India

FY2016 Ex-Post Evaluation of Japanese ODA Loan Project

"Micro, Small and Medium Enterprises Energy Saving Project (Phase 2)"

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0. Summary

This project has the purpose of providing medium- and long-term financing to micro, small, and medium enterprises (MSMEs) in India, where rapid economic growth has engendered an increase in energy consumption making it vital to improve the efficiency of energy use. This financing has been for investment in acquisition of energy-conserving equipment and facilities. The provision of financial support for investment in energy conservation by MSMEs is highly relevant to both the development assistance policy of the Japanese government and the policy and development needs of the Indian government. The project was realized within the amount of funds appropriated but loan disbursement was delayed compared in the planned period, so the efficiency of the project is judged to be fair. The energy conservation equipment financed for end user (final borrowers) either directly by the Small Industries Development Bank of India (SIDBI) or through intermediary financial institutions has helped to reduce energy consumption, making the project highly effective. The project also had impact through reducing the emission of CO_2. There are cases wherein the project had impact through increased output of manufacturing, increased income, improved worker safety, and retention of employment Thus, the effectiveness and impact are high. With regard to sustainability, at the time of the ex-post evaluation no serious problem is evident concerning SIDBI's institutions for operation and maintenance, technical matters, or financial matters.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description

Project Locations

Energy-efficient printing machine financed by the project

1.1 Background

Energy consumption in India continued to rise, in accordance with rapid economic growth that averaged greater than 8% annually, and the energy demand was predicted to rise further. Thus, the necessity for efficient use of energy for the purpose of stabilizing energy supply and conserving the energy were an urgent issue. In particular, the low efficiency of energy consumption by MSMEs was pointed out. The Indian government promoted energy conservation, enacting the *Energy Conservation Act in 2001*, establishing the Bureau for Energy Efficiency (BEE) as a single institution to promote energy efficiency, and formulating the National Mission for Enhanced Energy Efficiency as one component of the *2010 National Action Plan on Climate Change* which was published in June 2008. Further, after the *Micro, Small and Medium Enterprises Development Act* which became effective in 2006, the supply of preferential financing to MSMEs were expanded. However, the MSMEs had limitations to their ability to obtain financing, and to their technology and knowhow for introducing energy efficient equipment and facilities, while at the same time awareness of the importance of energy conservation was low, resulting in a continued delay in promotion of energy conservation in the sector. Facing these conditions, with a view to supplying medium- and long-term financing which was necessary for energy conservation, coupled with strengthening the capacity of provision of the loans by SIDBI and other intermediary financial institutions, and raising awareness among the MSMEs, an ODA loan, "Micro, Small and Medium Enterprises Energy Saving Project", (hereinafter the "Phase 1" project) was implemented and completed disbursement of the entire loan amount in the planned disbursement period, remaining three years. Due to necessity for further energy conservation and to respond to strong financial demand, this project was to be implemented as Phase 2.

1.2 Project Outline

The project aims at promotion of energy conservation by MSMEs, through supplying the necessary medium- and long-term loans for MSMEs to invest in energy conservation, while at the same time supporting strengthening of the lending capacity of both SIDBI as the executing agency and other intermediary financial institutions, and fostering enhancement of awareness of energy conservation among MSMEs, thereby contributing to improvement of the environment and sustainable economic development, as well as to mitigation of climate change effects.

Loan Approved Amount/ Disbursed Amount	30,000 million yen / 29,999 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	June, 2011 / June, 2011
Terms and Conditions	Interest Rate 0.4% Repayment Period 15 years (Grace Period) (5 years) Conditions for Procurement: General Untied
Borrower / Executing Agency	Small Industries Development Bank (SIDBI) / SIDBI (Guarantor: The President of India)
Project Completion	February 2015
Main Contractor (Over 1 billion yen)	None
Main Consultant (Over 100 million yen)	None
Feasibility Studies, etc.	• "Special Assistance for Project Implementation: Micro, Small and Medium Enterprises Energy Saving Project" (October 2008-March 2011) • "Special Assistance for Project Implementation: Micro, Small and Medium Enterprises Energy Saving Project Phase 2" (September 2011 -March 2014) • "Special Assistance for Project Implementation: Micro, Small and Medium Enterprises Energy Saving Project Phase 3" (2014 - February 2018)
Related Projects	ODA Loan Projects: • "Micro, Small and Medium Enterprises Energy Saving Project" (2008) • "Micro, Small and Medium Enterprises Energy Saving Project (Phase 3)" (2014)

2. Outline of the Evaluation Study

2.1 External Evaluator

Mitsue Mishima, OPMAC Cooperation

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: December 2016 – February 2018

Duration of the Field Study: February 12 – March 15, 2017, May 13 – May 26, 2017

2.3 Constraints during the Evaluation Study

The survey of beneficiaries[1] covered a sample of 125 firms, in the Delhi and Mumbai capital

[1] The beneficiary survey and project data and information collection support were performed by the National Institute of Labour Economics Research and Development (NILERD) of India.

areas as well as Pune, Chennai, and Kolkata, due to constraints in access to the survey area, the budget, and so on. Selection of these firms was conducted by purposive sampling with consideration given to a balance of the industries represented[2]. Therefore, the survey result is not statistically significant and is used as a reference in connection with selected cases.

3. Results of the Evaluation (Overall Rating: A[3])

3.1 Relevance (Rating: ③[4])

3.1.1 Consistency with the Development Plan of India

The Indian government addressed the intention to promote restraint on energy demand through energy conservation in the energy policy which was announced in 2006. *The Eleventh Five Year National Plan (April 2007 to March 2012)* stated the target of achieving a "20% improvement in energy efficiency by 2017". After these policies, according to the *Twelfth Five Year National Plan (April 2012 to March 2017)*, the energy conservation target of 13.8 million tons of petroleum-equivalent was adopted, and concerning the small and medium scale enterprise (SME) sector, the plan indicated that it is possible to conserve energy to the extent of 1.75 million tons of petroleum-equivalent and called for the continuation of efforts at conserving energy by improving its efficiency of use in the SME sector. Specifically, the plan addressed the necessity for upgrading production technology and raising productivity, for improving access to credit in the SME sector, and for continuation of financing for introduction of energy efficient equipment, as well as tax exemptions, preferential taxation, and so on. *The Three-Year Action Plan (April 2017 to March 2020)*, in effect at the time of the ex-post evaluation, indicates promotion of cost-benefit-based investment in energy efficient equipment in all sectors.

