Republic of India

FY2023 Ex-Post Evaluation Report of
Japanese ODA Loan
"Micro, Small and Medium Enterprises Energy Saving Project (Phase 3)"

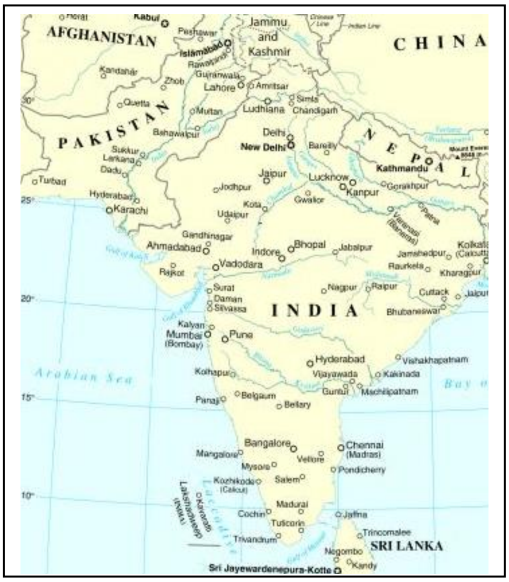
External Evaluator: Ryujiro Sasao, IC Net Limited

0. Summary

The project aimed to enhance energy utilization efficiency by primarily providing medium to long-term funding for energy efficiency initiatives, with a focus on micro, small, and medium-sized enterprises (MSMEs), which faced challenges in optimizing energy use. Regarding relevance, the project's objective of promoting energy conservation in the MSME sector aligns well with India's development policy. During the period between the ex-ante evaluation and the ex-post evaluation, the importance of energy conservation in this sector—namely, the development needs—remained high. While there were no fundamental problems with the basic approach of the project, challenges were observed in the pilot initiatives for lending in the health sector and the involvement of intermediary financial institutions in the project. Regarding coherence, the project's alignment with Japan's development cooperation policy is strong, and there are no particular issues with both internal and external coherence. Therefore, the project's relevance and consistency are high. Although the project duration exceeded the initially scheduled period, the project costs stayed within the planned budget, indicating that efficiency is high. Regarding effectiveness, both the loan amount and the number of loans to MSMEs fell short of the initial plans, resulting in the energy-saving achievements being below the targets. As for impact, the anticipated effects, such as cost reductions and productivity improvements for individual companies, have been realized to a certain extent. Therefore, the effectiveness and impact are moderately low. Regarding sustainability, there are no particular problems in aspects such as policies and systems, organizational structure, technology, finance, and environmental and social considerations. Thus, sustainability is very high.

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

1. Project Description



Project Location(s) (source: UN*)
*Note: This map is developed based on UN map.[1]

An injection molding machine procured in the project (source: evaluator)

1.1 Background

With India’s rapid economic growth in recent years, the country’s energy consumption has continued to increase, making it the world’s fourth-largest energy consumer. To ensure a stable energy supply and environmental preservation in the future, promoting efficient use of energy (energy conservation) has become an urgent priority for the country. As of 2011, MSMEs account for approximately 45% of India’s manufacturing industry and 43% of the country’s exports, and their impact on the Indian economy is significant. However, their energy consumption efficiency is low owing to aging equipment and other factors. Moreover, MSMEs’ energy-saving initiatives are lagging behind for reasons including the following: MSMEs’ limited capacity for funding energy-saving equipment investments, technology, and expertise compared to large corporations; and MSMEs’ relatively low awareness of the importance of energy conservation.

The Government of India set a goal in the 11th Five-Year Plan (April 2007-March 2012) to achieve a 20% improvement in energy use efficiency by 2017. The 12th Five-Year Plan (April 2012-March 2017) also outlined policies to promote further the reduction of energy demand through energy conservation.

Against the above backdrop of the energy-saving situation in India and the Indian government’s policies, the Government of Japan approved and implemented ODA loans for the “Micro, Small and Medium Enterprises Energy Saving Project” in fiscal year 2008 and the “Micro, Small and

[1] Disclaimer: This map is only for illustrative purposes and does not imply any opinion of JICA on the legal status of any country or territory, the border line of any country or territory or its demarcation, or the geographic names.

Medium Enterprises Energy Saving Project (Phase 2)" in fiscal year 2011. While these ODA loans contributed significantly to energy conservation in India, further energy-saving efforts were necessary to achieve the goal of a 20% improvement in energy use efficiency by 2017, as set in the 11th Five-Year Plan. Moreover, it was necessary to respond to the strong demand for required funds. The project is a follow-up on the aforementioned two projects.

1.2 Project Outline

The objective of the project is to enhance energy utilization efficiency by primarily providing medium to long-term funding for energy efficiency initiatives, with a focus on micro, small and medium-sized enterprises, including a pilot program in the health sector, thereby contributing to the improvement of the environment, sustainable economic development, and mitigation of climate change in India.

Loan Approved Amount / Disbursed Amount	30,000 million yen / 14,436 million yen
Exchange of Notes Date / Loan Agreement Signing Date	March 2014 / September 2014
Terms and Conditions	Interest Rate 0.15% Repayment Period 15 years (Grace Period 5 years) Conditions for Procurement General Untied
Borrower / Executing Agency(ies)	SIDBI: Small Industries Development Bank of India / SIDBI (Guarantor: The President of India)
Project Completion	December 2021
Target Area	India as a whole
Main Contractor(s) (Over 1 billion yen)	None
Main Consultant(s) (Over 100 million yen)	None
Related Studies (Feasibility Studies, etc.)	"SAPI (Special Assistance for Project Implementation) on MSME Energy Saving Project Phase III" (2014-2018)
Related Projects	(ODA Loan projects) "Micro, Small and Medium Enterprises Energy Saving Project" (November 2008) "Micro, Small and Medium Enterprises Energy Saving Project (Phase 2)" (June 2011) (Technical cooperation)

