

designs through interaction with technology providers, institutions and through experience sharing with co-professionals.

Development of 'Energy-cum-Investment Managers' through the project is to bridge the gap by offering 3-week full time comprehensive training program. This activity would involve- a) curriculum development, b) identification of resource faculty, c) tie-up with an institution offering similar courses with residential facilities, d) arrangement for field training, e) fixing of eligibility criteria and selection procedure for course participants, f) method of performance evaluation and certification of trainees.

Subsequent to the course, the participants shall work as 'interns' for six months under the guidance of PMC experts before their placement in industry clusters. As of today, the industry is not used to hiring and paying for consultancy services. In the post internship period, a group of industry in a cluster would be prepared to hire 'Energy-cum-Investment Managers' on cost-sharing basis.

Development of training modules, identification of resource personnel and institutions in different geographical clusters would precede launching of training courses and technical workshops for various stakeholders and operating personnel from industry, banking sector and financial institutions, policy makers and administrative departments of government, etc.

The monitoring indicators for the capacity building activity would include i) Preparation of detailed annual plan for each year, ii) Execution of training programmes/workshops as per schedule, iii) Analysis of feedback received from participants and action taken report thereon.

#### **Indicators of Outcome IV**

- Mapping of each cluster and assessment of technology resource and capacity building needs completed in the first year through a time bound action plan.
- Master plan for capacity building activities finalized and documented by 13th month.
- 5 cluster workshops for units/DEMs/consultants on 'new' technologies and technology management would be conducted in each year from 2nd year onwards.
- 10 Workshops for unit owners/managers on cooperative management practices and procurement processes held between 2nd and 5th year of the project. These would cover all the 5 clusters.
- Standard Operating Practices (SOP) and Standard Maintenance Practices (SMP) will be developed in third and fourth year.
- 'Best Practices' program developed in second year and workshops conducted in third and fourth year.
- Three study tours for DEMs/local consultants organised to developed countries for providing exposure to similar industrial set up.
- 5 interaction and policy-oriented workshops on complex SME issues and constraints conducted for central/state govt. institutions and departments/agencies dealing with SRRM industry.

- 3-week curriculum designed for developing Energy-cum-Investment Managers by the end of first year. 5 such training programs, one in each cluster, conducted in 2nd, 3rd, and 4th year.
- Pilot programs for local govt., administrators, and planners focusing on energy efficiency and greening of environment conducted in each cluster beginning second year.
- 2 - Training workshops on evaluation of EE technology projects for financing/banking sector would be conducted every year. These workshops would also cover exposure to innovative financing mechanisms including ESCO.

#### **Expected Impact of Outcome IV on Barriers**

The capacity building activity will result in improved institutional capabilities, increased confidence level of stakeholders, low perceived technical and financial risks and reduction in transaction costs associated with implementation of advanced EE technologies in the sector.

#### **Outcome V: Feasibility of ET Options and Technology Packages Established**

Output 5.01 Study of 30 Sample Units

Activity 5.01 Detailed study of the Sample Units will be conducted to develop the implementation plan for specific technology package. Requirement of funds, suppliers of technology, contractors for erection & commissioning and techno-economics of the investments will be worked out for developing bankable projects for submission to the Banks and FIs.

Output 5.02 Energy and Environment Cluster Study of Non-Sample Units

Activity 5.02 The units not covered under the selected 30 Sample Units and desirous of adopting the ET Options and Technology Packages will provided support through empaneled consultants for conducting investment studies. These would be discussed with the entrepreneurs, funding agencies for further action to develop pipeline projects under replication strategy of the project.

Output 5.03 Financial Linkages and TE Modeling of ET Options

Activity 5.03 In order to encourage greater participation of funding agencies in implementation of EE projects, suitable linkages will be developed and techno - economic modeling of the EcoTech option will carried out for capacity building as also to provide an analytical tool to the funding agencies for appraisal and monitoring of investment projects.

Output 5.04 Re-Engineering and Validation of Technology Packages

Activity 5.04 Techno-economic viability of the packages including cost recovery, performance and the impacts will be from the implementation experience of Sample Units. Problems encountered will be diagnosed for solutions and the technology packages will be suitably re-engineered before they are made available non-sample units for replication.

#### **Indicators of Outcome V**

- EcoTech Packages implemented and Operationalised in 30 units: 3 units in 1st year, 4 in 2nd year, 9 in 3rd year, 8 in 4th year and 6 in 5th year.
- Documentation of lessons learned in successive years as above.
- Multiplication strategy for each of the technology package developed and recommended in successive years in accordance with successful implementation of packages as above.

### **Expected Impact of Outcome V on Barriers**

Demonstration of advanced technology packages in sample mills would facilitate the removal of barriers associated with limited commercial model experience in minds of the sector, local consultants and FIs/Banks.

### **Outcome VI: Innovative Institutional Mechanism Established [ESCO and Third Party Financing (TPF)]**

**Output 6.01** Development of performance contracting mechanism involving identified ESCOs and technology providers.

**Activity 6.01** Energy service companies (ESCO) have proved their importance in implementing EE projects through performance contracting approach. In India ESCOs are in operation for over a decade but their exposure to manufacturing industry is minimal. It is, therefore, a challenge to introduce ESCO concept for the first time. The concept is welcome by industry, as it takes care of risk perception associated with EE investments, facilitates convenience of financial arrangements with Banks/FIs, and takes care of project implementation on turnkey basis including training of operating personnel.