Further, India's Intended Nationally Determined Contribution (INDC), announced in October 2015 concerning the target for reducing generation of greenhouse gas (GHG), states that after National Mission for Enhanced Energy Efficiency (2010), BEE has supported detailed plan formulation for energy conservation projects and implemented energy conservation technology demonstration projects covering small and medium sized enterprises in more than 150 clusters all over the country. Another initiative by SIDBI introduced energy efficiency technology cases of 500 SMEs extending over 40 industrial clusters. INDC describes the importance of these existing efforts. In addition, it emphasizes that through its

[2] The states to be studied were selected on the basis of their having high per capita GDP, being industrially developed with an emphasis on manufacturing, having high demand for energy, and being the site of many sub-loans. They are the Delhi capital region (north), Maharashtra (west), Tamil Nadu (south) and West Bengal (east). Coverage areas of SIDBI Mumbai and respective branch offices were confirmed and in each state interviews were conducted with one or more industrial cluster, with consideration given to a balance in the sectors of industries selected. Further, to supplement this, opinions on SIDBI's loans to energy conservation were obtained from the India Plastic Federation in Kolkata in the east and the Tamil Nadu Plastic Manufacturing Association.

[3] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[4] ③: High, ②: Fair, ①: Low

ZED (Zero Effect, Zero Defect) policy initiative for SMEs which has been implemented since 2015, the government is striving to promote energy efficiency.

3.1.2 Consistency with the Development Needs of India

According to national statistics for final energy consumption, compiled by the International Energy Agency, from the time of the 2011 appraisal to the latest year for which data are available, 2014, India is the third greatest user of energy after China and the United States. During that period, final energy use rose from 501.03 million to 555.74 million oil equivalent tons. Also during project implementation period, India's economy grew by more than 7% a year, and as the consumption of energy rose. Thus, the project matched the needs of MSMEs for equipment and facility investment and its timing.

Issues confronting MSMEs have been the lack of knowledge on what energy conservation equipment should be purchased, and improved access to the finance. Therefore, these needs of MSMEs were consistent with the project components through SIDBI, that were increase in the supply of credit, produce of energy saving equipment list, and improvement of the appraisal capacity of SIDBI loan officers on financing for energy conservation.

According to SIDBI, while energy consumption is relatively high in the manufacturing sector, the consumption by MSMEs, accounted for 30% to 40% of total consumption of that sector and their superannuated equipment was creating inefficiency in energy use. It was confirmed that requirements of investment in energy conservation by MSMEs, in order to reduce the cost of energy, that was high during the project period, has continued thereafter to the time of post-evaluation. Thus, the needs for investment in energy efficient equipment targeting MSMEs have been recognized.

3.1.3 Consistency with Japan's ODA Policy

"Improvement of the poverty and environmental issues" were priority areas in Japan's Country Assistance Program for India (May 2006) and the policy for environmental issues support referred to renewable energy and conservation of energy. Responding to this, JICA emphasized "support for measures related to the environment and climate change" as priority area, and addressed the policy of support for introduction of energy conserving technology in the industrial sector. The project is consistent with this policy.

This project was highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The project consisted of two-step loans (direct loans) whereby SIDBI provided the loans to MSMEs (end users), and three-step loans (indirect loans) whereby SIDBI provided the loans to end users through intermediary financial institutions. The project was implemented in this way, as planned. More than 90% of respondents to the survey of beneficiaries expressed content with SIDBI's required procedures, explanations of the financing, interest rates, and repayment schedules.

3.2.1.1 Result of Finance to Energy Saving Equipment to Micro, Small and Medium Enterprises

The number of sub-loans to be approved and disbursed, according to the plan, was expected to be about total 3,000, and the actual total came to 3,965. Direct loans from SIDBI to MSMEs account for more than 80% in terms of total amount, while they are 1,836 (46%) in terms of the number of the loans. Indirect loans were implemented through two intermediary financial institutions in the private sector. Of these institutions, Reliance Capital Ltd. made 2,092 loans and Intec Capital Ltd. made 37 loans, so in total 2,129 loans were made by the two. Regarding the indirect loans, almost all the loans were through Reliance. According to SIDBI, as a result, among all financial institutions that were target for refinance, only these two institutions requested SIDBI refinance[5], having had the target loans that matched with loan conditions of this project.

Table 1: Project Output (Actual)

Type of Loan	Financial Institutions	No. of Loans	Amount (10 million Rs)	% of Amount
Direct	SIBDI	1,836	1,570	82.4%
Indirect	Reliance Capital Ltd.	2,092	325	17.1%
	Intec Capital Ltd.	37	10	0.5%
TOTAL		3,965	1,905	100.0%

Source: SIDBI

3.2.1.2 Conditions for the Loans

(1) Eligible Borrowers

The eligible borrowers or end users were micro, small, and medium scale enterprises as defined in the table below, according to *Micro, Small and Medium Enterprises Development Act*.

Emphases were given to awarding loans to micro and small enterprises, and to creation of

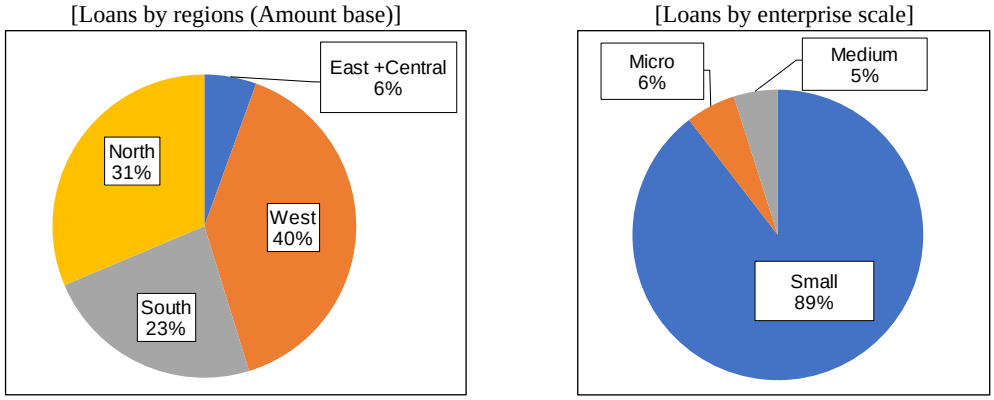
[5] Each intermediary institution requests SIDBI the loan amount that they implemented and then they receive the finance from SIDBI retrospectively.

demand for energy conservation in central and eastern areas of the nation, that were under-represented in Phase 1 (2008). Results of direct finance by SIDBI are as shown in Figure 1, where it can be seen that small enterprises accounted for 89% of the loans, or most of the total, and micro enterprises accounted for 6%. The intended emphasis on aiding small and micro enterprises was thus achieved as planned. Further, regarding regional shares (monetary basis), in Phase 1 the central and eastern regions combined accounted for 2% but in this project the share was increased to 6%.