	"The Visionary Leaders for Manufacturing Programme (VLFM) in India" (2007-2012), "Applying Japanese low carbon technologies to small and medium-sized enterprises in India" (SATREPS) (2010-2014), Technical Training on Energy Conservation (2008-2010, 2011-2014) (Other donors (SME related projects)) World Bank: "Small and Medium Enterprise (SME) Financing and Development Project" (2004-2013) "Scaling up Sustainable and Responsible Microfinance Project" (2010-2015) "Partial Risk Sharing Facility in Energy Efficiency" (2015-2024) AFD: "Small Industries Development Bank of India (SIDBI) Line of Credit" (2010-2013) KfW: "SIDBI Energy Efficiency Credit Line II" (2016-2020) ADB: "Micro, Small, and Medium Enterprise Development Project" (2010-2015)

The specific mechanism of the project is outlined below. The provision of medium- to long-term funds primarily required for energy-saving initiatives to MSMEs in India was implemented through a combination of two-step loans, where funds were on-lent from SIDBI to MSMEs (hereinafter referred to as "end users" in the project), and three-step loans, where funds were lent from SIDBI to end users via intermediary financial institutions (IFIs).

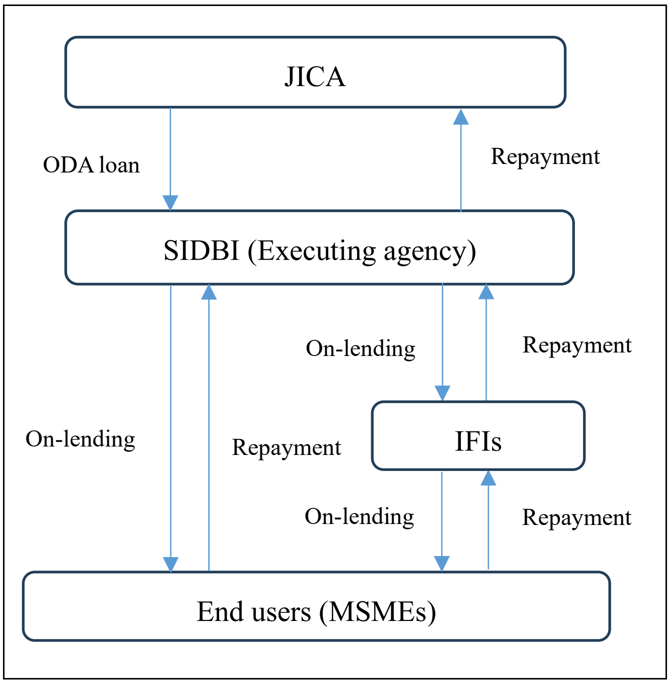


Figure 1: Loan Mechanism in the Project

2. Outline of the Evaluation Study

2.1 External Evaluator

Ryujiro Sasao, IC Net Limited

2.2 Duration of Evaluation Study

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

Duration of the Study: December 2023-February 2025

Duration of the Field Study: March 30-April 17 and July 6-18, 2024

2.3 Constraints During the Evaluation Study

The beneficiary survey was conducted with the borrowers, MSMEs (end users), in the project. Owing to issues such as access to the target areas and budget constraints, the survey was conducted with a sample size of approximately 40 companies in Delhi and the capital area, and 5 states, namely Maharashtra (Pune), Tamil Nadu (Chennai), Gujarat (Ahmedabad), Karnataka (Dharwad, Hubballi, Hubballi), and Uttar Pradesh (Kanpur), selected through purposive sampling while considering the balance of industries.[2] The sample size is not statistically significant, and the survey results are to be regarded as reference information.

[2] The target states for the survey were selected based on the following main criteria: ① high GDP per capita, ② observed industrial development in such realms as manufacturing, ③ high energy demand, and ④ a relatively large number of sub-loans.

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

3.1 Relevance / Coherence (Rating: ③[4])

3.1.1 Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of India

(From the perspective of energy conservation)

The 11th Five-Year Plan (April 2007-March 2012), which was the national plan at the time of the appraisal, set a clear energy conservation goal of achieving a 20% improvement in energy efficiency by 2017. Additionally, the 12th Five-Year Plan (April 2012-March 2017) outlined a policy to further promote the suppression of energy demand through energy conservation, building on the previous energy-saving programs. Regarding policy, as part of the initiative announced in June 2008 called the National Action Plan on Climate Change, the “Energy Efficiency Plan” was formulated in 2010. This plan, in addition to the ongoing efforts to improve energy efficiency through the Bureau of Energy Efficiency (BEE), outlined measures such as the introduction of market mechanisms, preferential tax treatment, tax reductions and subsidies for energy-saving equipment, the introduction of financing mechanisms for demand management programs, and the establishment of a lending platform through financial institutions including SIDBI to promote energy efficiency.

After the inauguration of the Government of India led by Prime Minister Modi in May 2014, the Planning Commission, which was responsible for drafting the 12th Five-Year Plan, was abolished in January 2015. However, at the time of the ex-post evaluation, Prime Minister Modi announced a new goal on August 15, 2021 (the 75th Independence Day) to transform the country into an “energy self-reliant” one by 2047, as one of the themes of “Vision India@2047” (India will mark the 100th anniversary of independence in 2047). Within this goal, a target of “reducing CO_2 emissions by 2.5 billion metric tons” by 2047 was set.

(From the perspective of MSME promotion)

In the 12th Five-Year Plan, MSMEs were identified as being crucial not only for economic growth but also for employment, making them essential for achieving the growth that will benefit all the people of India (inclusive growth) advocated by the government.

Furthermore, a policy document called the “Draft National Policy for Micro, Small and Medium Enterprises (MSME) in India” was released in July 2021. According to this document, MSMEs in India employ 110 million people and account for 28% of the country’s GDP, making them a vital sector. Although this sector suffered significant setbacks during the COVID-19 pandemic, it is recognized that the efficiency and productivity of MSMEs are crucial for a V-

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

4 ④: Very High, ③: High, ②: Moderately Low, ①: Low

shaped recovery of the Indian economy.