A number of existing ESCOs operating in the country have been identified during PDF-B stage [Thermax EPS, INTESCO ASEA, ELPRO ENERGY CENTER, SEETECH INDIA, DCM. and 3EC]. The activity plan shall cover - Workshop on ESCO implementation in SRRM sector involving identified ESCOs, technology providers, select industry representatives, banks/FIs to familiarise stakeholders with the concept and formulation of implementation strategy in the 1<sup>st</sup> year.

**Output 6.02** Development of institutional linkages among exiting ESCOs, technology providers and industry.

**Activity 6.02** Arrangements will be developed for establishing linkages of existing ESCOs with technology providers, domestic equipments manufacturers, banks and financial institutions for seeking line of credit for EE projects to implemented through ESCO route.

Under this activity arrangements will be made to prepare policy research study on regulatory framework of the country for legal and taxation matters.

**Output 6.03** Assessment of market potential through results of demonstration of ESCO concepts in 7 SRRM units.

**Activity 6.03** Since the ESCO and third financing are significant for reducing risks of investment on the part of SRRM industry, it is essential to estimate the market potential based on successful implementation of the project. The study will provide business potential in not only SRRM industry but the scope of spreading the mechanism to other SME segment also.

### **Indicators of Outcome VI**

- Development of 'performance contracting' mechanism specific to SMEs in the SRRM sector and implementation plan for 2-medium sized units by first quarter of 2<sup>nd</sup> year.
- Performance capability of ESCOs specific to the needs of rerolling mills enhanced along with development of market transformation strategy by the end of 2<sup>nd</sup> year.

- 5- ESCOs to be made operational from third year undertake more projects. Demonstration of EcoTech packages in 7 units through ESCO route to be made operational between 3rd and 5th year.

#### **Expected Impact of Outcome VI on Barriers**

With adoption of market-based mechanisms and third party financing, the perceptible risks (technical, financial and commercial) and uncertainties associated with limited exposure to EE projects are greatly reduced. Bounded rationality is reduced/eliminated as a byproduct.

#### **Outcome VII: TIRFAC Established**

**Output 7.01** Establishment of Monitoring & Evaluation System

**Activity 7.01** An integrated Monitoring & Evaluation Cell with professional staff and up-to-date communication tools will be established and networked with 5 geographical clusters. The system of monitoring would be developed by an experienced consultancy organization with inputs from international expert, adopting latest monitoring techniques and practices. This task will be completed within 1<sup>st</sup> year of the start of the project.

**Output 7.02** Environment Assessment and Monitoring System

**Activity 7.02** Assessment of emission levels from individual units through chimney and in the surroundings will be carried out regularly through study of ambient air quality and status of emissions at zone level. This would be assigned to professional consultancy organization for different clusters. The reports of these studies will form important input for various other TA activities as well as for monitoring the emission reductions through the project.

**Output 7.03** Study Report for TIRFAC

**Activity 7.03** The project Management Cell would assume all the functions of the proposed TIRFAC until such time it is fully established. TIRFAC would have two functional components. The Software Centre would be established in Delhi along with PMC. The Hardware Centre is proposed to be located at NISST, Mandi Gobindgarh. Initially, the PMC would manage both the centres of TIRFAC. Subsequently, PMC would be merged with the centre at the end of the project to provide services to the SRRM sector on a sustained basis.

PMC and the Software Centre would be set up at Jawahar Dhatu Bhawan, premises of IIM - Delhi Chapter and would involve following steps:

- (a) The detailed plan for setting up TIRFAC Software Centre would be developed by a management consultant. This would incorporate i) software to be procured, ii) manpower requirement, iii) nature of services and outputs of the centre and iv) assessment of sustainability of software centre as a stand alone cost head and as part of the total business support activity. The Software Centre would be made operational by end of 2<sup>nd</sup> year.
- (b) M/s MECON Ltd., prepared concept report of TIRFAC during PDF - B phase. In order to establish, the Hardware Centre at Mandi Gobindgarh, a detailed study will be conducted to assess the following:- i) requirement of equipment and facilities, ii) activities and services of the centre, iii) management structure with participation of industry and technology providers, iv) operating



expenses and likely sources of revenue and v) sustainability in the long run. This task would be assigned to an engineering consultant.

Output 7.04 TIRFAC Installed and Commissioned

Activity 7.04 Based on recommendations of the activity 7.03, the consultancy firm would be engaged to develop layout plan, specifications of the equipment along with source of supply and budgetary quotations, detailed engineering and implementation plan along with requirement of funds. The Hardware Center would be established by the end of 3<sup>rd</sup> year.

The two centres of TIRFAC would be operational by end of 3<sup>rd</sup> year. From 4<sup>th</sup> year onwards, efforts would be made to identify sources of revenue that could be generated from the services of the centre. The activities of PMC would be transferred to TIRFAC at the end of 5<sup>th</sup> year to continue the range of technical assistance services in post project period on cost sharing basis.

#### Indicators of Outcome VII

- Monitoring and Evaluation Plan along with reporting procedures finalized. Monthly/quarterly/annual performance review formats prepared for adoption by all project constituents. The task will be completed within 6 months from the day the contract is awarded to the Consultant.
- Software and hardware centers of TIRFAC set up at the end of 2<sup>nd</sup> and 3<sup>rd</sup> year respectively.

#### Expected Impact of Outcome VII on Barriers

With establishment of TIRFAC and subsequently partnering with industry the barriers related to technology absorption and transfer; design, development and implementation; customized EE solutions, and innovation support, high transaction and hidden costs are effectively addressed.

