of purposes, and are occasionally used together in hybrid operations.

The various World Bank Lending instruments are discussed in Appendix 4-B.

All World Bank projects are governed by the institution's Operational Policies, which aim to ensure that Bank-financed operations are economically, financially, socially, and environmentally sound.

Only the very poorest countries are eligible for IDA credits. Under formal guidelines, countries with average annual per capita incomes of $1,445 or less are eligible. In practice, however, IDA credit is given to countries with average annual per capita incomes of $ 885 or less. Creditworthy countries with average per capita incomes below $1,445 could be given a blend

of IBRD loans and IDA credits. Generally, countries with annual average per capita incomes less than $5,225 are eligible for IBRD loans.

World Bank lending Instruments

- **Investment Lending**

Investment loans provide financing for a wide range of activities aimed at creating the physical and social infrastructure necessary for poverty alleviation and sustainable development. Over the past two decades, investment lending has, on average, accounted for 75 to 80 percent of all Bank lending.

The nature of investment lending has evolved over time. Originally focused on hardware, engineering services, and bricks and mortar, investment lending has come to focus more on institution building, social development, and the public policy infrastructure needed to facilitate private sector activity. Projects range from urban poverty reduction (involving private contractors in new housing construction, for example) to rural development (formalizing land tenure to increase the security of small farmers); water and sanitation (improving the efficiency of water utilities); natural resource management (providing training in sustainable forestry and farming); post-conflict reconstruction (reintegrating soldiers into communities); education (promoting the education of girls); and health (establishing rural clinics and training health care workers).

Eligibility
Investment loans are available to IBRD and IDA borrowers not in arrears with the Bank Group.

Disbursement
Funds are disbursed against specific foreign or local expenditures related to the investment project, including pre-identified equipment, materials, civil works, technical and consulting services, studies, and incremental recurrent costs. Procurement of these goods, works and services is an important aspect of project implementation. To ensure satisfactory performance, the loan agreement may include conditions of disbursement for specific project components.

Instruments
The large majority of investment loans are either Specific Investment Loans or Sector Investment and Maintenance Loans. Adaptable Program Loans and Learning and Innovation Loans were recently introduced to provide more innovation and flexibility. Other instruments tailored to borrowers, specific needs are Technical Assistance Loans, Financial Intermediary Loans, and Emergency Recovery Loans.

- **Adjustment Lending**

Adjustment loans provide quick-disbursing assistance to countries with external financing needs, to support structural reforms in a sector or the economy as a whole. They support the policy and institutional changes needed to create an environment conducive to sustained and equitable growth. Over the past two decades, adjustment lending has accounted, on average, for 20 to 25 percent of total Bank lending.

Adjustment loans were originally designed to provide support for macroeconomic policy reforms, including reforms in trade policy and agriculture. Over time, they have evolved to focus more on structural, financial sector, and social policy reform, and on improving public sector resource management. Adjustment operations now generally aim to promote competitive market structures (for example, legal and regulatory reform), correct distortions in incentive regimes (taxation and trade reform), establish appropriate monitoring and safeguards (financial

sector reform), create an environment conducive to private sector investment (judicial reform, adoption of a modern investment code), encourage private sector activity (privatization and public-private partnerships), promote good governance (civil service reform), and mitigate short-term adverse effects of adjustment (establishment of social protection funds).

Eligibility
Adjustment loans are available to IBRD and IDA borrowers not in arrears to the Bank Group. (Only IBRD borrowers are eligible for special structural adjustment loans; see below.) Eligibility for an adjustment loan also requires agreement on monitorable policy and institutional reform actions, and satisfactory macroeconomic management. Coordination with the IMF is an essential part of the preparation of an adjustment loan.

Disbursement
Funds are disbursed in one or more stages (tranches) into a special deposit account. Tranches are released when the borrower complies with stipulated release conditions, such as the passage of reform legislation, the achievement of certain performance benchmarks, or other evidence of progress toward a satisfactory macroeconomic framework. Funds may be disbursed against a *positive list* of specific imports needed for the operation, or subject to a *negative list* of prohibited expenditures (e.g. military and luxury items). Since 1996, the negative list has typically been used.

Instruments
Structural and Sector Adjustment Loans are the most commonly used adjustment instruments. Other types of adjustment loans, designed to respond to specific borrower needs, are Programmatic and Special Structural Adjustment Loans, and Rehabilitation Loans. Debt Reduction Loans, while not adjustment loans, often accompany adjustment operations.

- **Specific Investment Loan**

Specific Investment Loans (SILs) support the creation, rehabilitation, and maintenance of economic, social and institutional infrastructure. In addition, SILs may finance consultant services and management and training programs.

- **Sector Investment and Maintenance Loan**

Sector Investment and Maintenance Loans (SIMs) focus on public expenditure programs in particular sectors. They aim to bring sector expenditures, policies and performance in line with a country's development priorities by helping to create an appropriate balance among new capital investments, rehabilitation, reconstruction, and maintenance. They also help the borrower develop the institutional capacity to plan, implement and monitor the expenditure or investment program.

Special design features
SIMs typically involve agreement on the composition of sector investment programs, and on sectoral policy reforms necessary for the program's success. They also involve strengthening the institutions that will carry out the program.

When are SIMs used?
The SIM is most appropriate where a sector expenditure program needs extensive coordination, particularly if the program involves a large share of donor-financed investments. Therefore, SIMs typically involve coordinated efforts among the multilateral and bilateral donors providing assistance to the sector.

- **Adaptable Program Loan**

Adaptable program loans (APLs) provide phased support for long-term development programs. They involve a series of loans that build on the lessons learned from the previous loan(s) in the series.

Special design features

APLs involve agreement on (1) the phased long-term development program supported by the loan, (2) sector policies relevant to the phase being supported, and (3) priorities for sector investments and recurrent expenditures. Progress in each phase of the program is reviewed and evaluated, and additional analysis undertaken as necessary, before the subsequent phase can be initiated.

When are APLs used?

APLs are used when sustained changes in institutions, organisations, or behavior are key to successfully implementing a program. They can be used to support a phased program of sector restructuring, or systemic reform in the power, water, health, education, and natural resource management sectors, where time is required to build consensus and convince diverse actors of the benefits of politically and economically difficult reforms.

Example: An example in this category is:
India Power Sector Restructuring Program Loan with a loan amount of US 210 million. This project, first in a series, is part of an adaptable program that, over the next eight years, will help transform Andhra Pradesh, power sector, now a major drain on the state, budget into a contributor of resources for priority sectors.

- **Learning and Innovation Loan**

The learning and innovation loan (LIL) supports small pilot-type investment and capacity-building projects that, if successful, could lead to larger projects that would mainstream the learning and results of the LIL.

Special design features

LILs do not exceed $5 million, and are normally implemented over 2 to 3 years, a much shorter period than most Bank investment loans. All LILs include an effective monitoring and evaluation system to capture lessons learned.

When are LILs used?

LILs are used to test new approaches, often in start-up situations and with new borrowers. LILs may be used to build trust among stakeholders, test institutions capacity and pilot approaches in preparation for larger projects, support locally based development initiatives, and launch promising operations that require flexible planning, based on learning from initial results.

- **Technical Assistance Loan**

The technical assistance loan (TAL) is used to build institutional capacity in the borrower country. It may focus on organisational arrangements, staffing methods, and technical, physical, or financial resources in key agencies.

Special design features
TALs require agreement on specific action programs to strengthen organisations, and on terms of reference for the appointment of consultants and local counterparts.

When are TALs used?
TALs are used to build capacity in entities directly concerned with implementing policies, strategies, and reforms that promote economic and social development. They also build capacity related to public sector reform and to the preparation, implementation and maintenance of investments. TALs often complement investment or adjustment operations by supporting specific tasks related to their preparation or implementation.

- **Financial Intermediary Loan**

Financial intermediary loans (FILs) provide long-term resources to local financial institutions to finance real section investment needs. The financial institutions assume credit risk on each subproject.

Special eligibility and design features
Eligibility for a FIL requires a satisfactory macroeconomic and sector framework. The FIL supports financial sector reforms, interest rate policies, subsidies, measures to enhance financial system competition, institutional development of financial intermediaries, that have a direct and substantial bearing on the operational efficiency of financial intermediaries. FILs may accompany adjustment operations that address financial sector policy issues, and may contain technical assistance components.

The borrower may pass on Bank funds to a financial intermediary as either a loan or equity. The financial intermediary, in turn, may pass on Bank funds to subborrowers as subloans or equity, to finance projects that aim to increase the production of goods and services. To ensure satisfactory performance, these subprojects must meet specific eligibility and development criteria. Bank funds are disturbed against eligible expenditures for goods, works, and services, including technical assistance.

When are FILs used?

FILs help to develop sound financial sector policies and institutions, promote the operational efficiency of those institutions in a competitive environment, improve the terms of credit to enterprises and households, and promote private investment.

- **Emergency Recovery Loan**

Emergency recovery loans (ERLs) support the restoration of assets and production levels immediately after an extraordinary even, such as war, civil disturbance, or natural disaster that seriously disrupts a borrower, economy. They can also used to strengthen the management and implementation of reconstruction efforts, and to develop disaster-resilient technology and early warning systems to prevent or mitigate the impact of future emergencies.

Special design features
To accommodate the emergency nature of the operation, abbreviated processing may be used. To ERL may include fast-disturbing components that finance a list of imports identified as necessary to an effective recovery program.

When are ERLs used?
ERLs focus on the rapid reconstruction of economic, social, and physical systems within a limited period, normally 2 to 3 years. They finance investment and productive activities, rather than relief or consumption. For recurring events such as annual flooding, or for a slow-onset disaster such as drought, a SIL is usually more appropriate.

- **Structural Adjustment Loan**

The structural adjustment loan (SAL) supports reforms that promote growth, efficient use of resources, and sustainable balance of payments over the medium and long term.