As stated above, from the time of the appraisal to the one of the ex-post evaluation, the importance of energy conservation and MSME promotion in India's development policy is clear. Accordingly, the consistency is high between the evaluated project, which aimed to promote energy conservation in MSME sector, and India's policy above.

3.1.1.2 Consistency with the Development Needs of India

In India, with its rapid economic growth and population increase, energy consumption continues to rise. Ensuring stable energy supply and environmental preservation in the future necessitates the urgent task of improving energy efficiency through energy conservation. MSMEs in particular have been noted for their lower energy efficiency than large corporations because of factors such as outdated equipment, leaving significant room for improvement in the aforementioned efficiency. To address the issues above, JICA has been supporting and promoting energy conservation efforts by MSMEs through Phases 1 and 2 of the Micro, Small and Medium Enterprises Energy Saving Project, which are the stages immediately prior to the evaluated project. These phases provided medium- to long-term funds necessary for energy-saving initiatives and strived to raise awareness of energy conservation. The ex-post evaluations of Phases 1 and 2 indicated highly positive results, with significant energy-saving effects being recognized. However, to achieve the goal of "20% improvement in energy efficiency by 2017" set in the 11th Five-Year Plan, further efforts in energy conservation were required, leading to the implementation of the project (Phase 3).

Even in the ex-post evaluation stage, energy consumption in India continued to expand rapidly,[5] and such consumption within the MSME sector was increasing. Despite the recognition at the project's inception of the need to promote energy conservation among MSMEs, the sector still lags behind large corporations. Moreover, the importance of energy conservation within the MSME sector remains unchanged at the time of the ex-post evaluation. Since the start of the project, there have been no significant external changes, such as drastic economic shifts or policy changes, that would invalidate the relevance of the project and its implementation.

3.1.1.3 Appropriateness of the Project Plan and Approach

The project is Phase 3 of a series of projects that have been successfully implemented thus far, and the project plan was formulated based on past achievements. Thus, it is fair to regard the project plan and approach as largely effective.

From the ex-post evaluations of similar past projects, it has been learned that, in development

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[5] The growth in global energy consumption accelerated in 2023 (+2.2% year-on-year), significantly surpassing the average growth rate of +1.5% per year from 2010 to 2019. India, the world's third-largest energy consumer, also recorded a 5.1% increase in 2023. (Source: "World Energy Consumption Statistics," https://yearbook.enerdata.jp/total-energy/world-consumption-statistics.html)

finance loans, when involving multiple implementing agencies (financial institutions) in parallel, it is effective not to standardize the project scale and sub-loan conditions uniformly, but to manage them flexibly according to the funding needs and scale of the target end users of each institution. This lesson from the past has been applied, and it has been confirmed by one participating intermediary financial institution that loan conditions were set flexibly according to the credit status of the borrowers. Owing to the utilization of the "Make in India Fund" provided under the "Make in India" policy[6] of the Government of India after the start of the project whose interest rate is more concessional than JICA loan , it became impossible to fully utilize the ODA loan credit line of JICA, and the loan amount remained at about half of the planned amount. The de facto plan change during the project implementation was the result of unavoidable circumstances that could not have been anticipated beforehand.

In the project, healthcare-related companies were selected as a pilot sector, and it was planned to allocate 10% of the total lending portfolio to them. The reason given was that, unlike manufacturing, healthcare companies do not own real estate such as land or buildings, making it difficult for them to secure funding through banks or other financial institutions using real estate as collateral, as is common in manufacturing. As a result, only one healthcare-related company participated, and the pilot project did not fulfil its intended role. At the time of the ex-post evaluation, it was not possible to confirm the abovementioned reason clearly. Furthermore, of the 18 seminars conducted to introduce the project, only two seminars were held for the healthcare sector. Therefore, verification of the sector's financing needs may have been insufficient, and the number of seminars introducing the project may have been inadequate.

Moreover, sub-loans through intermediary financial institutions were implemented in the project, but it was difficult to obtain ex-post indicators from these institutions to verify performance.[7] This issue goes beyond simply acquiring information for evaluation purposes and may suggest SIDBI's inadequate project monitoring of the intermediary financial institutions.

3.1.2 Coherence (Rating: ③)

3.1.2.1 Consistency with Japan's ODA Policy

In "Japan's Country Assistance Program for India" formulated by the Japanese government in May 2006, "improving poverty and environmental issues" was identified as a priority area, and support for the energy conservation realm was included. "JICA Country Analysis Paper" (March 2012 edition) also designated "environmental measures and responses to climate change" as a key area. For India, whose dependence on foreign countries for fuel is increasing, the energy

[6] It is a manufacturing promotion policy announced in September 2014 under the first Modi administration, aiming to increase the share of manufacturing in GDP to 25% by 2022 and create 100 million new jobs within five years.
[7] Of the two participating intermediary financial institutions, no information was obtained from one, and the other provided only limited information.

conservation realm is not only important for its energy policy but also a field where Japanese expertise and technology can be utilized. Thus, the Japanese government has decided to involve actively in this realm.

In response to the growing global interest in environmental issues in recent years, the Japanese government has also demonstrated a proactive stance in supporting India's environmental and energy policies through initiatives such as the Japan-India Energy Forum, Japan-India Energy Dialogue, and joint statements between the Japanese and Indian leaders.

As mentioned above, Japan is supporting India's energy conservation policy, and the project is highly consistent with Japan's development cooperation policy.

3.1.2.2 Internal Coherence

The JICA project (Technical Cooperation through JICA's Loan Account), which was anticipated at the time of the project appraisal, was successfully implemented. However, apart from the Technical Cooperation through JICA's Loan Account, there was no direct linkage between the project and the related projects mentioned in the appraisal documents or other projects (in the SME or energy conservation sectors) undertaken during the same period within the "Rolling Plan."