The Project Management Cell (PMC), established for the PDF phase would be strengthened to develop adequate project management structure and systems. The Project Management Cell would be responsible for implementation of various technical assistance (TA) activities of the project, such as:

- Re-constitution of Project Steering Committee (PSC) and formation of Project Advisory Committees.
- Establishment of norms and procedures for incurring expenditure and major disbursements.
- Setting up of the office infrastructure and communication facilities at the proposed site. This would be completed within 10 weeks (2 and a 1/2 months).
- Selection and appointment of project personnel will be completed within 6 months in a phased manner according to priority of work.
- Development of work-cum-implementation and monitoring plan for activities in the TA component and its approval by the PSC.
- Reporting to funding agencies on pre-determined progress indicators for various project activities.
- Subsequent to approval of the work plan and budget, Quarterly Operation Report (QOR) and Financial Report (FR) would be submitted to the funding agencies. Internally, the

progress indicators would be put up to the Project Advisory Committee (PAC) once in each quarter.

A number of project activities will be assigned to consultancy organization/experts on contract basis. The draft ToR with broad scope of work for different activities are enclosed at **Appendix 4**. ToR for PMC personnel are placed at **Appendix 5**.

### **Outcome VIII: Investment Projects in Sample Units Completed**

**Output 8.01** Project Reports/Detailed Engineering Reports for Investment Projects

**Activity 8.01** An extensive exercise was carried out during PDF - B phase to identify the critical mass, that represents the entire SRRM sector in the country spread across 13 states and 5 geographical clusters. These units were selected from more than 300 applicants, who offered to participate in the project before commencement of the PDF - B phase. Out of these 20 units were taken up for detailed energy, process and technology audit during the PDF - B stage to assess technological gaps and requirement of investments for introduction of EcoTech options/technology packages.

Audit and investment reports prepared for the selected units during PDF-B phase shall be converted to Project Document with detailed engineering, cash flow, implementation schedule and milestones for progress monitoring. Simultaneously, baselines (BL) and EcoTech level (EL) shall be fixed in accordance with pre-determined guidelines and consultation with the concerned unit.

Additional selected units will be taken up for preparation investment reports and DPR for individual units.

**Output 8.02** Implementation and Commissioning of Sample Units

**Activity 8.02** The respective unit shall manage all investments for equipment, installation, commissioning and operation from its own resources and through finance from Banks/FIs. The project shall facilitate development of linkages with Banks/FIs and provide expert advice in preparation of 'bankable' proposals.

Soft funding is proposed by the Project in the form of interest draw down on borrowed capital to the selected sample units to partly meet contingent liability and associated up-front cost. This is essentially to leverage private sector funds for implementation of energy efficiency projects in the sample units.

A mechanism shall be developed for sharing of commercial risk of FIs by providing credit guarantee on energy efficiency (EE) loans and development of sustainable and innovative third party financing through ESCO route.

Arrangements shall be made for streamlining credit review, appraisal and administrative functions/modalities of financing institutions through the TA component for gradually moving the model financing mechanism closer to commercial terms and reducing the need for concessional funds for large scale financing of SRRM units.

The progress of project implementation shall be monitored for each unit with respect to time frame and cost. The operating results shall be collected after commissioning of technology packages. These would be used for validation, benchmarking, review and modification of technology packages, wherever called for.

The Project shall support preparation of project document, regular monitoring, consultancy services and training of operating personnel as per requirement.

A panel of consultants shall be prepared with provision for capacity building to ensure adoption of uniform norms and standard practice for preparation of reports in connection with energy efficiency projects. Training workshops would be conducted for consultants and technical experts at local, regional and national level.

Detailed year wise implementation schedule will be developed within 6 months from the start of project. The Project Advisory Committee (PAC) shall endorse the procedure and plan. A total of 30 sample units shall be covered in five years. Out of these at least 7 units shall be covered through ESCO route to demonstrate third party financing and implementation of performance contracting mechanism. The results and implementation experience of sample units would be documented for further dissemination to the industry and other stakeholders including financing institutions and government agencies. Sample units shall act as "lead unit" in respective clusters for demonstration of technology packages (TPs) to promote large-scale replication.

#### **Indicators of Outcome VIII**

- EcoTech Packages implemented and Operationalised in 30 units: 3 units in 1st year, 4 in 2nd year, 9 in 3rd year, 8 in 4th year and 6 in 5th year.
- Documentation of lessons learned in successive years as above.
- Multiplication strategy for each of the technology package developed and recommended in successive years in accordance with successful implementation of packages as above.

#### **Expected Impact of Outcome VIII on Barriers**

Demonstration of advanced technology packages in sample mills would facilitate the removal of barriers associated with limited commercial model experience in minds of the sector, local consultants and FIs/Banks.

#### **IV Sustainability**

The project has been primarily driven by the industry and focuses on industry requirements. From the government's perspective, the project provides an effective framework for integrating environment and development involving the private sector. The institutional mechanisms proposed are sensitive to the roles of different stakeholders such as the financial institutions, small and medium scale rerolling mills, and other partners. Specific elements that influence the sustainability of the project are listed below:

- The technology packages have been tailored to suit typical units taking into consideration the technical and financial strengths of the industry and to improve the cost competitiveness of the sector and thereby sustain the energy efficiency projects.
- Networking among industry associations, technology providers, domestic and international consultants, and domestic energy and environment agencies for undertaking collective mitigation of perceived risks.
- Targeting, developing and expanding market of ESCOs as part of sustainability strategy in the project design.
- Clustering of small sized mills to develop sizeable portfolios for investment by Banks/FIs, bilateral and multilateral agencies.
- Establishing a center supported through subscription and service charges from the industry for long-term support to technology innovation, development and diffusion for the sector.
- Involvement of research, design and development institutions both within India and outside the country for securing transnational co-operation to develop advanced international designs and raising industry standards to expand the energy efficiency markets.
- The policy environment resulting from Energy Conservation Act, 2001 would be gainfully utilized to support the project through Bureau of Energy Efficiency.
- An incentive structure comprising of monetary/non-monetary schemes and mechanisms proposed under the project would contribute to EE reforms.