When are SALs used?
SALs typically focus on major macroeconomic and structural issues that cut across sectors, such as trade policy, resource mobilisation, public sector management, private sector development, and social safety nets.

- **Sector Adjustment Loan**

The sector adjustment loan (SECAL) supports policy changes and institutional reforms in a specific sector.

When are SECALs used?
SECALs focus on major sectoral issues such as the incentive and regulatory framework for private sector development, institutional capability, and sector expenditure programs.

Special features
SECALs are subject to an environmental assessment.

- **Programmatic Structural Adjustment Loan**

The programmatic structural adjustment loan (PSAL) is provided in the context of a multiyear framework of phased support for a medium-term government program of policy reforms and institution building.

Special design features

PSALs support the government, program through a series of loans made over 3 to 5 years, each building on the preceding loan to support sustained, sequential structural and social reforms. Each individual adjustment loan under a PSAL typically supports a one-year program, with its tranches (if there is more than one tranche) spaced regularly throughout the year and tied to specific target measures. Monitorable indicators are built into the design of each loan in the series. The eligibility and disbursement criteria are the same as for a SAL.

When are PSALs used?
PSALs respond to country needs for Bank financing and advice in support of structural and social reforms that involve continuous, incremental policy changes and institution building over several years. The focus is on step-by-step capacity building and reform, typically in the public sector, aimed at strengthening public expenditure management and improving governance, resource allocation, and public service delivery. PSALs rely on a solid foundation of completed or parallel analytic and advisory work in these areas.

- **Special Structural Adjustment Loan**

The special structural adjustment loan (SSAL) supports structural and social reforms by creditworthy borrowers approaching a possible crisis, or already in crisis, and with exceptional

external financing needs. These loans help countries to prevent a crisis or , if one occurs, mitigate its adverse economic and social impacts.

Special eligibility and design features

SSALs are available to countries facing an actual or potential financial crisis with substantial structural and social dimensions. They support structural, social and macroeconomic policy reforms that are typically part of an international support package put together by multilateral donors, bilateral donors, and private lenders and investors. An IMF program must be in place.

SSALs have different terms than other Bank loans. They carry a 5 year maturity with a 3 year grace period, and a minimum loan spread of 400 basis points over USD LIBOR equivalent. There are no waivers of interest or commitment charges.

- **Rehabilitation Loan**

The rehabilitation loan (RIL) supports government policy reforms programs aimed at creating an environment conducive to private sector investment, where foreign exchange is required for urgent rehabilitation of key infrastructure and productive facilities. The focus is on key short-term macroeconomic and sector policy reforms needed to reverse declines in infrastructure capacity and productive assets.

When are RILs used?
RILs are typically used when a country is committed to overall economic reform but a SAL cannot be used because the structural reform agenda is still emerging. RILS are appropriate in transition economic and post-conflict situations.

- **Debt Reduction Loan**

The debt reduction loan (DRL) helps eligible highly indebted countries reduce commercial debt and debt service to a manageable level, as part of a medium-term financing plan in support of sustainable growth. The focus is on rationalising the country's external commercial bank debt, by either converting it to lower-interest instruments or buying it back at a discount.

Special features : Although not an adjustment operation, the DRL is often processed in conjunction with an adjustment loan, part of which may also be used to finance the debt reduction operation. Bank staff help to design an operation that meets the Bank's criteria, but the Bank does not participate directly in negotiations between the debtor and its commercial creditors on the terms of the operation.

Funds are disbursed against tendered commercial debt for buy-backs or for purchasing acceptable collateral, to reduce principal and interest payments on new instruments issued in exchange for existing debt.

Contact Address:

The World Bank
1818 H Street, N.W.
Washington, DC 20433 U.S.A.

Tel: (202) 477-1234
Fax: (202) 477-6391
www.worldbank.org

4.C.13. Global Environment Facility (GEF)

The Global Environmental Facility was established to forge international cooperation and finance actions to address four critical threats to the global environment: biodiversity loss, climate change, degradation of international waters, and ozone depletion. Related work to stem the pervasive problem of land degradation is also eligible for GEF funding.

The GEF is a financial mechanism, which provides grant and concessional funding for recipient countries for projects and activities that address climate change, biological diversity, international waters, and depletion of the ozone layer. In 1994, 34 nations pledged $2 billion in support of GEF's mission; in 1998, 36 nations, 14 of which are recipient countries, pledged $2.75 billion in grant resources to the GEF's Core Fund over a four-year period (1998-2002), to protect the global environment and promote sustainable development. The World Bank shares the responsibility for implementing GEF activities with the United Nations Development Programme (UNDP) and United Nations Environment Programme (UNEP).

In accordance with the provisions of the climate change conventions and the GEF Instrument, the use of GEF resources for purposes of the conventions is to be in conformity with the policies, program priorities and eligibility criteria decided by the Conference of the Parties (COP) of each of those conventions.

GEF activities will aim at maximizing agreed global environmental benefits in the areas of biological diversity, climate change, international waters, and ozone layer depletion. Land degradation issues, primarily desertification and deforestation, as they relate to the four focal areas will also be addressed by GEF activities, particularly in those countries in Africa which experience serious drought and/or desertification, consistent with the GEF Instrument.

The overall strategic thrust of GEF-financed climate change activities is to support sustainable measures that minimize climate change damage by reducing the risk, or the adverse effects, of climate change. The GEF finances agreed and eligible enabling, mitigation, and adaptation activities in eligible countries because

- Enabling activities facilitate implementation of effective response measures,
- Mitigation measures reduce or lead to the reduction of greenhouse gas emissions from anthropogenic sources or protect or enhance removal of such gases by sinks (thus reducing the risk of climate change), and
- Adaptation activities minimize the adverse effects of climate change.

The initial portfolio of GEF-financed activities includes:

- Long-term measures, including long-term mitigation projects and enabling activities to facilitate implementation of effective response measures. These measures will be country driven and prepared in the context of GEF operational programs.
- Enabling activities that specifically support national communications, including Stage I adaptation activities these will be country-driven and prepared and scheduled in accordance with GEF operational criteria.
- Short-term mitigation projects will be country-driven and approved individually on the basis of GEF operational criteria.

Because enabling activities are the foundation for much of the GEF portfolio, they are emphasized initially. As the GEF builds on this foundation, the emphasis gradually shifts to the other types of activities. Long-term measures constitute the largest share of the GEF climate change portfolio, with enabling activities in support of national communications a relatively small and declining share. Short-term mitigation projects constitute only a small share of the portfolio, in order to maintain the operational emphasis on long-term measures.

Insofar as it is feasible, projects will be designed and located so as to meet global environmental objectives in other focal areas and to prevent or control land degradation.

GEF Project Preparation and development Facility (GEF-PDF)

Funding for project preparation is available in three categories or "blocks." Block-A grants (up to $25,000) fund the very early stages of project or program identification, and are approved through GEF's implementing agencies. Block-B grants (up to $350,000) fund information gathering necessary to complete project proposals and provide necessary supporting documentation. These grants are approved by the GEF CEO, with attention to the GEF operations committee's recommendations. Block-C grants (up to $1 million) provide additional financing, where required, for larger projects to complete technical design and feasibility work. Block-C grants are normally made available after a project proposal is approved by the GEF Council.

GEF Small Grants Programme (GEF-SGP)

The GEF Small Grants Programme (GEF-SGP) was launched in 1992 by UNDP. The GEF-SGP provides grants of upto US$20,000 and other support to community based groups (CBOs) and non-governmental organizations (NGOs) for activities that address local problems related to the GEF areas of concern. Since its inception, the GEF-SGP has funded over 1300 projects in Africa, North America and the Middle East, Asia and the Pacific, Europe and Latin America and the Caribbean. Today, the programme is operational in over 50 countries.

The decentralized structure of the Small Grants Programme encourages maximum country and community level ownership and initiative. India is one of the participating countries in this programme.

In each participating country, a broad-based National Steering Committee (NSC) provides overall guidance and strategic direction for the programme and screens and selects projects for grant awards. The committee guides the development of a country strategy and establishes country-specific eligibility criteria within the framework of the overall GEF guidelines. Members of the NSC serve on a voluntary basis and typically represent the government (which must endorse the programme); the CBO/NGO community; national academic, scientific, and technical institutions; and the UNDP Country Office.

A national coordinator is responsible for managing the implementation of the country programme. The coordinator works in close partnership with CBOs and NGOs to help them formulate their project proposals, visits the sites of proposed activities, supports the work of the NSC, and ensures sound programme monitoring and evaluation.

GEF/SGP grants are awarded for activities which support community-level action in the biodiversity, climate change, and international waters focal areas. Activities that address land degradation issues-primarily concerning desertification and deforestation can be supported if they relate to one or more of these focal areas.

To be eligible for GEF/SGP support, a project proposed for funding must fit the GEF/SGP country programme strategy and country-specific eligibility criteria approved by the NSC. It must also be consistent with the Operational Strategy and relevant Operational Programs established by the GEF:

- In the biodiversity focal area, activities must promote the conservation and sustainable use of biological resources in arid and semi-arid ecosystems; coastal, marine and freshwater ecosystems; forest ecosystems; or mountain ecosystems.
- In the area of climate change, activities must either demonstrate the removal of local barriers to energy efficiency, or promote the adoption of renewable energy.
- In the international water focal areas, activities must address environmental concerns in a specific water body shared by two or more countries (such as freshwater drainage basin that is regionally significant or a large marine ecosystem), or address land-based threats to international waters.