3.1.2.3 External Coherence

Although there is no co-financing or clear division of roles between JICA and other donors regarding a program approach aimed at energy conservation for MSMEs, it has been confirmed that exchanges of views are occasionally taking place among the major donors. In particular, JICA has closely exchanged views with KfW (*Kreditanstalt für Wiederaufbau*: German Credit Institute for Reconstruction). Furthermore, there is a case where KfW improved its approach to supporting SMEs in the energy conservation sector upon learning from JICA's approach, thereby indirectly contributing to the final outcome (impact) of the project.[8]

Regarding the Make in India Fund, it is fair to state that the loan projects utilizing the Fund and the project have had a de facto complementary relationship in achieving the impact (as detailed in the "project cost" section of the efficiency analysis).

Regarding a contribution to an international framework, the project is related to the Paris Agreement.[9] Specifically, this agreement aims to have countries around the world strive to reduce greenhouse gas emissions, which contribute to global warming, and the introduction of energy-saving technologies and policies is part of such effort. The Government of India ratified

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[8] Previously, lending operations to MSMEs had stalled, but they have been promoted by utilizing the energy-saving equipment list from the JICA project. However, to promote energy efficiency, KfW requires a 20% energy saving as a condition for financing.

[9] Adopted at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21), held in Paris, France, in December 2015, as a new international framework for reducing greenhouse gas emissions and other measures from 2020 onward.

the agreement in October 2016. Around the same time, the government was advancing energy conservation efforts across various sectors including SMEs, and the project is part of such undertaking.

Therefore, its relevance and coherence are high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

1) Loan Performance for Energy-Saving Equipment to MSMEs

The initially planned total number of approved and disbursed sub-loans was 2,000, but the result was 1,626. Out of the total loan amount, 95.37% was directly financed by SIDBI, and 4.63% was indirectly financed through private financial institutions. The indirect financing by SIDBI through private financial institutions was conducted via two institutions, namely Intec Capital Ltd. and IKF Finance Ltd. (details on the number of loans in indirect financing are unknown). According to SIDBI, it approached multiple seemingly eligible financial institutions, but only two showed an interest in the project.

The other output indicators and their achievement levels are as indicated in Table 1. Here is the main reason that the targets were not achieved for the total number of approved and disbursed sub-loans and the number of seminars held: after the loan agreement for the project was signed, the Government of India provided Make in India Fund for lending to MSMEs whose interest rate is more concessional than JICA loan, leading to SIDBI's prioritization of the governmental fund in its lending activities midway through the project period. Although the total loan amount in the project reached only 48% of the initial plan (approximately 14,467 million yen against the planned 30,000 million yen), the total number of approved and disbursed sub-loans reached 80% of the target. This is because the loan amount per case was not as large as initially expected, resulting in a higher-than-anticipated ratio of sub-loan cases to the total loan amount. It should be noted that no re-lending through a revolving fund has been implemented.

Table 1: Output Indicators and Results in the Project

Indicator	Target (2021) (2 years after the completion)	Result (2021)	Achievement ratio (%)
Number of sub-loan cases committed and disbursed	2,000	1,626	81.3
Number of seminars to raise MSMEs' awareness of energy conservation	24	18	75
Number of participants in seminars to raise MSMEs' awareness of energy conservation	n.a.	1,166	—

2) Loan conditions

(1) Borrowers (End users)

Qualified end users for the project loans are classified as either micro, small, or medium-sized enterprises based on the definitions set forth by the Ministry of Micro, Small and Medium Enterprises (the Ministry of MSMEs) and are recognized as eligible for receiving loans from SIDBI. In the project, there are no specific industry restrictions (except for industries involved in weapons, drug trafficking, or other illegal activities). During the project period, the Government of India revised the definitions of MSMEs under the 2006 Small and Micro Enterprises Development Act as indicated in Table 2 (effective July 2020).

Table 2: Definitions and Categories of Enterprises

Unit: Indian rupee (INR)

Enterprise category	Before the revision		After the revision
	Manufacturing	Service	For all enterprises
Micro	Investment in facilities: 2.5 million or less	Investment in facilities: 1.0 million or less	Investment in facilities: 10 million or less Annual turnover: 50 million or less
Small	Investment in facilities: bigger than 2.5 million, and 50 million or less	Investment in facilities: bigger than 1.0 million, and 20 million or less	Investment in facilities: 100 million or less Annual turnover: 500 million or less
Medium	Investment in facilities: bigger than 50 million, and 100 million or less	Investment in facilities: bigger than 20 million, and 50 million or less	Investment in facilities: 500 million or less Annual turnover: 2,500 million or less

(Note: As the definitions were revised during the project period as stated above, it is difficult for SIDBI to present the enterprise distribution by definition before or after the revision. Accordingly, enterprise distribution by definition is omitted in this report.)

The loan results by region are as indicated in Table 3 and Figure 2. As pointed out in the ex-post evaluation of Phase 2, there are still fewer sub-loans in the eastern and middle regions, which is due to a clear difference in the demand for funds among MSMEs across regions.

Table 3: Regional Distribution of Sub-Loans

Region	Number of sub-loans	Share (%)
North	482	29.6
East	52	3.2
Middle	41	2.5
West	490	30.1
South	561	34.5
Total	1,626	100.0*

Source: SIDBI
*The sum of the five regional shares in Table 3 is not 100% because all numbers after the decimal point are rounded off.