## **V Risk Analysis**

The project faces potential risks emanating from the nature of the proposed interventions, and the involvement of various stakeholders. These risks would potentially be induced by technical, commercial, financial, and management factors as outlined below.

### **5.1 Technical Risks**

The proposed technical packages have been designed for a particular level of plant operation. Further, it assumes that adequate capacity would be available in the industry for implementing the technical packages.

Mitigation of this risk has been proposed through training of the industry personnel as part of technical assistance support and involvement of ESCOs. The performance levels are based on current operational levels.

### **5.2 Management Risks**

Lack of continuity of the project team and delays in constitution of the project management cell are practical risks associated with this project. In addition, lack of effective coordination by the team with the key stakeholders may further cause delays.

Mitigation of the above risks is addressed through continuation of the existing team that implemented the PDF, which will also assume the responsibility of setting up of the project management cell. The difficulties in coordination of stakeholders would be minimized by direct involvement of Government of India. The Ministry of Steel, being the executing agency for the



project, would constitute the project steering committee (PSC) with representatives from other Ministries and stakeholders, including industry through their associations to ensure streamlined project coordination, consultation and feedbacks.

### 5.3 Commercial Risks

The project envisages partnerships with ESCOs and financial institutions that have limited experience in this sector.

Mitigation of the above risk will be attempted by investment support to the sample mills. In addition, technical assistance will build the capacity of ESCOs and financial institutions. Already, industry has shown acceptance of this project and a number of units have already started implementing the recommendations. Since the energy efficiency related measures have a direct bearing on the operating margin, industry is keen to adopt the EE technologies to improve their bottom lines. This is reflected in changing energy consumption profile of industry during the last five years. These factors have also contributed to the lowering of risk perception. Table 4 summarizes specific potential risks and mitigation measures proposed in the project design.

**Table 4. Potential Risks and Mitigation Measures**

Description	Rating	Mitigation Strategy
Non Optimal Scale of operation	Low	EE norms based on plant working hours taking due consideration of past market behavior.
Conformance to technical package specifications	High	Incorporation of certified training component related to technology packages and strategy to achieve high interoperability levels.
Low Performance and reliability experienced	Low	Commercially established technical packages recommended and their feasibility would be demonstrated in the select sample mills involving ESCOs.
High Transaction Cost	Low	Reduction in cost through support activities in TA component.
Perceived risks for SME borrowers by FIs	Medium	Techno-economic viability and cost recovery demonstrated through sample units.
Low collateral value risks associated with EE projects	Medium	TA support to build capacity of FIs to value security features of EE projects, cost saving and end-use application of EE equipment, etc.
High Costs of Appraisal & financing	Low	Technical appraisal and financial returns ensured through analysis of techno-economic models.
Slow progress	Medium	Delays overcome through better coordination.
Change in Government Policy, Programs & Commitments	Low	The sector tends to cater to niche markets, and this risk is not expected to have much impact in the present circumstances.
Impact of recession/downturn in economy	Low	The project design takes into account that paybacks and energy saving potentials of the packages are based on the average market situation.
Fall in retail energy prices	Low	Fall not anticipated, an upward trend would give better viability.

## **VI Partnerships**

The project has been conceived as part of the national programme to accelerate deployment of EE technologies in the steel rerolling mill sector. The Ministry of Steel with the support of UNDP undertook development of the project in PDF-B phase with active participation of all stakeholders. The experience and the expectations of the stakeholders have been incorporated in designing the project. The roles of different stakeholders have been identified to minimize project implementation risks, and thereby ensuring its sustainability.

In addition to co-financing by Government of India for TA and infrastructure development support, various other financing agencies such as SIDBI, IREDA, Science & Technology funds have agreed to leverage funds for the sample units during the implementation of the project. To enhance the comfort level of financial institutions and ESCOs as well to provide incentive to sample units taking lead in demonstration of technology packages, an interest draw down scheme has been envisaged out of NEX support.

Industry Associations, technology providers, domestic equipment manufacturers and service providers would proactively participate in ensuring quality performance of the EE projects. They would network with existing SRRM units to promote EE projects resulting in development of pipeline projects for financial institutions.

State Governments through the State Electricity Boards, State Pollution Control Boards and concerned departments related with industry will ensure an enabling environment for project developers and other stakeholders. They would also participate in the capacity building programmes planned under the project.

## **VII Project Geographical Coverage**

The project activities would be implemented in 13 States – Jammu & Kashmir, Haryana, Punjab, Maharashtra, Gujarat, Rajasthan, Uttar Pradesh, Chhattisgarh, West Bengal, Tamil Nadu, Andhra Pradesh, Kerala, and Karnataka.

## **D. IMPLEMENTATION ARRANGEMENTS & ROLES/RESPONSIBILITIES OF PROJECT PARTNERS**

### **I Prior Obligations and Pre-requisites**

The Ministry of Steel would initiate the project with constitution of Project Steering Committee (PSC), appointment of NPD and establishment of Project Management Cell (PMC). PMC constituted during PDF - B phase shall continue to function with restructuring and induction of additional personnel. The funds flow envisaged is ensured for implementation of activities. There are no other prior obligations and pre-requisites.