Given the focus on small-scale, community-level initiatives, the GEF-SGP is not active in the ozone layer focal area. Several different kinds of activities are eligible for funding under the GEF Small Grants Programme:

- Community-based assessment and planning (planning grants): Small amounts of grant funds (typically no more than US$2,000) are available to support pre-project participatory assessment and planning activities designed to strengthen community participation in project identification and development.
- Pilot demonstration activities: Most funded projects are activities that test and demonstrate the viability of innovative community level approaches to global environmental problems.
- Capacity development: Although most demonstration projects include capacity development components, grants may be awarded for targeted technical assistance and training activities which focus on developing CBO and NGO capacities in the GEF focal areas.
- Monitoring and analysis: Grants funds may also be made available to intermediary NGOs and research centres (including universities) to support programme monitoring; to help identify, assess, and document best practices; and to prepare case studies of GEF-SGP supported projects. The use of participatory methods in monitoring and analysis activities is encouraged.

  Dissemination, networking, and policy dialogue: In order to leverage GEF-SGP project experience, grant funds are available to support dissemination of innovations and best practices, relevant networking activities, and policy dialogue efforts aimed at promoting a supportive policy environment for community-level action in the GEF focal areas.

GEF Small Grants Programme (GEF-SGP)

Application for Grant

National and local NGOs and CBOs may propose projects for grant support under the Small Grants Programme. Procedures for project proposal screening and approval are generally as follows:

1. The project proponent contacts the SGP national coordinator to receive project application guidelines and forms.
2. With assistance from the national coordinator and using the standard SGP format, the proponent prepares a brief project concept paper and submits this to the coordinator.
3. The national coordinator reviews and pre-screens the concept paper according to GEF criteria and criteria adopted by the NSC for activities in that country.
4. If the project is judged eligible, the project proponent prepares a project proposal; in some cases, this step may be supported by a planning grant.
5. Completed project proposals are submitted by the national coordinator or the NSC.
6. The NSC reviews the proposal and either accepts it, rejects it, or returns it to the proposer with a request that further work be done on formulating and refining the project data.
7. Approved proposals enter the national GEF/SGP work programme. GEF/SGP grants are usually paid in three installments: an up-front payment to initiate the project; a mid-term payment upon receipt of a satisfactory progress report; and a final payment on receipt of a satisfactory project completion and final report.

Evaluation and Appraisal Procedures

National and local NGOs and CBOs may propose projects for grant support under the Small Grants Programme. Procedures for project proposal screening and approval are generally as follows:

1. The project proponent contacts the SGP national coordinator to receive project application guidelines and forms.
2. With assistance from the national coordinator and using the standard SGP format, the proponent prepares a brief project concept paper and submits this to the coordinator.
3. The national coordinator reviews and pre-screens the concept paper according to GEF criteria and criteria adopted by the NSC for activities in that country.
4. If the project is judged eligible, the project proponent prepares a project proposal: in some cases, this step may be supported by a planning grant.
5. Completed project proposals are submitted by the national coordinator or the NSC.
6. The NSC reviews the proposal and either accepts it, rejects it, or returns it to the proposer with a request that further work be done on formulating and refining the project data.

   Approved proposals enter the national GEF-SGP work programme. GEF-SGP grants are usually paid in three installments: an up-front payment to initiate the project; a mid-term payment upon receipt of a satisfactory progress report; and a final payment on receipt of a satisfactory project completion and final report.

Contact Address:

For GEF
GEF Secretariat
1818 H Street, NW
Washington, DC 20433, USA

Tel: (202) 473-0508
Fax: (202) 522-3240/3245
e-mail: secretariatofgef@worldbank.org
Website: http://www.gefweb.org/

For GEF unit of UNDP
304 East 45th Street
10th Floor
New York, NY 10017
Email: gefinfo@undp.org
Website: http://www.undp.org/gef/

For GEF-SGP in India
Dr. P. Venkata Ramana
GEF Environment Focal Point
UNDP, 55 Lodi Estate
New Delhi – 110 003

Tel : 011 24628877 ext. 352
Fax : 011 24627614
e-mail:venkata.ramana@undp.org.

4.C.14. International Finance Corporation (IFC)

IFC is a member of the World Bank Group. Although IFC coordinates its activities in many areas with the other institutions in the World Bank Group, IFC generally operates independently as it is legally and financially autonomous with its own Articles of Agreement, share capital, management and staff.

IFC is the largest multilateral source of loan and equity financing for private sector projects in the developing world. It promotes sustainable private sector development primarily by:

- Financing private sector projects located in the developing world.
- Helping private companies in the developing world mobilize financing in international financial markets.
- Providing advice and technical assistance to businesses and governments.

IFC's equity and quasi-equity investments are funded out of its net worth: the total of paid in capital and retained earnings. Strong shareholder support and the substantial paid-in capital base have allowed IFC to raise most of the funds for its lending activities in the international financial markets through its triple-A rated bond issues. Of the funding required for its lending operations, 80 percent is borrowed through public bond issues or private placements. The remaining 20 percent is borrowed from the IBRD.

IFC offers a full array of financial products and services to companies in its developing member countries. These include, but are not restricted to Long-term loans in major and local currencies, at fixed or variable rates; Equity investments; Quasi-equity instruments (such as subordinated loans, preferred stock, income notes, convertible debt); Syndicated loans; Risk management (such as intermediation of currency and interest rate swaps, provision of hedging facilities); Intermediary finance.

IFC can provide financial instruments singly or in whatever combination necessary to ensure that projects are adequately funded from the outset. It can also help structure financial packages, coordinating financing from foreign and local banks and companies, and export credit agencies. IFC charges market rates for its products and does not accept government guarantees.

To ensure the participation of investors and lenders from the private sector, IFC limits the total amount of own-account debt and equity financing it will provide for any single project. For new projects the maximum is 25 percent of the total estimated project costs, or, on an exceptional basis, up 35% for small projects. For expansion projects IFC may provide up to 50% of the project cost, provided its investments do not exceed 25% of the total capitalization of the project company. On average, for every US$1 of IFC financing, other investors and lenders provide over US$5.

IFC investment typically range from US$1 million to US$100 million. Its funds may be used for permanent working capital or for foreign or local expenditures in any IBRD member country to acquire fixed assets.

IFC mobilizes financing directly for sound companies in developing countries by syndicating loans with international commercial banks and underwriting investment funds and corporate securities issues. It also handles private placements of securities.

To be eligible for IFC financing, projects must be profitable for investors, benefit the economy of the host country, and comply with stringent environmental and social guidelines. IFC finances projects in all types of industries and sectors. Although IFC is primarily a financier of private sector projects, it may provide finance for a company with some government ownership, provided there is private sector participation and the venture is run on a commercial basis. It can finance companies that are wholly locally owned as well as joint ventures between foreign and local shareholders.

Small and Medium Enterprises (SME) Program

A partnership with the International Finance Corporation (IFC), a World Bank affiliate, the SME program finances projects that demonstrate a positive environmental impact and have basic financial viability, thus promoting private sector investment opportunities in developing countries.

The objective of the SME Program is to stimulate greater involvement of private sector SMEs (viable businesses with less than $5 million in assets) in addressing two specific objectives of the Global Environment Facility (GEF) – the conservation and sustainable use of biological diversity (referred to as biodiversity) and the reduction of greenhouse gases (or climate change).

Viable institutions experienced in working with SMEs in GEF eligible countries are eligible to act as SME Program Intermediaries. SME Program Intermediaries receive a long-term low

interest rate loan of from $500,000 to $1 million (for up to 10 years at an interest rate as low as 2.5% p.a.). Intermediaries use the loan proceeds to finance, with debt or equity, SMEs or SME projects which address the biodiversity or climate change objectives of the GEF. The maximum amount of SME Program funding an Intermediary may advance to any one SME or SME project is $250,000.

Contact Address:

2121 Pennsylvania Avenue, NW
Washington, DC 20433 USA

Tel: (202) 473-7711
Fax: (202) 974-4384

4.C.15. Asian Development Bank (ADB)

P.O. Box 789
0980 Manila, Philippines

Tel: (632) 632-4444
Fax: (632) 636-2444
Website: www.adb.org

4.C.16. Resident mission in India

37 Golf Links
New Delhi 110 003, India
P.O. Box 3019, Lodi Road HPO
New Delhi 110 003, India

Tel. (91-11) 2469-2578
Fax. (91-11) 2463-6175
Website: http://www.adbindia.org/

4.C.17. W. Alton Jones Foundation

W. Alton Jones Foundation
232 East High Street
Charlottesville, Virginia 22902-5718
Voice :1.804.295.2134
Fax : 1.804.295.1648
Website: www.wajones.org

Appendix 4-D

Project / Funding Information

4.D.1 E & Co

Application Formats and Procedures

The Proposal should be structured in the following way :

I. General Information :

- Project Title
- Geographic Location
- A brief description of the organization, company or person responsible, including its history, goals and structure. Resumes of chief management personnel.
- Contact person
- Complete address and/or PO Box
- Telephone, Fax and E-mail.
- Project summary, including the opportunity, the applicability of the technology, and the local need. The source of energy, the generation scale, and the end-users served should also be identified. Describe the sponsors' previous experience in the project area and any innovative aspects and non-commercial benefits of the project.

II. Technical Information :

- Describe the technology or process used, the fuel supply or resource availability as appropriate and quality control guidelines.
- Emphasize any innovative technologies, applications or approaches to energy provision.
- Describe previous applications of the technology or delivery approach.
- Detail existing and proposed agreements for concessions and energy sales.

III. Financial/Economic Information :

- Information about any previous studies (pre-feassibility, feasibility, marketing) made, including their costs and companies involved.
- Information about the structure of project costs.
- Sources of capital, including identified and proposed investment partners and lenders. Proposed investment structure (debt/equity). Include documentation of all interested investors.

- Requested terms and conditions for funding from E&Co.

IV. Local Market Conditions :

- The overall energy market and investment climate of the project country, including information on tax policies, currency convertibility, profit repatriation, and other relevant legal issues.