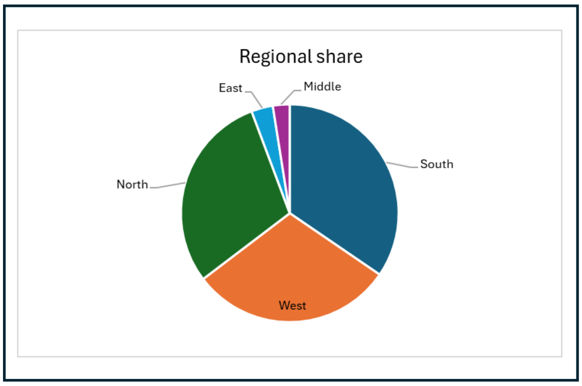

Figure 2: Geographical Distribution of Sub-Loans

The loan results by industrial sector are as presented in Table 4. Although most of the share is in manufacturing industries such as metal, machinery, rubber, and plastics, a wide range of industries has received funding. The overall trend is similar to that of Phase 2. There is a small portion of loans in the service sector as well.

Table 4: Sub-Loan Distribution by Industry Sector

<table>
<tr><th></th><th>Industry sector</th><th>Number of sub-loans</th><th>Ratio (%)*</th><th></th><th>Industry sector</th><th>Number of sub-loans</th><th>Ratio (%)*</th></tr>
<tr><td>1</td><td>Metal Products</td><td>534</td><td>33</td><td>13</td><td>Non-ferrous Metals</td><td>7</td><td rowspan="10">0.5 or less</td></tr>
<tr><td>2</td><td>Machinery</td><td>304</td><td>19</td><td>14</td><td>Wood and Wood Products</td><td>5</td></tr>
<tr><td>3</td><td>Transport Equipment</td><td>202</td><td>12</td><td>15</td><td>Electricity Generation</td><td>2</td></tr>
<tr><td>4</td><td>Rubber and Plastic Products</td><td>174</td><td>11</td><td>16</td><td>Financial Intermediation</td><td>2</td></tr>
<tr><td>5</td><td>Other Services</td><td>89</td><td>5</td><td>17</td><td>Construction</td><td>1</td></tr>
<tr><td>6</td><td>Textiles</td><td>78</td><td>5</td><td>18</td><td>Hospitals</td><td>1</td></tr>
<tr><td>7</td><td>Paper and Paper Products</td><td>60</td><td>4</td><td>19</td><td>Hotels</td><td>1</td></tr>
<tr><td>8</td><td>Iron and Steel</td><td>44</td><td>3</td><td>20</td><td>Leather and Leather Products</td><td>1</td></tr>
<tr><td>9</td><td>Electrical Equipment</td><td>37</td><td>2</td><td>21</td><td>Mining</td><td>1</td></tr>
<tr><td>10</td><td>Electronic Equipment</td><td>16</td><td>1</td><td>22</td><td>Non-metallic Mineral Products</td><td>1</td></tr>
<tr><td>11</td><td>Chemical and Chemical Products</td><td>14</td><td>1</td><td>23</td><td>Others (Manufacturing)</td><td>45</td><td>3</td></tr>
<tr><td>12</td><td>Food and Food Products</td><td>7</td><td>0.5 or less</td><td></td><td>Total</td><td>1,626</td><td>100</td></tr>
</table>

Source: SIDBI
*Note: numbers after the decimal point were rounded off.

3) Detailed loan conditions for different borrowers

Loan operations were conducted as planned, as indicated in Table 5.

Table 5: Loan Conditions for Different Borrowers

Original Plan	Results
1. Sub-projects eligible for financing	
1) Energy conservation sector	
Investment in such items as equipment listed in the Energy Saving Equipment List[10] created for the project and approved as eligible for financing (hereinafter referred to as the "ESEL").	Conducted as planned
The project aims to raise awareness on energy conservation by conducting seminars and other educational activities related to energy conservation efforts by MSMEs through the introduction of consultants for technical assistance.	Conducted as planned
2) Health sector	
10% or less of total financing, positioned as a pilot project	Conducted as planned (there was only one borrower enterprise in this sector.)
Capital investment in such items as medical equipment, buildings, and interiors. For medical equipment items, those on the medical equipment list to be prepared for the project will be recommended.	Conducted as planned
2. Eligible End Users for Loan	
Companies classified as either micro-enterprises, small-scale enterprises, or medium-scale enterprises, based on the definitions set by the Ministry of MSMEs and recognized by SIDBI as eligible for loans.	Conducted as planned
No specific restrictions on sector. However, weapons, drug trafficking, and other illegal industries are excluded.	Conducted as planned
3. Intermediary Financial Institutions	
Candidates of Intermediary Financial Institutions (IFIs) are those 200 organizations including Commercial Banks and Regional Rural Banks and are limited to financial institutions recognized by SIDBI as eligible*. In the loan from SIDBI to IFIs, an interest rate of 11.5-12.75% with a repayment period of approximately 3-7 years in INR is expected. *To be selected based on current rating as per the SIDBI's internal rating model, utilizing its network to reach many MSMEs in identified clusters and even outside the clusters. (source: JICA document)	To Intec Capital Limited (INR 250 million) Interest rate: 11.25% Repayment period: 4 years and 3 months To IKF Finance Limited (INR 65 million) Interest rate: 12.5% Repayment period: 3 years and 9 months (INR 100 million) Interest rate: 11.15% Repayment period: 3 years and 10 months
4. Loan Conditions for End Users	
Target of the Loan: Investment funds for energy saving equipment and facilities in the health sector.	Conducted as planned
Loan Limits: The minimum loan amount is set at INR 1 million, and the maximum amount is set at INR 350 million. Loan limits are established for each end user and industry.	Loan limits were not set.
Currency: INR	Conducted as planned

[10] A list containing information such as energy saving equipment that is the subject for loan and the suppliers of such equipment. It was mainly used by the staff of financial institutions involved in the project and borrower MSMEs.