## **II Implementation Arrangements - Institutional Mechanisms & Monitoring**

### **2.1 Executing and Implementing Agency**

The Ministry of Steel (MOS) will take overall responsibility for the execution and implementation of the project through a dedicated Project Management Cell at New Delhi. The Ministry of Steel will supervise and closely monitor the arrangements for execution of the project and would be responsible for following:

- Overall project execution and implementation.
- Coordination with key stakeholders including concerned line Ministries, state governments.
- Mechanism for smooth flow of funds to the Project Management Cell.

A National Project Director (NPD) will be appointed by the Ministry of Steel (MOS). The NPD will be a senior official of the MOS and would be responsible for overall coordination, supervision, monitoring and clearance of the detailed work plan.

### **2.2 Project Steering Committee**

A Project Steering Committee (PSC) will be constituted with Secretary (Steel) as chairman. The members of the committee shall be from various cross-sectoral ministries such as - DEA (Ministry of Finance), Ministry of Power, Bureau of Energy Efficiency (BEE), Ministry of Coal, Planning Commission, Ministry of Petroleum and Natural Gas, Ministry of Non Conventional Energy Sources (MNES), Ministry of Environment & Forests (MoEF), Department of Science and Technology (DST), Department of Scientific and Industrial Research (DSIR), and UNDP.

The National Project Director will be the member secretary to the PSC. The steering committee will oversee the implementation of the project and will meet at least once in six months to review progress of the project. The main functions of the PSC will be:

- To provide guidelines and policy decisions.
- To review and monitor project activities with reference to the work plan.
- To ensure fulfillment of project goals and objectives in a defined time frame.
- To facilitate inter-Ministerial co-ordination and cooperation with various government agencies.
- To identify policy related issues in context of the project that require review of rules, regulations to encourage adoption of EE technologies.

### **2.3 Project Management Cell (PMC)**

The Project Management Cell (PMC), set up by the Ministry of Steel will ensure adequate organizational structure and systems for facilitating implementation. The National Project Coordinator (NPC) will head PMC. He will be supported by Chief Technical Adviser (CTA), Manager Administration and Finance (M A&F), Accountant-cum-Disbursement Officer and Manager HRD. Three technical experts in different disciplines and project management experts with expertise in project, finance, legal matters, etc. will be associated on full time/part time basis depending upon the work load. The job description and TORs for various positions/assignments are enclosed. Requirement of additional support staff for fieldwork in

different clusters will be assessed and experts will be engaged on contract/assignment basis as per requirement.

#### **2.4 Project Advisory Committee**

A Project Advisory Committee (PAC) will be constituted with NPD as the Chairman. National Project Coordinator will be member secretary for PAC. It will have members from the Ministry of Steel, technical experts from Consultancy organizations, large public and private sector steel plants, R&D institutions, Technology Development Board, Programme Aimed at Technological Self Reliance (PAT SAR), IREDA, SIDBI, ICICI, representatives of industry associations, and state government officials. This Committee will meet once in a quarter during the tenure of the project and will constitute a formal vehicle for on-going stakeholder consultations and interaction with the project participants. In addition, PAC will ensure -

- Institutional interactions and cooperation among various stakeholders.
- Periodic reviews and discussion of issues requiring mid-term changes/corrections during the course of implementation.
- Co-option of experts and appointment of special task force for specific assignments.
- Timely decisions on project management issues.
- Flexible management, in tune with the ongoing UNDP initiative.
- Implementation of participatory monitoring, evaluation and research strategy.
- Cooperation of State Government agencies for implementation of the project in various clusters.

#### **2.5 Monitoring and Evaluation**

##### **Monitoring**

Monitoring of project inputs, outputs and evaluation of impact in relation to the objectives is an important element of the project design. An integrated Monitoring and Evaluation (M&E) cell with professional staff and up-to-date communication tools will be housed in the PMC and networked with 5 geographical clusters through regional offices of JPC. Project progress will be evident by timely implementation of project activities, both under the TA and "Sample Units". PMC with in-country partner, UNDP and IA, will prepare a comprehensive M&E plan at outset of the project. This will form an M&E manual by clearly defining the activities and setting up credible baselines for measuring the project impacts.

The primary focus of the M&E activity will be measurement and documentation of the direct and indirect impacts of the project in terms of success indicators including the following:

- Utilization of funds as planned.
- Performance of technical packages.
- Extent of stakeholder participation.
- Replicability.
- Implementation of innovative institutional mechanisms such as ESCOs.
- Actual investments (including equity, banks/FIs).
- DEMs covered under the project.
- Productivity gains and energy saved in sample units.
- Reductions of pollution at unit level and ambient air quality improvement.



Indirect benefits to 'sample units' will be accounted for by monitoring parameters such as mill productivity, reduced down-time/breakdowns, improvement in quality of product etc.

The monitoring indicators are linked to the Strategic Results Framework of UNDP. In case of sample units, indicators given in Table 5 would be regularly measured and monitored for each of the technology packages for project sustainability.