Table 2: Definition of Micro, Small, and Medium Enterprises

Enterprise Type	Manufacturing Industry	Service Industry
Micro	Investment in plant and machinery does not exceed twenty-five lakh (2.5 million) rupees	Investment in equipment does not exceed ten lakh (1 million) rupees
Small	Investment in plant and machinery is more than twenty-five lakh (2.5 million) rupees but does not exceed five crore (50 million) rupees	Investment in equipment is more than ten lakh (1 million) rupees but does not exceed two crore (20 million) rupees
Medium	Investment in plant and machinery is more than five crore rupees (50 million rupees) but does not exceed then ten crore rupees (100 million rupees)	Investment in equipment more than two crore (20 million) rupees but does not exceed five crore (50 million) rupees

Source: The Micro, Small, and Medium Enterprises Development Act, 2006



Source: SIDBI documents, upon project completion

Figure 1: Loans of the project by enterprise scale and regions

Credit supply projects (here and below, “sub-projects”) had the objective of funding investment in equipment chosen from the Energy Saving Equipment List for conservation of energy. The list was prepared by the technical assistance consultant. To be on the list the equipment had to provide a 10% and more reduction in energy use. Looking at the trend of sub-projects as shown in Table 3 it is evident that auto components accounted for the largest share, approximately 25%, followed by foundry and engineering, plastic & polymers, casting and forging, and textiles. The total of these six categories accounted for about 80% of the total.

Indirect financing through Reliance Capital Ltd. was made through 46 of its branches (in Gujarat, Maharashtra, Rajasthan, Karnataka, and Tamil Nadu) and most loans were made to companies in urban areas. Financing by Intec Capital Ltd. was made mainly to companies in the Delhi urban area. Both institutions mostly financed small enterprises.

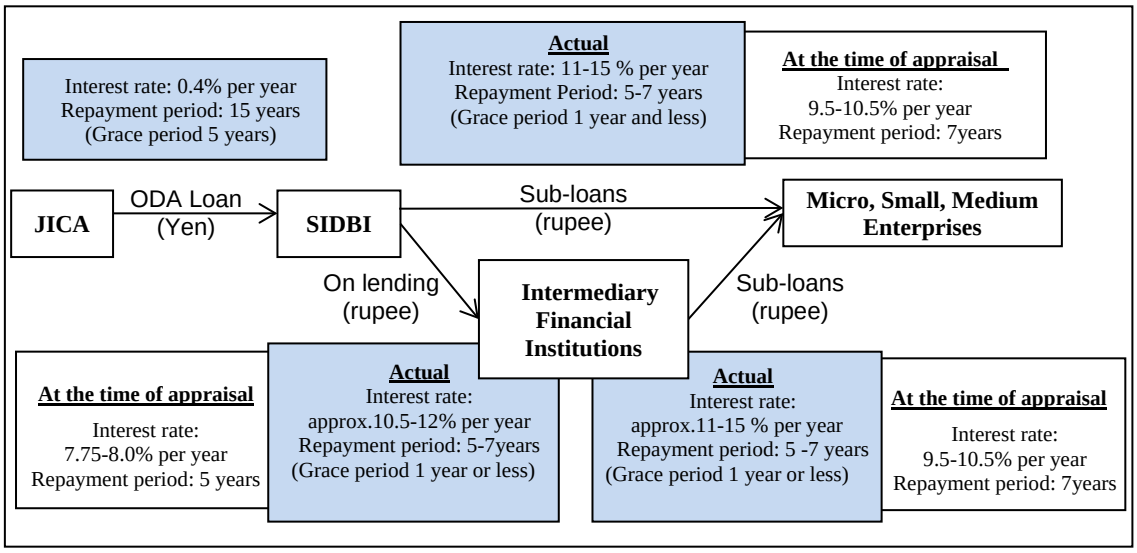
Table 3: Loans by subproject sector

Sector	No. of subprojects	Share
Auto Components	460	25%
Foundry	290	16%
Engineering	243	13%
Plastic & Polymers	176	10%
Casting & Forging	152	8%
Textile	126	7%
Printing	73	4%
Food Processing	59	3%
Leather	28	2%
Packaging	27	1%
Manufacturing of Electrical Equipment	22	1%
Ceramics & Glass	19	1%
Rubber	14	1%
Pharmaceutical & Bulk Drug	13	1%
Other (commercial building, renewable energy, etc.)	134	7%
TOTAL	1836	100%

Source SIDBI documents

(2) Interest Rate and Repayment Period

From the comparison in Figure 2 of the expected loan interest rate and repayment schedule between at the time of the appraisal and as they actually became, it is evident that the interest rate from SIDBI to end users, and from SIDBI to intermediary institutions, and from the intermediary institutions to end users, were higher than had been expected. The reason for the difference is that the prime lending rate at SIDBI at the time of appraisal was about 11% but from 2011 onward the rate was increased at the 12% level during lending period, as interest rates generally rose in reflection of the credit risk of the end users.



Source: Prepared by evaluator based on JICA and SIDBI documents
Note: Actual interest rate and repayment period indicate that majority falls in this range.

Figure 2: Plan and actual loan conditions of the Project

3.2.1.3 Technical Assistance (Out of Scope of the ODA loan)

In association with this project, JICA conducted Special Assistance for Project Implementation for the project while it was being implemented, and provided technical assistance as detailed in Table 4, from September 2011 to March 2014 (31 months). At time of the appraisal, technical assistance completion was planned to be when the loans had all been made, but because the ODA loan disbursement was delayed beyond what had been planned, the technical assistance was completed before disbursement completion.

It appeared that in connection with the technical assistance, coordination would be necessary with other technical assistance donors active at the time, Kreditanstalt für Wideraufbau (KfW) of Germany and Agence Française de Development (AFD) of France. According to what was heard from SIDBI and the technical assistance consultant, however, as there were no special conditions requiring this, not much coordination was made.