V. Risk Assessment :

- Identify the potential risks borne by the project and outline risk mitigation strategies.

Evaluation and Appraisal Procedures

The initial evaluation of proposals will be done on the basis of the following criteria :

- The project must be well defined and involve capable people. Local, in-country developers, sponsors or partners are preferred.
- The project should employ innovative approaches to energy production, use or finance using established renewable or efficiency technologies.
- The project must offer clear social and environmental benefits, while being competitive with conventional alternatives.
- The project must have the potential to be economically self-sufficient in order to attract private investment in the next stages of development.
- The project proposal should be written in English.

As a general policy, E&Co does not provide general or administrative support to energy enterprises, nor does it fund research and development, policy analysis, pre-feasibility studies, the publication of papers, meetings or conferences, or technical demonstrations of new technologies.

Previously supported projects

- **Asia** : KBAL Treadle Pumps (Bangladesh), Grameen Shakti (PV) (Bangladesh), Xaingtan Bergey Wind Turbine Production (People's Rep of China), Electric Rickshaws (India), SELCO PV Co. (India), SST Fresnel Solar Concentrators (India), Palm Oil Biomass (Malaysia), Lotus Energy PV (Nepal), LEDCO Hydro (Nepal), Annapuram Hydro (Nepal), Philippines Bio-Sciences & Engineering Co. (Philippines), Bubunawan Mini Hydro (Philippines), Solar Laterns (Sri Lanka), Vacvina Biogas (Vietnam), and SELCO Vietnam PV Co (Vietnam).
- **Eastern European Projects and Regional Initiatives**: HPA Energy Efficiency (Poland), SELF (Regional), and Pico Hydro (Regional).
- **Africa** : Gam-Solar Renewable Energy Services Co. (The Gambia), Bethel (Lesotho), Noor Holdings PV (Morocco), TAQA PV (Morocco), RAPS Energy Stores (South Africa), and Briquetting of Saw-Dust for Energy Use (Zimbabwe).
- **Latin America** : Energy Efficiency Investment Fund (Costa Rica), Andar PV Electrification Program (Costa Rica), Petrogas (Costa Rica), Soluz Dominicana PV (Dominican Republic), EEN 5 MW Biomas (E1 Salvador), Genesis (Guatemala),

Geoteca Geothermal (Guatemala), Selmeca Hydro (Guatemala), Credieegsa PV (Guatemala), Rio Hondo Hydro (Guatemala), Atlantis Small Hydro (Honduras), Bamboo to Electricity (Honduras), Prolena Efficient Woodstoves (Honduras), Soluz Honduras PV (Honduras), Solar Ocean Energy (Jamaica), Cerro Prieto Biphase Turhine (Mexico), Integrated Solar Combined Cycle system (Mexico), Vehizero Electric Hybrid Vehicles (Mexico), E1 Hoyo-Monte Galan Geothermal (Nicaragua), Hidropantasma Hydro Electric (Nicaragua), VENSa 30 MW Wind (Nicaragua), Kanata Hydro (Bolivia), Red Ceramics Fuel Substitution (Bolivia), Riberalta 1 MW Biomass (Bolivia), FTV PV and Water Pumping (Brazil), and Quitaracsa (Peru).

4.D.2 Environmental Enterprises Assistance Fund (EEAF)

Previously Supported Projects

- Solar PV distributor – Domician Republic (1992),
- Independent hydro developer and efficiency services provider – Costa Rica (1992),
- Charcoal exporter – Indonesia (1992),
- Activated carbon manufacturer – Indonesia (1993),
- Ecotourism company – Costa Rica (1993),
- Small hydro developer – Costa Rica (1994),
- Water Pollution Control Company – Indonesia (1994),
- Producer of horticultural growing medium from coconut husk waste – Philippines (1992),
- Organic apple production and processing – Poland (1995),
- Private tree plantation expansion – Costa Rica (1995),
- Private sewage treatment and drinking water utility expansion – Costa rica (1995),
- Photovoltaic ("PV") leasing company – Dominican Republic (1995 and 1997),
- Assembly and sale of household solar photovoltaic products – Indonesia (1995),
- Construction of water treatment and recycling facility for coffee processor cooperative – Costa Rica (1995),
- Environmental tourism lodges – Indonesia (1996),
- Solar water heater leasing company – Costa Rica (1996),
- Small hydro developer – Costa Rica (1996),
- Environmental Fund for Central America – Costa Rica (1996),
- Soil Erosion Control Company – E1 Salvador (1996),
- Sustainable oyster growing – Mexico (1997),
- Water Treatment for Tannery – Costa Rica (1997),
- Air Pollution Monitoring Company – Philippines (1997),
- Energy Services Company – Mexico (1998),

- Organic Berry Exporter and Processor – Chile (1998),
- International Energy Services company – Mexico (1998),
- Certified Sustainable Hardwood Charcoal Company – Mexico (1999).

4.D.3 Triodos Bank, The Netherlands

Application Formats and Procedures

Loan application is simple and follows several basic steps:

- Make initial contact by phone. Have ready a brief summary of what is intended.
- Alternatively, send a brief written summary, typically about 3 pages. Focus on what you want to do so Triodos can decide whether it can support your loan application in principle.
- Triodos will then discuss your application with you by phone and ask you to send your detailed business plan if appropriate. This needs to cover all the key aspects of your project.
- If appropriate Triodos will arrange to meet you, usually at your premises, for a more detailed discussion.
- Triodos comes to a decision about applications at its loan committee meeting held on Monday mornings. If it is a positive decision, it will make you an offer, including any terms and conditions attaching to the loan.
- If the offer is acceptable to you, you will need to send Triodos a written acceptance.
- The formalities of putting the loan security in place are completed and the loan is advanced.

4.D.4 Export Import Bank of the United States (Ex-Im Bank)

Application Procedure

- Application for Ex-Im Bank financing for medium- and long-term loans and guarantees can be made using the Letter of Interest (LI) Application or the Preliminary Commitment (PC)/Final Commitment (AP) Application. Application should be made after determining
- that you are facing competition supported by foreign export credit agencies or
- that financing from the private sector is either unavailable or the amount and/or terms offered are inadequate to win the export sale. In most cases, either the LI or AP will be appropriate.
- The Business Development Division should be contacted for information about applying for Ex-Im Bank export credit insurance and working capital guarantees.
- Applications received without the processing fee are not reviewed.

The private banking sector plays a major role in facilitating U.S. exports by providing financial services independently and in conjunction with Ex-Im Bank. Ex-Im Bank encourages U.S. exporters to establish a relationship with a commercial financing institution.

Applying for a Letter of Interest

The Letter of Interest (LI) is an indication of Ex-Im Bank's willingness to consider financing a given export transaction. Application for a LI should be made during the bidding or negotiating stage of an export sale when the following conditions exist:

- An indication from Ex-Im Bank is needed on the general eligibility of the transaction participants and the goods and services to be exported.
- The repayment terms and other program guidelines in the LI are sufficient for the bid.

An LI is generally issued within seven business days after Ex-Im Bank receives the application. The terms and conditions in the LI are valid for six months. At the request of the applicant, the LI can be renewed for a maximum of three six-month extensions of the LI Expiry Date, which, if approved by Ex-Im Bank, would extend the validity of the LI for a total term of two years. However, the terms are subject to change.

The review of the LI application includes comparing the transaction information to Ex-Im Bank's cover policy and identifying any potential issues that may need to be analyzed in more detail when an AP application is reviewed.

Any responsible party may apply for an LI. The applicant for an LI is usually the U.S. exporter or a financial advisor representing the exporter. A financial advisor acting on behalf of a foreign buyer may also apply for an LI, but the LI will be issued directly to the foreign buyer. A foreign buyer or borrower may also apply. The non-refundable processing fee for an LI is $100.

LIs are not available for credit guarantee facilities or exports of items to be used for nuclear power plants, nuclear fuel research reactors and related facilities.

Where to Apply for a Letter of Interest

Ex-Im Bank offers a secure, Internet-based, online Letter of Interest Application. Applicants can submit, save and/or edit a LI application and make credit card payment online.

To mail or fax an application and make payment by check or money order, completed and signed LI application with the required attachments and a check or money order made payable to the Export-Import Bank of the U.S. should be mailed to the Export-Import Bank of the U.S.

If payment has to be made by credit card (not online), completed and signed LI application with the required attachments and credit card information should either be mailed to the address above, or faxed to the Export-Import Bank of the U.S.

Applying for a Final Commitment

The AP is an authorization of financing by Ex-Im Bank. Application for an AP should be made when the export contract has been awarded. Ex-Im Bank will perform a comprehensive evaluation of the transaction and any related issues. The AP will specify the exposure fee which can be financed by Ex-Im Bank. It is not necessary to have an LI or PC before applying for an AP.

The applicant for an AP is responsible for payment of Ex-Im Bank's commitment fee for a loan or guarantee or facility fee for a credit guarantee facility. If the applicant is the lender, the lender may require the borrower to accept this responsibility in writing prior to submitting the AP application.

Only the foreign borrower may apply for an AP for an Ex-Im Bank direct loan. The foreign borrower or guaranteed lender may apply for an AP for a guarantee. If the lender has not been selected, only the borrower may apply for an AP for a guarantee. In cases where the borrower is a special purpose vehicle, the applicant must be the guarantor, if there is one. If there is no guarantor, the applicant must be the company obligated to make payments to the special purpose vehicle.

While the PC/AP Application is used to apply for limited recourse project financing, other types of financing commitments are offered and a separate fee arrangement applies.

Where to Apply for a Final Commitment

Completed and signed AP Application with the required attachments should be mailed to the Export-Import Bank of the U.S.

Applying for a Preliminary Commitment

The PC is an offer of Ex-Im Bank financing subject to the award of the export contract and Ex-Im Bank's review of an AP application. Ex-Im Bank reserves the right to determine when a request for a PC is justified and has established the following three criteria for the appropriate use of a PC.