**Table 5. Monitoring Indicators**

Indicator	Description
Reduction in Energy consumption	Aggregate energy consumption both thermal and electrical (energy intensity) in the Sample Units and at the level of a zone/cluster.
Reduction in GHG Emissions	<ul style="list-style-type: none"> <li>▪ Quantification of reduction of CO2 emissions</li> <li>▪ (CO2 emissions will be measured regularly but full impact will be observed after two years of implementation, when sample units are expected to achieve 80% capacity operation)</li> <li>▪ Quantification of reduction SO2, NOx, SPM and RSPM emissions.</li> </ul>
Scale loss and yield improvement	Quantitative improvement in material use efficiency
Replication of technology packages	The level of penetration of technology packages (measured by number of units adopting technology packages and expressed as a ratio of GEF capacity in operation to total capacity in operation in a zone/cluster.
Implementation of TA component	Half-yearly progress reports of TIRFAC (sustained institutional support, market development, ESCOs capacities and capabilities to implement EE projects, expanded market for EE finance etc.)

The field managers/third party auditors will conduct on-site verifications to confirm successful completion of EE projects in 'sample units' and certify the application of funds as per project plan. They will also audit baselines and estimated energy savings and reductions in GHG emissions with reference to Detailed Project Reports (DPRs) prepared by the project developers/consultants.

### **Evaluation**

A team of NPC, CTA and field officers will carry out mid-term, terminal and ex-post evaluations. These reports will be presented to the PAC for review and midcourse corrections, if necessary. These evaluations will generate a data bank and shall form the basis of "lessons learned"-a cumulative learning tool to effectively design the project, improve management and address the problems associated with project planning and implementation.

The PMC will develop a format for project evaluation in each quarter. In addition, annual participatory evaluation exercises will be undertaken with key stakeholders, local committees, financial institutions and partner organization. UNDP will report on project performance to the

GEF at the annual Project Implementation Review (PIR). The project will document the lessons learned and make it available to the stakeholders over the worldwide web.

A four-level (project inputs, outputs, effects and impact) MIS will be set up. Empirical progress of each of the five technology packages in SRRM sector will be quantitatively measured by 'Progress Ratio'<sup>9</sup> over various ranges of their production/market volumes. This would serve the objective to determine the replication potential of each of the technologies deployed in the sector and to develop future strategies.

Every 'sample unit' would be monitored through establishing clear baselines and subsequently documenting the experience and conducting post-project evaluation at various stages. This would be a key input for replication of technology packages. Formats for project activity, sub-activity, task based monitoring, evaluation and lessons learned will be prepared, discussed and finalized for use in monitoring activities. These will be tested for specific tasks and activities and applied for the entire project during the project period. In addition, the project monitoring team will verify when sufficient progress has been made toward the goals of the project.

## 2.6 Milestones

The following milestones shall be used to determine whether the project activities designed have been successfully implemented as per the schedule. The evaluation must demonstrate that the conditions, which led to the initial design of the project, still hold without major re-design work. If conditions have changed sufficiently, due either to the success or failure of the activities, at the initial stage of the project, the remaining part of the project may have to be significantly redesigned to respond to the rapidly changing reality. The evaluation will specify whether or not change is needed and how that change should be made.

**Table 6. Milestones**

SI No	Milestone	Target
1	Setting up of PMC (as per implementation arrangement shown at Annex F)	2.5 months
2	TIRFAC Software Center established	24 months
3	TIRFAC Hardware Center established	36 months
4	EcoTech Packages Implementation and Operationalised in 30 sample units	1 <sup>st</sup> year: 3
		2 <sup>nd</sup> year: 4
		3 <sup>rd</sup> year: 9
		4 <sup>th</sup> year: 8
		5 <sup>th</sup> year: 6
5	Innovative Institutional mechanisms established and Operationalisation of ESCOs	36 months

## 2.7 UNDP Collaboration

<sup>9</sup> "Progress Ratio" is a quantitative tool, which measures the progress of any technological development on a long-term basis by plotting 'experience' curves. It relies on the assumption (from empirical studies) that cost per unit of EE equipment/technology declines exponentially with increased production of the same item. PR is defined as slope of the experience line plotted on logarithmic axis to show unit cost versus cumulative production, as the percentage of cost remaining after each doubling in production volume.

UNDP will support management of the project and towards this participate in various projects committees and monitoring missions. UNDP will support drawing and up scaling of development lessons. At the request of the Executing/Implementing Agency, UNDP will also provide support (termed as UNDP Country Office support services) for sub-contracting and for monitoring and evaluation. Country Office supports may be provided in other areas also as agreed between UNDP and the Executing Agency/Implementing Agency. Such support activities will be carried out in accordance with UNDP rules and regulations.

### **III Funds Flow Arrangements and Financial Management**

As per the GOI-NEX guidelines, Ministry of Steel, the Executing Agency, shall make suitable provision for their contribution to the project through Steel Development Fund (SDF)/budgetary provisions. At the request of the Executing Agency, UNDP will release payments directly to the separate Project Account opened by PMC for technical assistance components. UNDP will advance funds on a quarterly basis as per the approved work plan at the request of the National Project Director/National Project Coordinator in the appropriate format. The Financial Report (FR) will contain, in addition to the information on funds required, information on annual budget, year-to-year expenditure and available budget.

The PMC shall maintain separate bank account in order to receive and disburse UNDP funds. Separate books of accounts on cash basis of accounting shall also be maintained in order to ensure accurate reporting of expenditures and providing a clear audit trail. In all cases, fund transfers will be on the basis of MoUs/contracts between PMC/FIs and the agencies/experts and project promoters. The terms and conditions of all MoUs/sub-contracts will be discussed and approved by the Empowered PAC.