Concerning support for generating demand for energy conservation in the central and eastern regions, a campaign and focus group meetings were carried out targeting MSMEs in industrial categories having high potential for energy conservation; in addition, awareness-building seminars were held during Phase 1 in Kolkata and other places in the eastern region and were thought that the seminars could have contributed to the increased applications for loans in Phase 2.

Hearing opinions of SIDBI officers who participated in training for strengthening the capacity for appraisal of energy conservation loans could not be implemented, since there were no participants in this seminar from the head office (Mumbai), the Delhi office, Thane branch and Chennai branch that were visited for the evaluation this time. Also, as SIDBI personnel were being transferred from the position when they attended seminars to new locations nationwide, time was needed to find seminar participants at that time. Thus, the effect of capacity strengthening could not be confirmed by this study.

At the time of this study, according to SIDBI personnel in the department in charge of the project implementation in Mumbai office, in all instances the technical assistance was satisfactory and was useful in facilitating the implementation and efficiency of the project, and contributed to the collection and organization of information. Although contribution of the employee training by the technical assistance to project implementation could not be revealed and, with regard to preparation of the equipment list, SIDBI personnel at the head and other offices, and also personnel of Reliance Capital Ltd., an intermediary financial institution, said that it was of high value in conducting loan appraisals as confirmed by the ex-post evaluation of the Phase 1 project. KfW and AFD commented that they referred to the list by JICA in making their own similar lists of energy saving equipment list for target of their finance. It must be noted that SIDBI and technical assistance consultants pointed out that while they renewed the list a number of times since it was made in Phase 1, they only

added more items, so at this time it was necessary to study to remove some items from the list, and to review the list in entirety so as to be easier to use.

Further, the awareness-building campaign and publicity for this project financing appeared to have contributed to promoting investment by MSMEs in energy conservation equipment. Monitoring of the operation and effect indicators (energy conservation effect) of sub-projects selected as the sample was essential for ascertaining the project's effect, and in particular was thought to have been useful for stimulating awareness of those who received technical assistance.

Table 4: Result of Technical Assistance

Item (plan at the appraisal)	Result
(1) Energy conservation awareness campaign	• Actual implementation: awareness campaigns were conducted 18 times from November 2011 to October 2013, targeting at industrial cluster areas: Guwahati, Mangalore, Balasore, Mirzapur, Rudrapur, Jamshedpur, Gandhidham, Nashik, Jamnagar, Mysore, Panaji, Rourkela, Lucknow, Raipur, Indore, Hyderabad, Nagpur, and Hubli • Focus group meetings, two times, mostly for representatives of industrial associations and small and medium enterprises with potential for saving energy, in December 2011 and September 2012. Locations: Coimbatore and Shillong. • Publicity on availability of loans of the project: via the web page and pamphlets, and 11 issues of a newsletter featuring case studies of energy conservation.
(2) Revision and updating of the Energy Saving Equipment List	• Updating the list was done six times during the project period (on average, twice a year), and new technology was added to the list. The last revision during the project period was in April 2014 (release 7.6)
(3) Support for social and environment impact monitoring	• Concerning social and environmental monitoring, sub-projects in sectors where the potential impact was high were selected and 41 from all over the nation were studied. No adverse impacts were discovered.
(4) Monitoring of operation and effect indicators (energy conservation effect)	• Regarding energy conservation effect, from the nation's industrial clusters, 125 sub-projects were selected for study and monitored regarding the extent of energy consumption.
(5) Strengthening capacity for appraising energy conservation loans by employees of SIDBI and intermediary financial institutions (including introduction of an energy rating system)	• Training was provided only for SIDBI employees, on three occasions.
(6) Support for procedures in relation to application of a Clean Development Mechanism (CDM) / Program CDM	• From CDM candidates identified in Phase 1, in Phase 2 support was provided for registration of a CDM project for the steel (rolling) cluster in Bhavnagar. (Confirmation at the internet site of the UNFCCC at the time of the ex-post evaluation: this was registered on December 22, 2014.)

Source: JICA and SIDBI documents, and results of hearing from the technical assistance consultant.

3.2.1.4 Overall Analysis on the Background for Financial Needs

According to SIDBI, the need for the loans at end users of loans made by this project continued to be robust. Policy for promoting energy conservation by enterprises in Japan encompassed many incentives, such as subsidies for energy saving diagnosis for factories, etc., and acquisition of energy conservation equipment, tax exemption, and interest subsidies

to the loans for acquiring energy conservation equipment or creating arrangements for energy conservation. Provision of these incentives promoted energy conservation by enterprises. Similarly, in India, all the following factors worked simultaneously and concurrently as incentives for investing in energy saving equipment by MSMEs, and generated a robust demand for financing.

i) Implementation of an energy conservation promotion system

As a system for promotion of acquisition of energy conservation by MSMEs, reduced or preferential taxation on energy conservation equipment and subsidies, etc. were implemented. Companies benefiting from these systems were included among the end users of loans made by the project.

ii) Stimulation of demand for investment in energy conservation equipment by end users

In order to encourage energy conservation investment by potential borrowers of project loans, seminars for awareness enhancement on that subject were held in industrial clusters as part of the technical assistance, and publicity about the project was disseminated via the Web and pamphlets.

iii) Speeding up of the loan appraisal process

As technical assistance, a list of energy saving equipment that could reduce energy consumption by 10% or more was made and updated. It was helpful in simplifying and speeding up appraisal of the loan applications.

iv) Economic trends

Economic conditions in India were favorable relatively during the project period, creating an environment that made equipment investment by MSMEs easily, that normally are vulnerable to changes in the economic environment.

3.2.2 Project Inputs

3.2.2.1 Project Cost

As shown in Table 5, the entire amount of ODA loan of 30,000 million yen was disbursed, the overall project cost was planned to be 33,330 million yen, and the actual cost conformed to the plan, at 33,328 million yen.

Table 5: Project Cost (Plan/Actual)

Unit: million yen

Items	Plan (2011)		Actual (2015)	
	Total	Of which ODA loan	Total	Of which ODA loan
Loan	30,000	30,000	29,999	29,999
Interest during construction	280	0	299.5	0
Commitment charge	50	0	20.8	0
Administration fee	3,000	0	3,009	0
Total	33,330	30,000	33,328	29,999

Source: JICA, SIDBI documents

Note: Exchange rate at the time of appraisal: 1 rupee=1.78 yen (November 2010); actual: 1 rupee=1.7 yen (IFS annual average exchange rate data, average from 2011 to 2015). Due to fluctuation of the exchange rate, actual total project cost was slightly lower than in the plan.