Loan Interest and Repayment Period: Set considering the credit and other risks of the end user. The repayment period is approximately 3-7 years. On average, a repayment period of 5 years is assumed.	Actual interest level and repayment periods are: Interest rate: 7.6-16.5% Repayment period: 3-5 years
Loan Ratio: Varies for each loan target, but funding can be provided for 66-75 % of the total project cost.	Conducted as planned
Environmental Permits: SIDBI follows the “JICA Guidelines for Environmental and Social Considerations” (issued in April 2010).	Conducted as planned

4) Technical Assistance Accompanying the Yen Loan Project

Implementation of Technical Assistance Accompanying the project: A consultant was planned to be recruited for technical assistance to the executing agency (outside the scope of the yen loan, expenses covered by Technical Cooperation through JICA’s Loan Account). The outline of the plan is as follows (Source: JICA document):

① Awareness activities such as holding seminars on energy-saving initiatives for MSMEs
② Support for creating and updating the ESEL and medical equipment list
③ Support for monitoring environmental and social impacts
④ Support for calculating energy-saving effects
⑤ Strengthening the energy-saving loan assessment capabilities of intermediary financial institutions

A consulting firm was actually employed, and work including the above five items was conducted under the Special Assistance for Project Implementation (SAPI) from April 2014 to February 2018. The activities of the above five items were generally conducted as planned. Among these five items, especially items ②, ③, and ④ have greatly contributed to the tasks of implementing and evaluating (by providing various data on indicators) the project.

The results of analysis on SAPI based on its PCR are shown at the end of the report as “Appendix 1. Results of SAPI.”

3.2.2 Project Inputs

3.2.2.1 Project Cost

As shown in Table 6, the actual loan amount was 14,467 million Japanese yen (JPY), compared to the planned yen loan amount of JPY 30,000 million. (The management costs and front-end fees are absorbed into the overall operating expenses of SIDBI, so they are indicated as “-” (unknown).) Therefore, the project cost remained within the plan.

The reason that the loan amount was only about half of the planned amount is that, owing to the priority use of the Make in India Fund provided by the government of India, it became impossible to fully utilize the limit of the JICA loan. Through the utilization of this Fund, SIDBI received loans from the Reserve Bank of India at a considerably lower interest rate than the JICA loan.

Furthermore, the amount of the Make in India Fund that SIDBI was able to utilize was equivalent to five times the initially planned JICA loan amount. The use of this Fund is not necessarily limited to energy-saving support, but according to SIDBI, approximately 25% of the utilized Fund is related to the purchase of energy saving equipment. Therefore, even with this Fund alone, loans equivalent to 1.25 times the originally planned JICA loan amount were made in the energy-saving sector. In this sense, the utilization of this Fund in conjunction with the project played a complementary role in achieving the impact of the project.

Table 6: Project Cost (Planned and Actual)

Cost item	Planned*			Actual*		
	Total	JICA	Other	Total	JICA	Other
Unit	JPY 1 million			JPY 1 million		
Loan amount	30,000	30,000	0	14,466.93	14,436.93	30
Administration cost	3,000	0	3.000	－	－	－
Front end fee	60	0	60	－	－	－
Total	33,060	30,000	3,060	14,466.93	14,436.93	30

Source: SIDBI
*Note
1. Exchange rate: USD 1.00 = INR 63.8, USD 1.00 = JPY 99.2, INR 1.00 = JPY 1.56
2. Base year: October 2013

3.2.2.2 Project Period

The planned project period (from signing of L/A to the completion of lending) was from April 2014 to March 2019 (5 years, i.e., 60 months). In the reality the period was from September 2014 to December 2021[11] (7 years and 4 months, i.e., 88 months). The actual project period, which is more than 1.4 times the planned project period, exceeded the plan.

Therefore, efficiency of the project is high.

3.3 Effectiveness and Impacts[12] (Rating: ②)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

The planned target indicators set beforehand (It was planned to set them after the start of the project) and the results are as presented in Table 7.

[11] Although the credit line was not fully utilized in the project, there was no cancellation of the remaining balance in the period when SIDBI can borrows funds.
[12] When providing the sub-rating, Effectiveness and Impacts are to be considered together.

Table 7: Planned and Actual Target Indicators

Indicator	Target	Actual
	Year 2021	Year 2021
	2 years after the project completion	
1: Annual electricity energy saving (MkWh)	212.93*1	128.97*2
2: Annual thermal energy saving (G kCal/annum)	—*3	— *4
3: Annual reduction in greenhouse gas (CO_2) emissions (kTons)	195.50*5	118.41*6

(Note)
*1. The figure obtained from the SAPI consultant was 143.23 MkWh.[13] However, as a result of the sub-loan amount per loan during the project period being overestimated, the total target number of sub-loans was set at only 847, far fewer than the initial target of 2,000 or the actual number of 1,626. Consequently, it was found that the target for energy savings was also set at a very low level. The evaluator recalculated the figure with the target value at 212.93 MkWh. In the recalculation, considering the positive correlation between the loan amount per sub-loan and the energy savings, the ratio of the total loan amount (in INR) to the energy savings in Phase 2 was applied to the total loan amount (in INR) for the project to estimate the expected energy saving amount.
*2. The ex-post effect indicators were not obtained from SIDBI, but the SAPI Project Completion Report (PCR) provided the measurement of electricity energy saving and reduction in greenhouse gas emissions up to February 2018, the midpoint of the project's implementation period, of 107 cases sampled from 347 sub-loans. Based on these results, the total energy saving for the entire project period was estimated under the assumption that similar energy reductions were realized throughout the project period.
*3. The figure obtained from the SAPI consultant was 123.40 G kCal/annum, but it was not adopted because of similar issues in the calculation process.
*4. Information not obtained.
*5. The greenhouse gas emissions reduction was calculated by applying a certain grid emission factor to the annual reduction in electricity consumption, using the same coefficient applied in the PCR.
*6. Same as point 5.

The achievement rate of the targets, both for electricity energy saving and reduction in greenhouse gas emissions, is 60.6%. The primary reason for the target not being attained is that the total loan amount for the sub-loans was only about half the initial target value (there is a confirmed positive correlation between the loan amount per sub-loan and the energy saving).

In the project, the output (number of sub-loans) is directly linked to the outcome (energy saving). Regarding external environmental factors, interviews with SIDBI and end users revealed that the impact of COVID-19 on the loan operations, which are directly linked to the output, was relatively minor.