- If the award of the export contract is subject to a formal competitive bid process in which there is clear evidence that an actual quote of the definitive rates, fees, terms, and conditions of Ex-Im Bank support must be presented, then Ex-Im Bank will accept an application for a PC.
- If the exports are items to be used for nuclear power plants, nuclear fuel research reactors and related facilities, Ex-Im Bank will require a PC application. An LI is not available.
- If the applicant requests resolution of significant financial, technical, environmental, or policy issues which would have a critical impact on the availability of Ex-Im Bank support, Ex-Im Bank will accept an application for a PC only if it determines that the issues are significant enough to warrant Ex-Im Bank's review prior to the award of the export contract.

In order for Ex-Im Bank to perform the necessary review of program and credit issues required to issue a PC and specify an exposure fee, the PC/AP Application requires more detailed information pertaining to the transaction than the LI Application. Examples of case-specific issues include: economic impact on U.S. production; eligibility of military-related products; environmental impact of the project; and credit review of the borrower (and guarantor, if any). Ex-Im Bank will issue a PC subject to final review of outstanding issues when information is not available at the PC stage. However, Ex-Im Bank will require sufficient information on the borrower (and guarantor, if any) in order to establish a specific exposure fee.

The applicant has two PC options: a four-month PC with a cap on Ex-Im Bank's direct loan interest rate or a six-month PC with no interest rate cap. The terms and conditions of the PC are valid for four months or six months, depending on the option selected. At the request of the applicant, the PC can be renewed at four-month or six-month intervals, but the terms are subject to change. Large aircraft transactions are not eligible for the four-month PC option with the interest rate cap. All PCs for large aircraft transactions will continue to be valid for six months and can be renewed at six-month intervals, but the terms are subject to change. PCs are not available for credit guarantee facilities.

Any responsible party may apply for a PC. The applicant for a PC is usually the U.S. exporter or a financial advisor representing the exporter. A foreign buyer or borrower may also apply for a PC.

The processing fee for a PC is equivalent to 1/10 of one percent of the requested amount of the financing (excluding the exposure fee), up to a maximum of $25,000. If the foreign buyer or borrower applies for a PC, the processing fee may be paid by the U.S. exporter.

The higher processing fee for the PC is intended to cover the additional transaction processing costs associated with issuing a PC and to encourage appropriate use of the LI. Exceptionally, if the Board approves a PC with a tied aid offer, Ex-Im Bank will immediately refund the PC processing fee regardless of whether the exporter eventually wins or loses the export contract.

Where to Apply for a Preliminary Commitment

Completed and signed AP Application with the required attachments should be mailed to the Export-Import Bank of the U.S.

4.D.5 The United States Agency for International Development (USAID)

Previously Supported Energy Projects

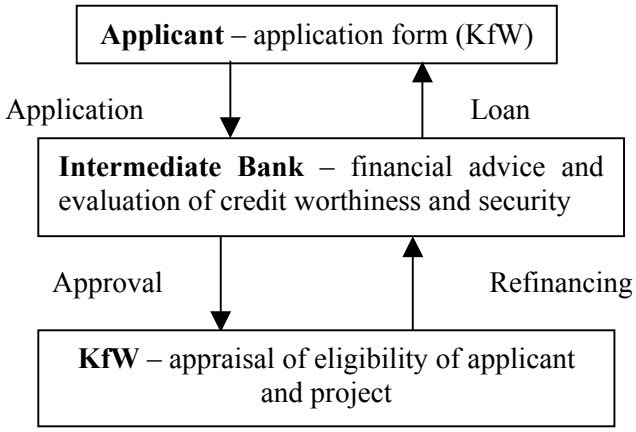
1. In the State of Haryana, USAID identified and developed projects worth $40 million for the World Bank to improve low-tension electricity distribution.
2. USAID technical assistance in the states of Punjab, Haryana, and West Bengal is helping establish State Electricity Regulatory Commissions (SERC) to improve power sector efficiency.
3. USAID recommendations have led to the reduction of 2 million metric tons of carbon dioxide emissions by power plants of the National Thermal Power Corporation (NTPC) and by the Gujarat Electricity Board (GEB).
4. The signing of a new partnership agreement between leading Indian and U.S. power utilities and regulatory agencies provides a long-term mechanism for the transfer of U.S. technology and experience. The Energy Training Program also provides training for ongoing regulatory reform and energy efficiency.
5. USAID's support for renewable energy technologies has resulted in the installation of nearly 200 MW of sugar cogeneration plants, (using sugarcane waste for power) that will offset approximately one million tons of carbon dioxide annually.
6. USAID credit assistance to the Indian Solar Electric Light Company helped establish a multi-million credit line for the company to bring power for pumping water, lighting and communication to 2500 rural homes.

7. Zero-emission electric vehicles, to replace the heavily polluting three-wheelers, are being introduced to India through an Indo-U.S. joint venture brokered by USAID.
8. USAID's Clean Technologies Initiative providing assistance to Indian industries to adopt certified environmental management systems and to enhance the capacity of industry to incorporate best technologies and practices for enhanced productivity and profitability. Energy intensive sectors of cement, thermal power and steel are targeted for assistance. Nine firms will achieve ISO 14000 certification under a pilot phase.
9. USAID's Urban and Environmental Credit Loan Guarantee of up to $25 million helped launch South Asia's first municipal bond for improvement of water, sewerage and waste collection systems. This bond, for the city of Ahmedabad in Gujarat state, has encouraged thirteen other Indian cities seek credit ratings for future bonds or other debt instruments.
10. USAID technical and capital assistance is making a $200 million infrastructure project in Tirupur in Tamil Nadu a reality. Negotiations for the first build-own-transfer water supply and sewer project have been completed, with construction to commence in 1999.
11. Responding to the needs of both city governments and NGOs working on community-based environmental initiatives. USAID provided technical assistance to develop a tool kit of improved environmental management approaches and helped five cities prepare environmental status reports/workbooks, comparative risk assessments, and environmental action plans.
12. Through its Trade in Environmental Services and Technologies (TEST) program, USAID has collaborated with FICCI's Business Information Services Network and ICICI Limited to establish an online Environmental Information Center. The website is dedicated to facilitating and promoting Industry Actions for environmental protection and addressing key issues such as global climate change, adoption of clean technologies, waste management and energy efficiency.
13. The United States Asia Environmental Partnership (USAEP) is an interagency and public private partnership programme led by USAID. USAEP activities focus on promoting an Asian 'clean revolution' - the continuing development and adoption of less polluting and more resource efficient products, processes and services in the Asia regions.

4.D.6 Kreditanstalt fur Wiederaufbau (KfW)

Application Procedure

Application for a KfW promotional loan can be made with any bank or savings bank. KfW also cooperates with a number of foreign banks which handle its programme loans.



The intermediate bank, frequently the investor's principal bank, appraises the financial and business situation of the applicant and collect in the security for the loan. In most cases KfW and the intermediate bank share the liability. It generally takes 3 to 4 weeks to decide on a loan.

4.D.7 Netherlands Development Finance Company (FMO)

Criteria Memorandum

Introduction

Since FMO's object according to its Articles of Association is the basis of its financing policy, it is appropriate to restate that object in full here:

The object of the company is to contribute to the advancement of productive enterprises in developing countries, to the benefit of economic and social advancement of those countries, in accordance with the aims pursued by their governments and the policy of the Netherlands government on development cooperation, by:

- providing finance to or on behalf of natural persons and legal entities engaged or intending to engage in a business or profession in a developing country by taking equity interests, advancing loans and providing subsidies;
- acting as intermediary in raising finance on behalf of the natural persons and legal entities referred to under a above;
- providing appropriate forms of finance for technical assistance, training, investment, promotion activities and other activities which may be conducive to the advancement of productive enterprises in developing countries;
- engaging in any other activity, in the widest sense, which is conducive to the advancement of productive enterprises in developing countries.

To facilitate the identification and selection of projects and the implementation of appropriate financial services, a number of policy principles and criteria have been defined by the Board of Directors and approved by the Supervisory Board to serve as a guideline and ensure consistency with the current policy of the Netherlands government on development cooperation. These criteria are updated to reflect changing circumstances, partly on the basis of the regular semi-annual policy meetings between the State and FMO.

Policy principles

The operational policy is based on the following principles:

- ***catalysis***: maximizing the flow of finance to FMO's target group. This requires FMO to maximize the growth in and utilization of its equity and the leverage provided by its financing activities;
- ***additionality***: only providing financial services which the market does not provide, or does not provide on an adequate scale or on reasonable terms;
- ***good governance***: adherence to the principles of good governance in the widest sense. FMO sets the standard in several areas of its operations, including social policy and environmental policy.

Choice of country

"Developing countries" are countries which were classified by the World Bank in its recent World Development Report as low-income economies, lower middle-income economies or upper middle-income economies, or countries which were classified as such when the finance was approved and countries or regions expressly designated as such by the Netherlands government. If one of the countries as defined above fails to meet the political criteria against which they are tested from time to time by the Netherlands government, the government will notify FMO and FMO will refrain from any new business in that country. It should be noted that existing investments in countries which fall into political disfavour will not be withdrawn as a matter of course. FMO will, whenever possible, wind these investments down.

FMO also applies the following principles:

- no finance is to be provided in a country which is in a state of war or armed conflict with another country;
- it attempts to ensure that low-income and lower middle-income economies account for approximately 70% of investments, approximately half (35%) of which being accounted for by low-income economies;
- where possible, additional manpower should be deployed and specific programmes and/or instruments should be developed and implemented for countries or groups of countries for which the Netherlands government from time to time requests FMO's particular attention, to the extent that this is consistent with the policy framework. Agreements in this regard will be recorded in "side letters".