3.2.2.2 Project Period

The proposed schedule at the time of appraisal was from June 2011 (signing of the ODA loan agreement) to March 2014 (34 months)[6] but the actual duration was from June 2011 to February 2015 (45 months), approximately 11 months longer than the plan (132% of the plan). The reason for this was that while there was strong financial need of the loans to MSMEs, SIDBI was cautious about the effects of the yen-dollar exchange rate risk, and delayed the timing of the request to JICA for loan disbursement, considering the trend of the exchange rate.

Although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness[7] (Rating: ③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

3.3.1.1 Non-Performing Asset Ratio

The ratio of loan repayment in arrears was suggested as an operation indicator of the project. In this report, the ratio of non-performing assets (NPA) was examined. It was intended to set a target at the time of project commencement; however, as this was not done in fact, Table 6 shows only actual figures. At the end of fiscal 2015-2016, the NPA ratio in monetary terms, was high relative to the NPA ratio of 0.73% for all of SIDBI in the same fiscal year, but was at about the same level, at NPA ratio 4% to 5% on the average,[8] as that announced by the Reserve Bank of India (RBI) for public financial institutions in the same year. According to SIDBI, the situation was due to two loans of large sums that fell in arrears

[6] Definition of project completion here is defined as the date of final disbursement as planned at the time of appraisal.
[7] Sub-rating for Effectiveness is to be made with consideration of Impact.
[8] Source: https://dbie.rbi.org.in/DBIE/dbie.rbi?site=publications#!4 (Aug. 2017) "Bank Wise and Bank Group-wise Gross Non-Performing Assets, Gross advances and Gross NPA Ratio of Scheduled Commercial Banks."

in fiscal 2015-2016 that made the number high. In general, the NPA ratio was kept within reasonable range.

Table 6: NPA Ratio of the Loans under the project

Indicators	FY 2013-14 [1] During project implementation	FY 2014-15 Project Completion Year	FY 2015-16 One year after project completion
NPA ratio in amount base (%)	0.4	0.98	5.18
NPA ratio in number (%)	2.17	1.41	2.47

Source: SIDBI documents
Note 1: Fiscal year in India is April to March
Note 2: ① NPA are loans not repaid for 180 days or more after the due date for repayment. Ratio of unpaid amount to outstanding loan amount at the end of the year. ② Ratio of number of the loans classified as NPA to total number of loans.

3.3.1.2 Energy Consumption Reduction

At the outset of the technical assistance, a target value for energy conservation was set based on results of Phase 1. In comparison to it, the result of reduction in energy consumption volume calculated as of March 2014 from the result of operation and effect indicator monitoring during implementation of technical assistance is as shown in Table 7.[9]

Although target saving values were set for respective annual electrical and thermal energy consumption based on the share by type of energy conservation equipment financed under the Phase 1, it should have been difficult to predict what kind of energy conservation equipment would be needed by MSMEs in Phase 2, and the possibility is fully considered that the actual share of energy conservation equipment financed by Phase 2 is not the same as in Phase 1. Thus, it is considered to be reasonable that electrical energy saving was converted to thermal energy saving (in Mcal) and then the plan and actual figures were compared. Consequently, as of March 2014 the value was 459,850 Mcal in comparison to the target of 469,290 Mcal, achieving 98% of the target figure.

Table 7: Total Energy Saving Amount[1] by Sub-loans Financed by the Project

Indicator	Target (As of Disbursement Completion)	Actual (As of March 2014)
①Annual Electrical Energy Saving	535.09MkWh	280.43MkWh
②Annual Thermal Energy Saving	8,416MkCal	218,680MkCal
①+② (Total thermal energy conversion saving)	469,290MCal	459,850MCal

Source: SIDBI and JICA documents
Note 1: To set target values, results of Phase 1 were used to calculate per project (sub-loan) energy conservation, and assuming the total number of loans for Phase 2, the result was made the target for Phase 2. From the results of actual disbursement of loans, the number of equipment financed were multiplied by the operation and effect indicator for each type of equipment (energy conservation effect) as had been monitored; this yielded the magnitude of energy saved.
Note 2: Converted at 1 kWh = 860kCal.

[9] At this time there were 1,757 outstanding loans, and the calculation was made on that basis. Loans were made until February 2015 and totaled 1,836; the calculation thus was based on about 96% of loans completed.

The energy saved was examined by comparative analysis from another aspect. Calculation by use of the monitoring result of operation and effect indicator by the technical assistance, the effect of energy conservation achieved by use of respective equipment by the project was estimated to be approximately 28% to 39%, depending on the equipment type. Results obtained by monitoring averaged about 39%, so the assumed energy conservation effect was generally on target.

Further, according to the results of beneficiary surveys, 94% of the responses were that energy was saved by the project. Depending on the response, energy conservation ranged from 5% to 60%, and averaged 18.4%. Also, 99% of the respondents stated that they were satisfied with the performance of the acquired equipment. Among the responses were three instances of companies that had been a target for monitoring of operation and effects indicators by the technical assistance. All stated that there was energy saving effect.

From the above, it is judged that in overall terms the project generally had an energy conservation effect.

3.3.2 Qualitative Effects (Other Effect)

3.3.2.1 Enhanced Awareness on Energy Saving by Micro, Small, Medium Enterprises

In the opinion of SIDBI, many of the companies that participated in the awareness promotion campaign indicated in their answers to a questionnaire that their understanding of the importance of energy conservation in production processes had improved; it is evaluated from this that the project stimulated many initiatives to be taken by MSMEs to conserve energy.

Further, as the beneficiaries' questionnaire result, of the 125 companies that were interviewed, 124 replied that their awareness of energy conservation had improved as a result of the project. This is the result of limited samples selected by purposive sampling; however, almost all respondents gave positive replies. In addition, in the opinion expressed by leaders of industrial organizations in Kolkata and Chennai, it appears that since 2010 awareness of energy conservation has risen in the MSME sector.

Thus, the implementation of this project has had the aspect of raising awareness of energy conservation.

3.3.2.2 Improved Appraisal Capacity of SIDBI and Intermediary Financial Institutions on Energy Saving Projects

The effects of training could not be verified. The technical assistance component provided training only of SIDBI loan officers and the number of training sessions was limited. However, in the opinion of SIDBI and the consultant in charge of the technical assistance, in

the beginning of the project, SIDBI officers often consulted with the technical assistance consultant regarding the effects of equipment proposed to be financed, but the number of such consultations gradually decreased as the loan officers increased making decisions on their own, and this is considered to be a sign of improved capability.