3.3.1.2 Qualitative Effects (Other Effects)

1) Degree of Improvement in Energy-Saving Awareness Among MSMEs

According to a questionnaire survey conducted with end users, the responses to the question,

[13] Source: "Target Setting Analysis for Operations and Effect Indicators SAPI for MSME Energy Saving Project - Phase III" (dated March 2015)

"Has the introduction of energy-saving equipment this time led to an improvement in employees' awareness of energy conservation?" were distributed as follows (41 companies responded):

-Significantly improved: 10 companies
-Slightly improved: 15 companies
-Not much change: 16 companies

As a result, 25 companies, or 61% of the respondents, answered that "employees' awareness of energy conservation has improved." A closer look at the details reveals that when the energy-saving equipment made it easier to measure actual energy saving (more visible to employees), it led to an increase in employee awareness. However, use of equipment that does not make such data visible was less likely to lead to an improvement in employee awareness.

2) Improvement in the Capability of Financial Institutions of Credit Assessment for MSMEs' Energy Efficiency Loans

The project has not seen a significant improvement in this area. In other words, the lending operations for MSMEs in the project were not fundamentally different from regular lending operations. The primary difference was in the credit assessment related to energy-saving equipment, which was reinforced by the ESEL. Moreover, given the sufficient experience accumulated in the previous phases, the initially planned training for SIDBI was omitted. According to a questionnaire survey conducted with end users to confirm the period from loan application to loan execution, the results were as follows, indicating the swift operations of SIDBI (41 companies responded).[14]

-Within 1 month: 35 companies
-Within 3 months: 6 companies

Furthermore, the overall evaluation of SIDBI's operations by end users was very high.

3.3.2 Impacts

3.3.2.1 Intended Impacts

Initially, it was planned to evaluate the impact of the project in two sectors: manufacturing and healthcare. However, in reality, there was only one end user in the health sector. Thus, the focus was mainly on assessing the realization of impact in the manufacturing sector, as described

[14] As a factor of rapid execution of loans, there is a background that most of the visited end users are existing customers of SIDBI and received loans to a single unit of equipment at the final stage of the project period.

below.[15]

1) Impact of energy saving in the project on the MSME / Manufacturing Sector: This evaluation aimed to obtain data on the estimated year-on-year energy consumption reduction for MSMEs as a whole and to conduct a comparative analysis between that data and the energy consumption reduction achieved by the project. However, although the evaluator visited energy-saving-related institutions (such as BEE and NPC[16]) and requested information, it was found that no target values had been set or estimates of results made for the year-on-year energy consumption reduction of MSMEs over the past 10 years.[17]
2) Impact of the project on reducing greenhouse gas emissions in MSME / Manufacturing Sector: The situation is the same as in point 1) above.
3) Other Impacts of the Project on the MSME Sector: According to business associations and end users in the regions visited, the companies that received loans from the project are top-tier, high-performing companies in the MSME sector. The actions of such leading companies in individual industry sectors are closely watched by competing companies. It was mentioned that the success experiences from the project (achieving energy savings and improving productivity) may have promoted the purchase and installation of energy-saving equipment, which is generally more expensive than standard equipment, by competing companies. Furthermore, there is a view that the implementation of the project has contributed to the growth of energy-saving equipment manufacturers, a perspective that has been expressed by manufacturers listed in the project's ESEL.
4) Impact on the Total Sales and Profits of Borrower Companies and on the Sector: According to a questionnaire survey on end users, the following changes were observed in "company sales and profits" after the introduction of energy-saving equipment (Number of respondents: Question 1: 41 companies, Question 2: 40 companies):

(Question 1) "How much has the introduction of energy-saving equipment contributed to saving utility costs?"

- Contribution: Large: 5 companies, Medium: 23 companies, Small: 8 companies, Don't know: 5 companies

(Question 2) "To what extent has the introduction of energy-saving equipment contributed to your company's sales and profits?"

- Contribution: Large: 9 companies, Medium: 24 companies, Small: 6 companies, Don't know: 1 company

[15] The end-user in the health sector (a hospital) responded in the questionnaire that this loan enabled them to provide more efficient and higher-quality medical care.
[16] National Productivity Council
[17] The reason was that India has extremely numerous small and micro enterprises comprising a wide variety of industries, making it exceedingly difficult to survey or estimate the reduction in energy consumption.

The responses to the two questions show similar trends, indicating consistency between the answers. The reduction in utility costs from the introduction of energy-saving equipment is a cost-saving factor that leads to increased profits. Moreover, many companies reported that the introduction of energy-saving equipment not only saved utility costs but also improved production efficiency and increased production capacity.[18] This likely explains why a higher proportion of respondents selected "Large" in Question 2.

5) Impact of Changes in Company Sales and Profits on Employee Income and Employment Status: According to a questionnaire survey on end users, when the introduction of energy-saving equipment had a positive impact on a company's performance, the changes as indicated in Table 8 were observed regarding the impact on employee salary levels and the number of employees.

Table 8: Impact of Changes in Company Sales and Profits on Employee Income and Employment Status

Unit: Number of enterprises

Degree of change	Level of staff salary	Number of staff
Increase	28	32
Same	13	8
Decrease	0	1
Total	41	41

Source: End-user survey

As the Indian economy is on a continuous expansion trend, the impact of such macroeconomic factors is significant. However, it can generally be inferred that the following process has been realized:

Introduction of energy-saving equipment → Increased efficiency in production activities (cost reduction effects and shortened work time) and increased production capacity → Reduced costs and increased sales → Increased profits → Improved employee salary levels and increased number of employees (the latter due to the expansion of production activities. Furthermore, the introduction of energy-saving equipment is, in most cases, not a replacement of old equipment but an addition of new equipment, which also explains the increase in operational staff). A logic model of the project's impact realization is presented on the next page.