Choice of sector

Activities qualifying for finance are commercial enterprises in agriculture and fisheries, mining, agribusiness, manufacturing industry, the service sector (including utilities) and banking and insurance in the widest sense. The emphasis is on development of the financial sector. Excluded are activities and institutions which are in conflict with statutory provisions or government regulations or measures or which offend against public morals in the Netherlands and/or the developing country or are in conflict with imperative rules of international law. Activities in the field of or relating to armaments and munitions are similarly excluded.

Other criteria

- FMO's clients or counterparties are natural persons, partnerships and/or legal entities associated with or engaged in productive enterprises; proprietors and managers must be of irreproachable business integrity, having due regard for the standards and conventions of the country concerned;
- the continuity of the client/counterparty should be assured by reasonable prospects of earning a positive return on investment;
- the client/counterparty must have the support of one or more entrepreneurs of good financial standing, who are themselves able to assume a substantial financial risk, and must be headed by capable – preferably local - managers. Financial institutions must be adequately regulated. If the local regulatory regime is unsatisfactory, FMO will seek to make good this deficit itself. It should be possible to demonstrate on the basis of a thorough analysis of all potential risks that the risks can be managed and are therefore acceptable;
- jobs created directly within the client/counterparty's operation should be sustainable. The terms of employment and social provisions should be of good standard relative to the local situation. Entrepreneurs and managers must demonstrate awareness of the importance of good terms of employment and social provisions;
- where applicable, FMO's clients/counterparties must as a minimum comply with the local environmental legislation. If possible, they should also comply with international standards, taking the standards of the World Bank group as a benchmark;
- the technology employed should be proven technology; innovative technologies are only considered if they are implemented by highly experienced clients/counterparties;
- although the selection of clients/counterparties does not depend on whether Dutch interests are involved, Dutch interests will be promoted in so far as this is practical, feasible, effective and advantageous to the client/counterparty.

Conclusion

Internal policy documents, guidelines and procedures have been prepared, based on these policy principles and criteria, which are updated from time to time to reflect the changes in FMO's sphere of operations and services.

4.D.8 The World Bank

World Bank lending Instruments

➢ **Investment Lending**

Investment loans provide financing for a wide range of activities aimed at creating the physical and social infrastructure necessary for poverty alleviation and sustainable development. Over the past two decades, investment lending has, on average, accounted for 75 to 80 percent of all Bank lending.

The nature of investment lending has evolved over time. Originally focused on hardware, engineering services, and bricks and mortar, investment lending has come to focus more on institution building, social development, and the public policy infrastructure needed to facilitate private sector activity. Projects range from urban poverty reduction (involving private

contractors in new housing construction, for example) to rural development (formalizing land tenure to increase the security of small farmers); water and sanitation (improving the efficiency of water utilities); natural resource management (providing training in sustainable forestry and farming); post-conflict reconstruction (reintegrating soldiers into communities); education (promoting the education of girls); and health (establishing rural clinics and training health care workers).

Eligibility
Investment loans are available to IBRD and IDA borrowers not in arrears with the Bank Group.

Disbursement
Funds are disbursed against specific foreign or local expenditures related to the investment project, including pre-identified equipment, materials, civil works, technical and consulting services, studies, and incremental recurrent costs. Procurement of these goods, works and services is an important aspect of project implementation. To ensure satisfactory performance, the loan agreement may include conditions of disbursement for specific project components.

Instruments
The large majority of investment loans are either Specific Investment Loans or Sector Investment and Maintenance Loans. Adaptable Program Loans and Learning and Innovation Loans were recently introduced to provide more innovation and flexibility. Other instruments tailored to borrowers, specific needs are Technical Assistance Loans, Financial Intermediary Loans, and Emergency Recovery Loans.

- **Adjustment Lending**

Adjustment loans provide quick-disbursing assistance to countries with external financing needs, to support structural reforms in a sector or the economy as a whole. They support the policy and institutional changes needed to create an environment conducive to sustained and equitable growth. Over the past two decades, adjustment lending has accounted, on average, for 20 to 25 percent of total Bank lending.

Adjustment loans were originally designed to provide support for macroeconomic policy reforms, including reforms in trade policy and agriculture. Over time, they have evolved to focus more on structural, financial sector, and social policy reform, and on improving public sector resource management. Adjustment operations now generally aim to promote competitive market structures (for example, legal and regulatory reform), correct distortions in incentive regimes (taxation and trade reform), establish appropriate monitoring and safeguards (financial sector reform), create an environment conducive to private sector investment (judicial reform, adoption of a modern investment code), encourage private sector activity (privatization and public-private partnerships), promote good governance (civil service reform), and mitigate short-term adverse effects of adjustment (establishment of social protection funds).

Eligibility
Adjustment loans are available to IBRD and IDA borrowers not in arrears to the Bank Group. (Only IBRD borrowers are eligible for special structural adjustment loans; see below.) Eligibility for an adjustment loan also requires agreement on monitorable policy and institutional reform actions, and satisfactory macroeconomic management. Coordination with the IMF is an essential part of the preparation of an adjustment loan.

Disbursement
Funds are disbursed in one or more stages (tranches) into a special deposit account. Tranches are released when the borrower complies with stipulated release conditions, such as the passage

of reform legislation, the achievement of certain performance benchmarks, or other evidence of progress toward a satisfactory macroeconomic framework. Funds may be disbursed against a *positive list* of specific imports needed for the operation, or subject to a *negative list* of prohibited expenditures (e.g. military and luxury items). Since 1996, the negative list has typically been used.

Instruments
Structural and Sector Adjustment Loans are the most commonly used adjustment instruments. Other types of adjustment loans, designed to respond to specific borrower needs, are Programmatic and Special Structural Adjustment Loans, and Rehabilitation Loans. Debt Reduction Loans, while not adjustment loans, often accompany adjustment operations.

- **Specific Investment Loan**

Specific Investment Loans (SILs) support the creation, rehabilitation, and maintenance of economic, social and institutional infrastructure. In addition, SILs may finance consultant services and management and training programs.

- **Sector Investment and Maintenance Loan**

Sector Investment and Maintenance Loans (SIMs) focus on public expenditure programs in particular sectors. They aim to bring sector expenditures, policies and performance in line with a country's development priorities by helping to create an appropriate balance among new capital investments, rehabilitation, reconstruction, and maintenance. They also help the borrower develop the institutional capacity to plan, implement and monitor the expenditure or investment program.

Special design features
SIMs typically involve agreement on the composition of sector investment programs, and on sectoral policy reforms necessary for the program's success. They also involve strengthening the institutions that will carry out the program.

When are SIMs used?
The SIM is most appropriate where a sector expenditure program needs extensive coordination, particularly if the program involves a large share of donor-financed investments. Therefore, SIMs typically involve coordinated efforts among the multilateral and bilateral donors providing assistance to the sector.

- **Adaptable Program Loan**

Adaptable program loans (APLs) provide phased support for long-term development programs. They involve a series of loans that build on the lessons learned from the previous loan(s) in the series.

Special design features
APLs involve agreement on (1) the phased long-term development program supported by the loan, (2) sector policies relevant to the phase being supported, and (3) priorities for sector investments and recurrent expenditures. Progress in each phase of the program is reviewed and evaluated, and additional analysis undertaken as necessary, before the subsequent phase can be initiated.

When are APLs used?
APLs are used when sustained changes in institutions, organisations, or behavior are key to successfully implementing a program. They can be used to support a phased program of sector

restructuring, or systemic reform in the power, water, health, education, and natural resource management sectors, where time is required to build consensus and convince diverse actors of the benefits of politically and economically difficult reforms.

Example: An example in this category is:
India Power Sector Restructuring Program Loan with a loan amount of US 210 million. This project, first in a series, is part of an adaptable program that, over the next eight years, will help transform Andhra Pradesh, power sector, now a major drain on the state, budget into a contributor of resources for priority sectors.

- **Learning and Innovation Loan**

The learning and innovation loan (LIL) supports small pilot-type investment and capacity-building projects that, if successful, could lead to larger projects that would mainstream the learning and results of the LIL.

Special design features
LILs do not exceed $5 million, and are normally implemented over 2 to 3 years, a much shorter period than most Bank investment loans. All LILs include an effective monitoring and evaluation system to capture lessons learned.

When are LILs used?
LILs are used to test new approaches, often in start-up situations and with new borrowers. LILs may be used to build trust among stakeholders, test institutions capacity and pilot approaches in preparation for larger projects, support locally based development initiatives, and launch promising operations that require flexible planning, based on learning from initial results.

- **Technical Assistance Loan**

The technical assistance loan (TAL) is used to build institutional capacity in the borrower country. It may focus on organisational arrangements, staffing methods, and technical, physical, or financial resources in key agencies.

Special design features
TALs require agreement on specific action programs to strengthen organisations, and on terms of reference for the appointment of consultants and local counterparts.

When are TALs used?
TALs are used to build capacity in entities directly concerned with implementing policies, strategies, and reforms that promote economic and social development. They also build capacity related to public sector reform and to the preparation, implementation and maintenance of investments. TALs often complement investment or adjustment operations by supporting specific tasks related to their preparation or implementation.

- **Financial Intermediary Loan**

Financial intermediary loans (FILs) provide long-term resources to local financial institutions to finance real section investment needs. The financial institutions assume credit risk on each subproject.

Special eligibility and design features
Eligibility for a FIL requires a satisfactory macroeconomic and sector framework. The FIL supports financial sector reforms, interest rate policies, subsidies, measures to enhance financial system competition, institutional development of financial intermediaries, that have a direct and

substantial bearing on the operational efficiency of financial intermediaries. FILs may accompany adjustment operations that address financial sector policy issues, and may contain technical assistance components.