Employees of SIDBI and intermediary financial institutions can be thought to have acquired insight regarding energy conservation equipment through reference to the Energy Saving Equipment List. This is believed to have been part of the contribution of this project to improvement of loan officer capability.

3.4 Impacts

3.4.1 Intended Impacts

3.4.1.1 Quantitative Impacts

(1) Green House Gas Emission Reduction

CO_2 reduction target was calculated as 438,430 tons a year by technical assistance, on the basis of the energy saving plan, after the start of the project. After the project implementation, the reduction calculated from monitoring results of operation and effect indicators (energy conservation effect) was 241,010 tons a year, about 50% of the target. As described in the section on effectiveness, however, given the difficulty of forecasting from the variety and quantities of equipment in the plan, in fact rather than the effect of electrical energy saving equipment, more thermal energy saving equipment was financed, resulting in a difference relative to the plan. In any event, a certain degree of reduction of CO_2 was observed, and it contributed to improvement of the environment and alleviation of climate change.

(2) Contribution to Sustainable Economic Development

Results of the survey of beneficiaries show that 88% of respondents stated that there was a favorable impact on production volume from the equipment financed by the project. Further, 93.6% replied that income too had risen, to the extent that it rose in 2015-2016 by 12.5% on the average relative to 2010-2011, around the timing of introducing energy conservation equipment. In response to the question on change of profits, 97.6% of total replied that there had been an increase. Many of the respondents to the survey thus indicated that there had been an economic impact. Besides these results, industrial organization representatives in Kolkata and Chennai, in interviews, expressed the opinion that SIDBI financing for energy conservation equipment investment by MSMEs had contributed to production growth.

3.4.1.2 Qualitative Impacts

According to the result of the survey of beneficiaries, almost all responders stated that there had been impact in term of improved workplace safety and product quality. Further, 90% of responders said that there had been an increase in the number of employees.

Photo 1: Energy conservation equipment purchased by Company A. In addition to reducing electricity use by about 30%-40%, product quality was improved, business was expanded by launching of new products, employment increased, and evaluation on product quality by customers and their satisfaction rose.

Photo 2: Energy conservation equipment purchased by Company B. In addition to reducing electricity use by about 10%-20% there was a 1-2% decrease in diesel oil use, sales and product quality improved, business expanded, and also contribution to retention and increase in employment.

3.4.2 Positive and Negative Impacts

Impacts on the Natural and Social Environment

The technical assistance consultant selected 41 companies in the textile, metal casting, and other industries in 12 industrial clusters in various states, and performed monitoring of the environment (of the atmosphere, water quality, noise, etc.) at subproject areas. It was confirmed that those companies followed government standards and also there were no adverse impacts on the social environment during the project.

According to the responsible person at SIDBI, there were no sub-projects falling in Category A of JICA Guidelines for Environmental and Social Considerations. Further, in the responses to questions to SIDBI, with specific reference to the sub-projects in textile and ceramics plants which could have an influence on the natural environment, the persons in charge at relevant branches visited the sites to determine whether serious impacts were identified, and after the loans were made they also confirmed that there were no instances of problem occurrence. They also reported that there were no cases of relocation of residents or new acquisition of land etc. From these findings it is judged that as a result of the project there was no significant impact on the natural environment.

As is evident from the above, the NPA ratio for project loans was relatively at a low level while the energy saving was roughly as had been planned. Also, CO_2 emissions had been reduced to the extent corresponding to the energy saving volume, and among the financed companies impact

was evident in the form of increased production output, increased income, and improvement of worker safety, and so on. This project has largely achieved its objectives. Therefore, effectiveness and impact of the project are high.

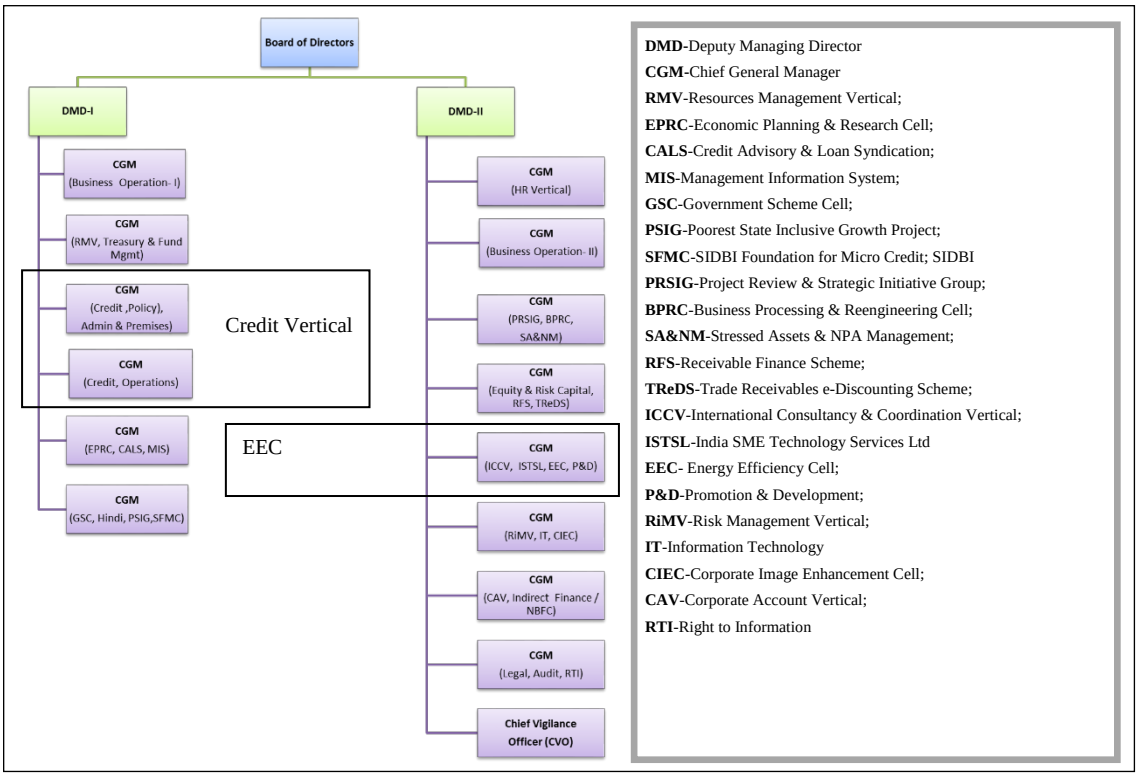
3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

SIDBI was established in 1990 as a financial institution specializing in MSME finance. Today, it has 1,060 employees, a head office in Lucknow, Uttar Pradesh, and substantial operation management functions concentrated in the Mumbai office. There are regional offices in 15 cities including Lucknow, Mumbai and Delhi, and branches in 80 locations (as of the end of March 2016).