PMC will send an annual work plan and budget to the NPD. Upon receiving written authorization from the Executing Agency, UNDP will release funds in advance every three months, based on this annual work-plan. The National Project Coordinator will report disbursement to the NPD and UNDP on a quarterly basis, in the Financial Report format referred to earlier.

The matching contribution from Govt. of India towards technical assistance and contingent fund for 'Sample Units' will be received respectively by PMC, progressively, as per the guidelines from the GOI and duly endorsed by the PSC for this project. The modus operandi for GOI contributions will be almost similar to UNDP funds. Separate accounts by Sources (UNDP and MOS) will be maintained for the purpose.

### **IV Audit**

As per the GOI NEX Guidelines, the project shall be subject to audit in accordance with UNDP procedures. In order to meet the UNDP requirement of covering 90% of the annual NEX expenditure under audit, an annual audit plan will be drawn up in consultation with DEA. The project shall be informed of the audit requirements by January of the following year. The audit covering annual calendar-year expenditure will focus on the following parameters: (a) financial

accounting, documenting and reporting; (b) monitoring, evaluation and reporting; (c) use and control of non-expendable reporting; and (d) UNDP Country Office support.

The auditor shall be appointed in consultation with DEA. In line with the UN Audit Board requirements for submitting the final audit reports by 30th April, the auditors will carry out field visits during February/March. Detailed instructions on audit will be circulated by UNDP separately and cost of audit will be charged to the project budget.

## **E. MONITORING & EVALUATION, RESEARCH, COMMUNICATIONS & ADVOCACY**

### **I Monitoring and Evaluation**

In order to ensure effective and results-oriented project implementation, the qualitative monitoring described above will be complemented with evaluation(s) when considered necessary by the PSC. In general, UNDP is trying to practice Outcome Evaluation. This entails assessment of a cluster of projects instead of a single project in order to evaluate relevance, performance and success in the broader context of agreed outcomes. The PSC will be guided by this approach in their decisions regarding the evaluation of the project.

### **II Research Agenda**

Given the development context, the Project has the potential to contribute significantly to the national and cluster-level debate and action on energy efficiency and conservation and sustainable development. Apart from documentation of 'best practices' by field partners and PMC, it is crucial to support rigorous study and analysis of the Project that could be shared widely for achieving sustainable development goals. In addition, the Project seeks to strengthen its contribution to policy advocacy at both Cluster/State and national level as outlined in the project activities.

These research agenda will be developed by PMC in consultation with UNDP and the partners at the beginning of the Project, along with developing the overall plan for communication and advocacy.

### **III Communication and Advocacy, Lessons Learned, and Upscaling**

The Project will encourage effective communication that covers information gathering and sharing documentation with all Project partners. It will encourage documentation of baseline as well as key milestones performance areas (KPAs) during the Project period through use of video and print media. Coverage of key events, processes and outputs by journalists and others; training of Project partners in communication tools and skills; development of success stories with a strong human element and; linkages, wherever possible, with communication staff of the government at appropriate levels will be taken care of. It will proactively support design and creation of mechanisms such as workshops to share and review experiences and lessons learnt at different levels within the Project as well as implications for program and policy formulation.



It will also seek to strengthen integration of strategic gender interests into the process of energy policy formulation at State and Central levels so that there is increased visibility of and focus on energy and environment issues in policy dialogue.

The Project will encourage monitoring and evaluation of project processes and outcomes jointly with policy makers, implementing groups and subject specialists. The Project will facilitate the travel of independent journalists to see the work in the field. It will provide funds to local partners to video document the process in the field. UNDP will commission films for international TV, organize annual thematic workshops in collaboration with PMC on issues raised through the research studies.

Overall responsibility for monitoring and evaluation tasks will be assumed by the national executing agency assisted by UNDP. The Project Manager will prepare regular reports on the progress of the project and its constituting activities and submit the reports to the UNDP Country Office and the national executing agency. Establishing a monitoring, evaluation and feedback mechanism for the project components will be the task of the Monitoring and Evaluation Specialist and will be developed in parallel with the start up of the project. Updated information about the intermediate and final results of the project, as well as its overall progress, will be disseminated to relevant stakeholders through a number of channels, including a project homepage to be established on the internet.

The project will be subject to tripartite review once every 12 months, the first such meeting to be held within the first 12 months of the start of the Stage 1 implementation. The project manager, in consultation with the UNDP program officer in Kiev, shall prepare and submit to each tripartite review meeting an Annual Project Report. A Project Terminal Report will be prepared for consideration at the terminal tripartite review meeting. It shall be prepared in draft sufficiently in advance to allow review and technical clearance by the executing agency at least four months prior to the terminal tripartite review. The Government will provide UNDP with certified periodic financial statements relating to the status of UNDP/GEF funds, including an annual audit of these financial statements according to the UNDP procedures. Project objectives, activities outputs and emerging issues will be regularly reviewed and evaluated by the competent bodies of the executing and implementing agencies (including UNDP/GEF).

The annual review will focus on performance (effectiveness, efficiency and timeliness) and evaluate the results in applying the defined progress indicators. At the Steering Group Meeting, the Project will submit and present an APR (Annual Project/Programme Report) in line with UNDP requirements and also participate in the GEF's PIR (Project Implementation Review) exercise each year

## **F. PROJECT BUDGET**

### **I UNDP/GEF and NEX Contributions**

The allocation of GEF contribution of US\$ 6.75 million is at **Appendix 6**. The Government of India is contributing US\$ 7.28 million (in equivalent Rupees) through Ministry of Steel for various project components. This is in addition to the 'in-kind' resources, in the form of services

rendered by the National Project Director and officers of the relevant departments and the Ministries.