The borrower may pass on Bank funds to a financial intermediary as either a loan or equity. The financial intermediary, in turn, may pass on Bank funds to subborrowers as subloans or equity, to finance projects that aim to increase the production of goods and services. To ensure satisfactory performance, these subprojects must meet specific eligibility and development criteria. Bank funds are disturbed against eligible expenditures for goods, works, and services, including technical assistance.

When are FILs used?

FILs help to develop sound financial sector policies and institutions, promote the operational efficiency of those institutions in a competitive environment, improve the terms of credit to enterprises and households, and promote private investment.

- **Emergency Recovery Loan**

Emergency recovery loans (ERLs) support the restoration of assets and production levels immediately after an extraordinary even, such as war, civil disturbance, or natural disaster that seriously disrupts a borrower, economy. They can also used to strengthen the management and implementation of reconstruction efforts, and to develop disaster-resilient technology and early warning systems to prevent or mitigate the impact of future emergencies.

Special design features
To accommodate the emergency nature of the operation, abbreviated processing may be used. To ERL may include fast-disturbing components that finance a list of imports identified as necessary to an effective recovery program.

When are ERLs used?
ERLs focus on the rapid reconstruction of economic, social, and physical systems within a limited period, normally 2 to 3 years. They finance investment and productive activities, rather than relief or consumption. For recurring events such as annual flooding, or for a slow-onset disaster such as drought, a SIL is usually more appropriate.

- **Structural Adjustment Loan**

The structural adjustment loan (SAL) supports reforms that promote growth, efficient use of resources, and sustainable balance of payments over the medium and long term.

When are SALs used?
SALs typically focus on major macroeconomic and structural issues that cut across sectors, such as trade policy, resource mobilisation, public sector management, private sector development, and social safety nets.

- **Sector Adjustment Loan**

The sector adjustment loan (SECAL) supports policy changes and institutional reforms in a specific sector.

When are SECALs used?
SECALs focus on major sectoral issues such as the incentive and regulatory framework for private sector development, institutional capability, and sector expenditure programs.

Special features
SECALs are subject to an environmental assessment.

- **Programmatic Structural Adjustment Loan**

The programmatic structural adjustment loan (PSAL) is provided in the context of a multiyear framework of phased support for a medium-term government program of policy reforms and institution building.

Special design features

PSALs support the government, program through a series of loans made over 3 to 5 years, each building on the preceding loan to support sustained, sequential structural and social reforms. Each individual adjustment loan under a PSAL typically supports a one-year program, with its tranches (if there is more than one tranche) spaced regularly throughout the year and tied to specific target measures. Monitorable indicators are built into the design of each loan in the series. The eligibility and disbursement criteria are the same as for a SAL.

When are PSALs used?
PSALs respond to country needs for Bank financing and advice in support of structural and social reforms that involve continuous, incremental policy changes and institution building over several years. The focus is on step-by-step capacity building and reform, typically in the public sector, aimed at strengthening public expenditure management and improving governance, resource allocation, and public service delivery. PSALs rely on a solid foundation of completed or parallel analytic and advisory work in these areas.

- **Special Structural Adjustment Loan**

The special structural adjustment loan (SSAL) supports structural and social reforms by creditworthy borrowers approaching a possible crisis, or already in crisis, and with exceptional external financing needs. These loans help countries to prevent a crisis or , if one occurs, mitigate its adverse economic and social impacts.

Special eligibility and design features

SSALs are available to countries facing an actual or potential financial crisis with substantial structural and social dimensions. They support structural, social and macroeconomic policy reforms that are typically part of an international support package put together by multilateral donors, bilateral donors, and private lenders and investors. An IMF program must be in place.

SSALs have different terms than other Bank loans. They carry a 5 year maturity with a 3 year grace period, and a minimum loan spread of 400 basis points over USD LIBOR equivalent. There are no waivers of interest or commitment charges.

- **Rehabilitation Loan**

The rehabilitation loan (RIL) supports government policy reforms programs aimed at creating an environment conducive to private sector investment, where foreign exchange is required for urgent rehabilitation of key infrastructure and productive facilities. The focus is on key short-term macroeconomic and sector policy reforms needed to reverse declines in infrastructure capacity and productive assets.

When are RILs used?
RILs are typically used when a country is committed to overall economic reform but a SAL cannot be used because the structural reform agenda is still emerging. RILS are appropriate in transition economic and post-conflict situations.

- **Debt Reduction Loan**

The debt reduction loan (DRL) helps eligible highly indebted countries reduce commercial debt and debt service to a manageable level, as part of a medium-term financing plan in support of sustainable growth. The focus is on rationalising the country's external commercial bank debt, by either converting it to lower-interest instruments or buying it back at a discount.

Special features : Although not an adjustment operation, the DRL is often processed in conjunction with an adjustment loan, part of which may also be used to finance the debt reduction operation. Bank staff help to design an operation that meets the Bank's criteria, but the Bank does not participate directly in negotiations between the debtor and its commercial creditors on the terms of the operation.

Funds are disbursed against tendered commercial debt for buy-backs or for purchasing acceptable collateral, to reduce principal and interest payments on new instruments issued in exchange for existing debt.

4.D.9 Global Environment Facility (GEF)

GEF Small Grants Programme (GEF-SGP)

Application for Grant
National and local NGOs and CBOs may propose projects for grant support under the Small Grants Programme. Procedures for project proposal screening and approval are generally as follows:

1. The project proponent contacts the SGP national coordinator to receive project application guidelines and forms.
2. With assistance from the national coordinator and using the standard SGP format, the proponent prepares a brief project concept paper and submits this to the coordinator.
3. The national coordinator reviews and pre-screens the concept paper according to GEF criteria and criteria adopted by the NSC for activities in that country.
4. If the project is judged eligible, the project proponent prepares a project proposal; in some cases, this step may be supported by a planning grant.
5. Completed project proposals are submitted by the national coordinator or the NSC.
6. The NSC reviews the proposal and either accepts it, rejects it, or returns it to the proposer with a request that further work be done on formulating and refining the project data.
7. Approved proposals enter the national GEF/SGP work programme. GEF/SGP grants are usually paid in three installments: an up-front payment to initiate the project; a mid-term payment upon receipt of a satisfactory progress report; and a final payment on receipt of a satisfactory project completion and final report.

Evaluation and Appraisal Procedures

National and local NGOs and CBOs may propose projects for grant support under the Small Grants Programme. Procedures for project proposal screening and approval are generally as follows:

1. The project proponent contacts the SGP national coordinator to receive project application guidelines and forms.
2. With assistance from the national coordinator and using the standard SGP format, the proponent prepares a brief project concept paper and submits this to the coordinator.
3. The national coordinator reviews and pre-screens the concept paper according to GEF criteria and criteria adopted by the NSC for activities in that country.
4. If the project is judged eligible, the project proponent prepares a project proposal: in some cases, this step may be supported by a planning grant.
5. Completed project proposals are submitted by the national coordinator or the NSC.
6. The NSC reviews the proposal and either accepts it, rejects it, or returns it to the proposer with a request that further work be done on formulating and refining the project data.

Approved proposals enter the national GEF-SGP work programme. GEF-SGP grants are usually paid in three installments: an up-front payment to initiate the project; a mid-term payment upon receipt of a satisfactory progress report; and a final payment on receipt of a satisfactory project completion and final report.

4.D.10 Asian Development Bank (ADB)

Project Cycle

- **Loan preparation**

Loan preparation involves justifying the technical feasibility, economic viability, and financial soundness of a project. This preparation phase can be undertaken by the government or any other agency, but ADB can also assist by providing technical assistance grants to the government. Using the grants, ADB hires consultants to undertake a feasibility study of the project. The consultants' work is closely monitored by ADB staff and the draft final report is reviewed at a meeting attended by representatives of the government, ADB, and the consultants.

- **Project examination**

Project feasibility, as presented in the consultants' report, is then examined by ADB, first through a fact-finding mission and then through an appraisal mission. The mission teams, in consultation with the government, examine the project's technical, financial, economic, environmental, marketing, and management aspects and potential social impact. Loan terms and conditions are discussed. Following the examination in the field, the appraisal mission team prepares a report and draws up a draft loan agreement for negotiation.

- **Loan negotiations**

After negotiations with the government, the loan proposal is submitted to ADB's Board of Directors for approval. The loan agreement is then signed by the ADB President and representatives of the government and the executing agency. The loan takes effect once certain conditions are met.

- **Project implementation**

The project is implemented by the executing agency according to the agreed schedule and procedures. Project consultants are recruited, the detailed engineering design and bidding documents are prepared, machinery and equipment are procured, and civil works are constructed and installed. ADB's Project Divisions review the implementation in close coordination with the borrower and the executing agencies. ADB disburses the loan for approved expenditures, as provided in the loan agreement.

- **Project completion**

After the project facilities are completed and commissioned, ADB prepares a project completion report to document the implementation experience. ADB's Operations Evaluation Office evaluates the formulation and implementation of projects on a selective basis and prepares a project performance audit report containing an assessment of the project formulation and implementation; its economic, financial, and social benefits; and its environmental impact.