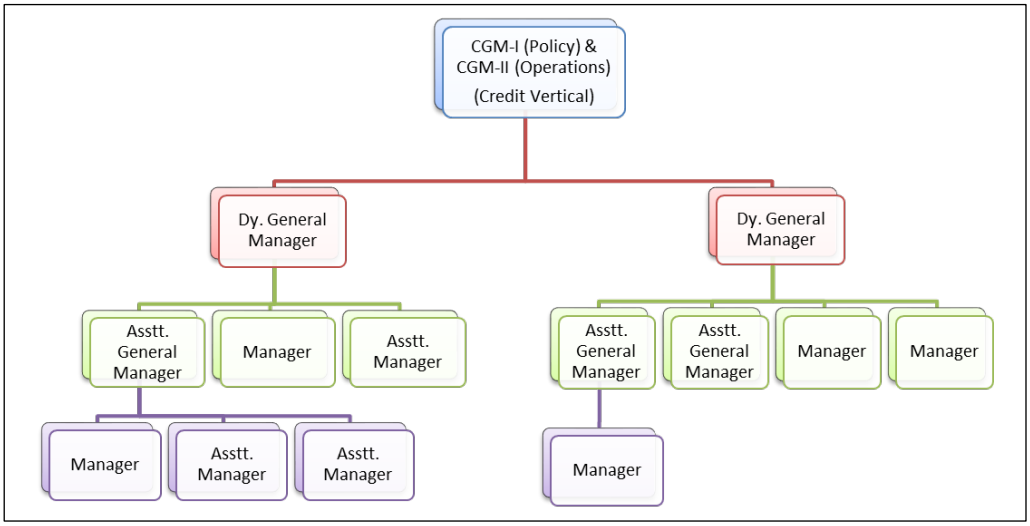
Organizational arrangements are as shown in Figure 3. Reporting to the Board of Directors are two Deputy Managing Directors who are in charge of 16 units. Among them is the Energy Efficiency Cell (EEC), and, in comparison to the situation at the time of ODA loan appraisal when there were EECs at Mumbai and Delhi offices, these have been consolidated to one cell, in Delhi. It provides technical support for energy conservation, and undertakes studies as are needed. At the time of the ex-post evaluation, Credit Policy and Credit Operation units at the SIDBI Mumbai office were in charge of monitoring implementation of loans and loan repayment. These are called the Credit Vertical part of the organization and are as shown in Figure 4. Energy conservation loan cases are allocated among the 12 members of the Credit Operation department. The loan officers at each branch lending sub-loans are responsible for most works on loan appraisal and repayment for loans made, and reports to Credit Vertical. The relevant branch offices of SIDBI handles issuance of loans to intermediary financial institutions and repayment from them, and the person in charge of refinance in the Mumbai office does monitoring with reports from the other offices.

The turnover rate of employees of SIDBI is low. Many employees are college graduates or have other higher-level education and there are many MBA holders, accountants, and engineers. There was no indication of a shortage of human resources, and this situation has not changed since the time of the ex-post evaluation of Phase 1.



Source: SIDBI Document

Figure 3: SIDBI Organization Chart (Overall)



Source: SIDBI

Figure 4: SIDBI Organization Chart for Credit Policy and Operation Vertical

While there has been some change in the organization since the project appraisal, the allocation of responsibility for energy conservation finance is clear at the head and branch offices, and concerning the officers there is no evident shortage or problem in doing the work. The monitoring arrangements for the project's financing appears to be suitable.

3.5.2 Technical Aspects of Operation and Maintenance

SIDBI runs two training centers where programs are regularly held, covering all aspects of finance and for all employees, so that they are equipped with the capability of smoothly implementing their basic work. Appraisal requirements for financing small and medium enterprises are fixed separately for each product. Regarding energy conservation financing guidelines were drafted on the basis of JICA guidelines for the project and loan officers at branches perform their work according to them. In addition, loan officers have conducted the project appraisal, routinely using the Energy Saving List which was repeatedly revised during the ongoing Phase 3, at least up to the time of the ex-post evaluation. The process for appraisal of energy conservation loan applications conformed to the uniform rules and procedures for it and appears to be suitable. Even in the case of making use of the list for future appraisal work it is thought that because of the experience gained through this project, SIDBI will be capable of providing similar finance based on its own revision of the list or through contracting out to consultants.

3.5.3 Financial Aspects of Operation and Maintenance

From examination of SIDBI's major financial indicators for fiscal 2011-2012 to fiscal 2015-2016, shown in Table 8, it is evident that revenue was increased in every year until fiscal 2013-2014, and was generally at the same level after that. Although in every year, net profits rose 20% to 30%, compared to previous year, from fiscal 2014-2015 to2015-2016 they declined about 20%. The reason for that was, as one factor, an increase in interest costs and financial costs that exceeded the growth of revenue.

The NPA ratio over the five-year period was consistently low, at 0.34% to 0.78%. SIDBI's financial conditions in recent years can be judged to be good, and there are no points threatening the sustainability of the project. Soundness of financial conditions is being maintained.

Table 8: SIDBI's Major Financial Indicators

Unit: million rupees

Indicators	FY2011-12	FY2012-13	FY2013-14	FY2014-15	FY2015-16
Income	46,152	54,012	58,083	57,415	57,846
Interest and Discount, etc	44,233	51,341	56,190	54,971	55,418
Expenditure	35,355	42,049	42,688	36,262	41,481
Interest & Financial Charges	25,233	30,393	33,371	33,737	35,021
Operating Expenses	2,760	3,221	3,093	4,495	4,209
Provisions and others	7,363	8,436	6,224	(1,970)	2,251
Profit Before Tax	10,797	11,963	15,395	21,152	16,365
Net Profit	5,914	8,645	11,514	14,531	12,172
Total Assets	593,849	618,926	678,104	608,550	764,785
Capital Risk Asset Ratio (%)	30.6	28.1	30.8	36.7	29.9
Non Performing Asset Ratio (%)	0.34	0.53	0.45	0.78	0.73

Source: SIDBI Annual Reports

3.5.4 Current Status of Operation and Maintenance

The NPA ratio of end users of direct loans by SIDBI, as stated in "3.3.1.1, Non-Performing Asset Ratio", has been kept relatively low. Among the companies surveyed as beneficiaries, none had problems in operation or maintenance of purchased equipment.