The Activity wise detailed break up of project cost covering GEF, NEX, Industry and FIs contribution is at **Annex B1**. The component wise summary of budget allocations of GEF and NEX components is as follows. The Fund Flow for the project is shown at **Annex B2**.

**Table 7. Project Budget (UNDP/GEF & NEX Contributions)**

BL	Component	UNDP/GEF	NEX
17.02	Personnel Costs	402,783	56,432
17.01	Domestic Experts	500,726	959,511
11.01	International Experts	203,193	0
20.00	Sub-contracts	2,558,513	445,638
30.00	Training/Workshops	1,313,023	693,840
45.00	Equipment Costs	79,768	2012,649
16.01	Mission Costs	280,318	314,312
<b>Travel/Local Conveyance (including Study tours &amp; fellowships)</b>		0	0
15.02	Domestic	376,605	229,787
15.01	International	649,048	76,596
63.00	Technical Assistance for demonstrating feasibility of EE options/packages	0	2,430,000
50.00	Miscellaneous	386,023	61,295
	<b>Total</b>	<b>6,750,000</b>	<b>7,280,060</b>

- The salaries of all National Project Personnel (NPP) engaged with PMC will be borne by UNDP. Recruitment for all positions for periods exceeding 3 months will be through a transparent process. The cost of administrative support staff will be borne by NEX.
- The honoraria to Domestic Experts shall be shared through both GEF and NEX depending upon the attachment of experts to various project activities. All International Experts shall be covered by UNDP budget.
- The allocation to sub - contracts, training/workshops are covered by both GEF and NEX budgets, as shown in the above table. The training head will include costs of resource faculty, hiring of space for training program, training materials and travel of participants. PMC will ensure that wherever possible, government buildings/facilities would be made available for this activity.
- NEX covers the cost of equipment for setting up Hardware Centre of TIRFAC. UNDP contribution for equipment shall be limited to basic office facilities and gadgets required for PMC personnel and technical experts. All purchases will require the prior approval of PSC or PAC and will be made strictly in accordance with UNDP NEX Guidelines. All equipment procured from UNDP funds under the Project will be in the name of 'Resident Representative, UNDP'.
- Mission cost and travel cost for both national and international have been allocated under the two heads for specific project components/activities. The TA/DA rules shall be adopted according to prevailing norms of public sector undertakings (PSUs). Funds have been provided for local travel of all members of PMC, consultants and agencies.

- The technical assistance for demonstrating feasibility of EE options/technology packages will be exclusively provided by UNDP.
- There is no provision for contingent grant to sample units from GEF. The assistance to sample units shall be covered from NEX account in the form of services, interest draw down support and risk guarantee.
- The miscellaneous component incorporates expenditure on account of telephone, fax, rent where necessary, e-mail facility, postage, printing and stationery, minor hospitality for official meetings, etc.

## II Other Contributions

The project will receive additional cofinancing and leveraged financing from the Financial Institutions and bilateral/multi-lateral agencies and project promoters of Sample Units as follows:

Cofinancing	Government of India (Steel Development Fund)	7,280,000
	Government of India (PDFB)	60,000
	Ministry of Environment and Forests (TA Cluster Project on SME)	1,000,000
	Total (Government cofinancing)	8,340,000
Cofinancing	Private Sector - program component	5,540,000
	<b>Total Cofinancing</b>	<b>13,880,000</b>
Leveraged	Government Agencies:	5,520,000
Leveraged	Financial Institutions and Commercial Banks	5,770,000
		11,290,000
<b>TOTAL Cofinancing &amp; Leveraged</b>		<b>25,170,000</b>
		6,750,000
	Total Project (minus Government PDF B)	31,860,000

## G. LEGAL CONTEXT

This project document shall be the instrument envisaged in the Supplemental Provisions to the Project Document attached hereto.

The following types of revisions may be made to this document with the signature of the UNDP Resident Representative only, provided he or she is assured that the other signatories of the Project document have no objections to the proposed changes.

Revisions in, or addition of, any of the Annexes of the project document (with the exception of a Standard Legal Text for non-SBAA countries which may not be altered and agreement to which is a pre-condition for UNDP assistance).

Revisions, which do not involve significant changes in the immediate objectives, outputs of activities of the Project, but are caused by the re-arrangements of inputs already agreed to or by cost increases due to inflation.

Mandatory annual revisions, which re-phase the delivery of, agreed project inputs or increased experts or other costs due to inflation.

The Executing Agency and Implementing Agency shall, at all times, ensure compliance with the NEX Guidelines annexed hereto. They would also comply with the requirements contained in the UNDP Programming Manual to the extent they do not conflict with the said NEX Guidelines or extant rules and provisions of Government of India.

Component	Estimated Cost (US\$)
1. Technical Assistance	1,000,000
2. Equipment	500,000
3. Training	200,000
4. Studies	100,000
5. Other	50,000
<b>Total</b>	<b>1,850,000</b>
6. Local Staff	1,000,000
7. Other	500,000
<b>Total</b>	<b>1,500,000</b>
<b>Grand Total</b>	<b>3,350,000</b>

**LOCAL CONTENT**

The project activities shall be carried out in accordance with the Government of India's policy on local content. The Government of India shall be consulted in advance of the project start-up regarding the local content policy. The Government of India shall be consulted in advance of the project start-up regarding the local content policy. The Government of India shall be consulted in advance of the project start-up regarding the local content policy.