4.D.11 W. Alton Jones Foundation

Synopsis of Projects

Alliance to Save Energy
Web Address : www.ase.org/
Location : Washington, DC, U.S.A.
Grant Amount : $ 106,000
Description : To decrease energy consumption in China using energy-efficient

Grant Year : 1998

International Institute for Energy Conservation

Web Address : www.cerf.org/iiec/
Location : London, SE16 7TX, England
Grant Amount : $40,000
Description : To promote a sustainable-energy future for the Ukraine by strengthening NGO involvement and public participation in energy policy and investment decision-making.
Grant Year : 1997

International Institute for Energy Conservation
Web Address : www.cerf.org/iiec/
Location : Washington, DC, U.S.A.
Grant Amount : $0
Description : To foster a renewable-energy market in Asia by linking manufacturers with financiers, distribution and wholesale dealers, local retailers, service providers and end users.
Grant Year : 1998

Lawrence Berkeley National Laboratory
Location : Berkeley, CA, U.S.A
Grant Amount : $80,000
Description : To promote energy-efficient building design, construction and operations in China
Grant Year : 1998

Least Cost Energy Analysis Project
Location : San Francisco, CA, U.S.A.
Grant Amount : $8,000
Description : To organise a series of seminars and public events on environmental issues related to the restructuring of the energy market in Brazil and Amazonas.
Grant Year : 1997

Natural Resources Defense Council
Web Address: ww.nrdc.org, www.nrdc.org/nuclear
Location : New York, NY, U.S.A.
Grant Amount : $300,000
Description : To develop a model energy project in Chongquing, China, that will help guide energy policy development and investment.
Grant Year : 1998

Regulatory Assistance Project
Web Address : www.rapmine.org
Location : Gardiner, ME, U.S.A.
Grant Amount : $40,000
Description : To engage China's State Environmental Protection Administration in developing a new environmental standard for emissions.
Grant Year : 2000

Regulatory Assistance Project
Web Address : www.rapmine.org
Location : Gardiner, ME, U.S.A.
Grant Amount : $ 250,000
Description : To promote three separate but interrelated projects for utility reform in China
Grant Year : 2000

Solar Electric Light Fund
Location : Washington, DC, U.S.A.
Grant Amount : $50,000
Description : For a demonstration project on rural solar electrification in western China.
Grant Year : 1993

United Nations Foundation
Location : Washington, DC, U.S.A.
Grant Amount : $65,000
Description : To encourage biomass power generation serving village-scale markets in China
Grant Year : 1998

W. Alton Jones Foundation
Web Address : www.wajones.org
Location : Charlottesville, VA, U.S.A.
Grant Amount : $17,600
Description : To prepare a preliminary assessment of opportunities to intervene in the development of Brazil's energy system and create a detailed Brazilian sustainable energy plan for the 21st Century.
Grant Year : 1999

Winrock International Institute for Agricultural Development
Web Address : www.winrock.rog
Location : Arlington, VA, U.S.A.
Grant Amount : $268,000
Description : To assist the India Ethanol Coalition, established through the support of a previous grant, to formulate a national policy to encourage the development of the ethanol industry and nurture public-private cooperation on the production and use of ethanol use.
Grant Year : 2000

WorkSmart Energy Enterprises, Inc.
Location : Washington, DC, U.S.A.
Grant Amount : $43,500
Description : To assist China in establishing a sustainable electrical utility market, in collaboration with the Royal Dutch Shell's Sustainable Energy Initiative.
Grant Year : 1999

World Resources Institute
Web Address : www.wri.org/wri/
Location : Washington, DC, U.S.A.
Grant Amount : $84,000
Description : To encourage the development of a renewable energy industry in Brazil.
Grant Year : 1996

World Resources Institute
Web Address : www.wri.org/wri/
Location : Washington, DC, U.S.A.
Grant Amount : $200,000
Description : To build local partnerships in Brazil, Colombia and Central America supporting new business formation in the renewable-energy sector.
Grant Year : 1998

World Wide Fund for Nature
Location : Beijing, China
Grant Amount : $200,000
Description : To conduct business development training for renewable-energy entrepreneurs, managers and technicians in China.
Grant Year : 1998

World Wide Fund for Nature
Location : Beijing, China
Grant Amount : $70,000
Description : To explore the use of a market approach to stimulate large-scale commercial development of biogas for cooking, fuel, heat and power in rural China.
Grant Year : 1999

Zhejiang University
Location : Hangshou, Zhejiang, China
Grant Amount : $90,000
Description : To develop and commercialize gasification technology through manufacturing a village-scale power generation system that couples the biomass gasifier with the sterling engine.
Grant Year : 1999

Appendix - 5A
DPR Supplementary Documentation

Several details must accompany the specific detailed project report (DPR) in an effort to obtain clearances and sanctions as the proposed project moves through the scrutiny of the concerned government agencies, departments and appraisal committees. These are listed as follows:

1. Project proponent specific (Background information about the project proponent)
    - If Urban Local Body
        - Audited financial statements for the past three years;
        - Rating accorded by the rating agencies such as CRISIL, ICRA, etc.;
        - Revenue stream details for the past three years;
        - Expenditure pattern for the past three years ;
        - Projects implementation record;
        - Organisational structure;
        - Implementing department details.
    - If private operator (for municipal solid waste management) or industrial unit
        - Audited financial statements for the past three years;
        - Rating accorded by the rating agencies such as CRISIL, ICRA, etc.;
        - Management and shareholding pattern details;
        - Organisational structure;
        - Physical and financial performance for the present financial year; and
        - Experience in managing or implementing similar projects (brief details such as type of project managed, capacity, technology back-up, total cost, actual revenue generated, etc.).
        - Details of a broad based, competent team that would ensure timely project implementation within the original cost estimates.
2. Technology specific (applicable for both types)
    - Method employed for waste characterisation;
    - Waste characterisation analysis with seasonal variation and reliability back-up;
    - Analysis of the technologies evaluated and rationale for selection of the proposed technology;
    - Details of the plants in India and abroad, using the proposed technology in similar operating conditions;
    - Performance data from the actual operations from such plants;
    - Scaling of operations in terms of characteristics, capacity or volume of waste handled per module (if modules proposed);
    - Background information on the technology provider;
    - Whether any performance guarantee back-up and if yes, up to what extent of project cost;

- Whether any pilot scale study carried out for demonstration in case of being proposed for the first time in India;
- Whether the pilot or demonstration unit being scaled appropriately to yield the similar results;
- Details of the segregation process proposed and measures undertaken to ensure 100% successful segregation of the raw waste; and
- Adequacy of technical resources with the proponent and the technology vendor for successful project implementation, commissioning, maintenance and operations.

3. Financial specific

- Report to provide detailed analysis of the cost of project.
  - Line item wise break up to be provided;
  - Basis of estimation also to be mentioned against each line item;
- Further, the report to also indicate the financing plan proposed by the proponent.
- The proponents must realize that the bankers follow certain financial norms/criteria while sanctioning any financial assistance. Each banker would have its own norms within the framework laid by the regulatory agencies. Normally these are
  - Debt to equity ratio should not exceed 3;
  - Security cover should be at the minimum be 1.33 times the assistance;
  - Fixed asset coverage ratio should be at least 1.5 times; and so on
- The proponent must provide the details related to the means of financing such as
  - Amount of equity proposed by the proponent to be brought in for the project;
    - By the proponent;
    - By the venture capitalist / other project partners including technology vendor;
    - By the bankers / investors;
  - Amount that would be available from the state and central governments
    - As subsidy, such as
      - → Interest rate relief;
      - → Grant;
    - Loans at soft terms; and
    - Loans at market linked terms;
  - Amount of unsecured loans (indicating the interest rate) proposed;
  - Amount of financial assistance sought from the banker as term loan assistance;
- Details about financial soundness of the promoter must be provided. This would assist in analyzing the
  - Ability to bring in money as and when required for the project;
  - Adequacy of cash reserves to overcome any cost overruns;
  - Ability to repay the assistance in timely manner;

- Ability to repay the assistance even when the revenues are under strain;

- Details must be provided about the proposed revenue streams for the project. This would assist in analyzing the
  - Ability of the project to generate timely revenues;
  - Arrangements worked out for sale of power, manure and any other end product;
  - Ability of the proponents to realize the generated revenues;
  - Fall back measures proposed in case of shortfall in revenues
    - Due to failure in performance of the plant;
    - Due to non availability of the raw material – solid waste
      - → of desired quality;
      - → free of cost as initially agreed by the waste generator;
    - Due to refusal or failure of purchaser(s) to buy the end products;
    - Due to inability of purchasers to pay for the end products consumed;
    - Due to reduction in selling prices of end products;
    - Due to shift in priorities of the Urban Local Body during budget allocation;
  - Ability of the proposed buyers of power, manure and any other end product to purchase the same continuously for the period of assistance

- Provide financial details of the buyers;

  If an industrial unit is buying power, the sector in which it is operating, also plays a major role in determining the future ability of the unit to continue buying the power;

- Details about financial projections for the project must be provided with the report for a period at least one more year than the proposed repayment schedule for the loan assistance, such as
  - Assumptions made for the projections and the basis used to arrive at these assumptions;
  - Statements regarding projected profitability, generation & deployment cash flows and balance sheet;
  - Each banker may follow its own format for the financial projections and, therefore, the proponents must check with the banker(s) / investor(s) for the adequacy of the information provided therein;

- Details about proposed security for the assistance must be provided such as
  - First charge on assets – movable and immovable;
  - Financial guarantee by the State Government towards repayment by the Urban Local Body;
  - Corporate guarantee;
  - Personal guarantees of proponents;
  - Possibility of escrowing the anticipated revenues in the name of the banker;

- The project related revenues;
- The composite revenues of the Urban Local Body or the industrial unit;
- Insurance cover for
  - The technology performance to cover loss in revenue;
  - The inability of the purchaser(s) of end product(s) to pay for the consumption;
  - Environmental remediation cost liability, if any;

4. General information
   - List and status of all statutory approvals required for the project with back up data / documentation attached;
   - Time frame for the balance approvals to be in place;
   - List and status of all legal documentation (attach copies) such as
     - Supply of raw waste at a defined location;
     - Any penalties for failure to supply;
     - Adequacy of such penalties to cover the liability towards the bankers
     - Power purchase agreement with either the state electricity board or the industrial unit for power generated; and so on
     - Implementation schedule for the project with bar chart and PERT schedule;
     - The company must be registered and certificate of Incorporation obtained (attach copy). In the case of Public Limited Companies, certificate of Commencement of Business is necessary;
     - Latest certified copy of the Memorandum of Articles of Association of the company to be attached;