As for indirect loans, according to a report from SIDBI, intermediary institutions have made payments to SIDBI on schedule, and no loan was in arrears. The person in charge of finance at the Mumbai office evaluated that the financial status of the two borrower institutions was good. Examination of the financial statements of those two institutions did not reveal any problems.

Regarding the reports of the second and following series of lending utilizing repayment from the borrowers, requirement of a revolving fund account was waived due to the reasons of SIDBI's administration and accounting, and all cases of granting credit for energy conservation equipment were required to be reported to JICA. Review of documents submitted to JICA in 2015 and 2016 indicated that there was more of an increase in total loan outstanding amount with lending with the same purpose than the increase in total repayment from the loans of the project, implying the situation wherein repayment funds for the project can be relent for the same purpose.

No major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project has the purpose of providing medium- and long-term financing to MSMEs in India, where rapid economic growth has engendered an increase in energy consumption making it vital to improve the efficiency of energy use. This financing has been for investment in acquisition of energy-conserving equipment and facilities. The provision of financial support for investment in energy conservation by MSMEs is highly relevant to both the development assistance policy of the Japanese government and the policy and development needs of the Indian government. The project was realized within the amount of funds appropriated but loan disbursement was delayed compared in the planned period, so the efficiency of the project is judged to be fair. The energy conservation equipment financed for end user (final borrowers) either directly by SIDBI or through intermediary financial institutions has helped to reduce energy consumption, making the project highly effective. The project also had impact through reducing the emission of CO_2. There are cases wherein the project had impact through increased output of manufacturing, increased income, improved worker safety, and retention of employment Thus, the effectiveness and impact are high. With regard to sustainability, at the time of the ex-post evaluation no serious problem is

evident concerning SIDBI's institutions for operation and maintenance, technical matters, or financial matters. In light of the above, this project is evaluated to be highly satisfactory.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Review of the Entire Energy Saving Equipment List

SIDBI and the technical assistance consultant indicated in connection with the Energy Saving List made during Phase 1 that the revision made by now was limited to the addition of equipment items, and that it is necessary to conduct a total review of the list including elimination of items which are no more needed. It is desirable that the list be reviewed at the earliest opportunity, either within the scope of the ongoing Phase 3 technical assistance, or under the SIDBI's EEC to make the list more user friendly.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

Detailed analysis of the environment within which a project is to be realized and examination of technical assistance, in the preparatory stage of energy conservation finance projects

In this project, The following factors were important for promotion of MSMEs' investment in energy conservation equipment and achievement of the project purpose: (1) the implementation status of policy and institutional arrangements for promotion of energy conservation investment, (2) the activities for stimulating the demand to invest in energy conservation, (3) smooth execution of loan appraisals for energy conservation investment loans, and (4) economic conditions that facilitated investment in plants and equipment. Further, with regard to evoking, among borrowers, of perception of the need for use of credit and to improvement of loan appraisal capacity of the executing agency, the role of technical assistance was valuable for the smooth implementation of the project and the accomplishment of the project purpose. The assistance included the awareness-raising seminars devoted to energy conservation investment that were held continuously starting in Phase 1, and the technical assistance to the formulation of Energy Saving Equipment List and to the loan appraisal by the executing agency.

Accordingly, when formulating a similar project investing in energy conservation equipment targeting MSMEs, at early stage of project formulation, JICA should evaluate the project from multiple aspects to foresee the possibility of smooth project implementation, such as aspects including (1) implementation status of energy conservation policy and system (2) awareness-

raising among MSMEs and necessity for stimulating their demand for investing in the energy conservation, (3) evaluation of appraisal capacity of the executing agencies regarding the target of the loans and necessity for producing reference document such as energy equipment list, and (4) the possibility of economic deterioration which influences the business of MSMEs in the near future. In the evaluation, in case the necessity for technical assistance is judged, it is desirable that technical assistance should be planned beforehand by JICA or in collaboration with other donors.

Agreement with the Project Executing Agency on Setting and Definition of Operation and Effect Indicators for Monitoring Purposes

In this project, as for necessity for indirect loans monitoring and the definition on operation and effect indicators, a common understanding was not formed with the project executing agency (for example, actual indirect loan amount by each financial institution was not reported and definition of NPA ratio was unclear about whether it is for the project financing portion or for total SIDBI). When implementing a development finance project in the future, it is necessary to agree with the executing agency on necessary items of operation and effect indicators and their definition in detail for monitoring purpose, clearly reflecting it in the report format.

End

Comparison of the Original and Actual Scope of the Project

Items	Plan	Actual
1. Project Outputs		
(1) Number of Loans	3,000	3,965
(2) Terms and Conditions		
Eligible subprojects	Eligible target project under ODA loan is investing in the facilities and others that are listed in energy saving equipment list	As planned
Eligible end users	MSMEs classified based the definition by Ministry of Micro, Small and Medium Enterprises, and eligible borrowers acknowledged by SIDBI	As planned
Target sector	No limitations in particular, however, excluding weapons, drug trading, other illegal industries	As planned
Target area	Nationwide in India	As planned
Interest rate and repayment period	Loans from SIDBI to end users 9.5-10.5%/year	Approx. 11-15%/year, 5-7 years
	Loans from SIDBI to Intermediary Financial Institutions: 7.75-8.0%/year, 5 years	Approx.10.5-12%/year, 5-7 years
	Loans from Intermediary Financial Institutions to end users: 9.5-10.5%/year, 7 years	Approx. 11-15%/year, 5-7 years
2. Project Period	June 2011-March 2014 (34 months)	June 2011- February 2015 (45 months)
3. Project Cost Foreign Currency Local Currency Total Japanese ODA loan portion Exchange rate	 30,330 million yen 3,000 million yen 33,330 million yen 30,000 million yen 1 Rs=1.78 yen (As of November, 2010)	 30,319 million yen 3,009 million yen 33,328 million yen 30,000 million yen 1Rs=1.7 yen (average IFS annual rate between 2011 and 2015)
4. Final Disbursement Date	February 2015	