18 As a specific example, many energy-saving devices use what is known as CNC (Computer Numerical Control). The use of CNC has automated tasks that were previously done manually and consolidated tasks that were performed on multiple separate machines into a single machine tool. This has not only resulted in energy savings but also increased production output within a given timeframe.

Impact: "The improvement of the environment, sustainable economic development, and mitigation of climate change in India"

(Impact that the project directly contributed to)
-The beneficiaries of the project, end users (Borrower MSMEs) realized energy efficiency and increased sales, profit and staff number by the more efficient operation and increased productivity by installing energy saving equipment.

(Impact brought by other projects)
-Energy saving was realized to a certain extent by SIDBI's expansion of loans related to energy efficiency by utilizing the Make in India Fund.
-Energy saving was realized to a certain extent by another donor (KfW) providing similar loans to promote energy efficiency.

The project supported KfW in its provision of loans related to energy efficiency by sharing ESEL.

Internal environmental factor

External environmental factor

Steady expansion of the Indian economy

Outcome: "to enhance energy utilization efficiency of MSMEs in India"

Achievement: The following major data show that the achievement rate was moderately low.

Indicator (unit)	Target	Result
1: Annual electricity energy saving (MkWh)	212.93	128.97
3: Annual reduction in greenhouse gas emissions (kTons)	195.50	118.41

Sustainability of outcome: From the following aspects sustainability is strong in general.
-Policy / Institution: the Indian government maintains the policy to emphasize energy efficiency and SIDBI also emphasizes energy saving by MSMEs. Thus, there is no problem.
-Organization (Organizational structure and human resources): The organization of the executing agency is stable and there are sufficient human resources.
-Technology: SIDBI staff have accumulated expertise on loan operations without problem.
-Finance (Operation & maintenance budget): Financial status of SIDBI is good and there is no problem.
-Environment / Society: Sufficient environmental consideration is observed.
-Response to risks: Although the spread of COVID-19 was an unanticipated risk factor, there was no serious problem in loan operations and installment of energy saving equipment.
-Status of operation and maintenance: Energy saving equipment items installed in enterprises are expected to be utilized for a long time.

(Inhibiting factor)
Sub loan amount per loan was smaller than originally expected. Thus, smaller energy saving equipment items were introduced, which led to the smaller energy saving effect.

Internal environmental factor

External environmental factor

No particular factor

Output: The planned output is "primarily providing medium to long-term funding for energy efficiency initiatives, with a focus on micro, small and medium-sized enterprises, including a pilot program in the health sector."

Achievement: The critical indicator, that is, the number of approved and conducted sub loans, was expected to reach 2,000. However, the result was 1,626, meaning the achievement ratio of 81.3%.

(Inhibiting factor) For more efficient banking management, SIDBI had to prioritize using the Make in India Fund.

(Facilitating factor) SIDBI owns the nationwide network of good MSME clients.

Internal environmental factor

External environmental factor

-The Indian government introduced the Make in India Fund to support MSMEs.

-SAPI including PR activities for the project and formulating the ESEL was effectively conducted.

Activity
(Credit analysis and financing by SIDBI)

Figure 3: Logic Model of the Impact Realization in the Project

3.3.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

According to the "JICA Guidelines for Environmental and Social Considerations (issued in April 2010)," the project has been classified as Category FI. The reason is that, owing to the nature of the project, it was not possible to identify the subprojects before JICA's loan approval, and it is expected that such subprojects may have environmental impacts. Consequently, the project did not include any sub-loans classified as Category A.

In accordance with the regulations of the Central Pollution Control Board, projects eligible for financing are classified into four categories based on the degree of adverse environmental impact. In the project, obtaining a Consent to Operate (which must be periodically renewed) from the State Pollution Control Board, in accordance with the level of impact, is a prerequisite for financing.

At the branches of SIDBI that the evaluator visited, there were no reports or complaints of environmental damage caused by the equipment financed by the loans; nor were there any reports made to the SIDBI headquarters.

According to the "Environmental and Social Impact Assessment Report" (part of the SAPI), site visits were conducted for 50 subprojects in 8 representative industrial sectors to monitor environmental and social considerations, and specific analyses of such as ambient air quality, stack emission quality, and ambient noise level were done. Overall, there were no significant issues, but minor issues were identified in some of the survey items (for details, see Appendix 2 "Environmental Impact Assessment Analysis").

2) Resettlement and Land Acquisition

These were not initially anticipated and in practice, no resident relocation or land acquisition occurred.

3) Gender Equality

Through interviews with the executing agency SIDBI, it was confirmed that there is no discrimination in the loan screening process against "people who are likely to be left behind" (although no preferential treatment is provided). Although details in the total number of sub-loans were not obtained (as detailed profiles of end users are not mandatory items in the SIDBI database), it was confirmed that a significant number of loans were granted to women entrepreneurs. However, as interviews were not conducted directly with women or entrepreneurs from designated tribes and castes, detailed information was not obtained. Nonetheless, given the nature of the project, which involves the installation of energy-saving equipment, it is inferred that the effectiveness at the corporate level, as mentioned above, does not rest entirely on the personal skills of the managers but largely depends on the quality of the equipment. Therefore, it is inferred that there was some positive impact on such enterprises and entrepreneurs by the project as well.

4) Marginalized People

As mentioned above, although details in the total number of sub-loans were not obtained (as detailed profiles of end users are not mandatory items in the SIDBI database), it was confirmed that loans were granted to a small number of entrepreneurs from designated castes and tribes.

5) Social Systems and Norms, People's Well-being and Human Rights

No significant impacts were observed from these perspectives.

6) Unintended Positive / Negative Impacts

No significant impacts were observed.

In conclusion, the project has achieved its objectives only to a certain extent. Therefore, effectiveness and impacts of the project are moderately low.

3.4 Sustainability (Rating: ④)

3.4.1 Policy and System

As noted in the section on relevance, even at the stage of the ex-post evaluation, the Government of India has demonstrated a commitment to energy conservation through initiatives such as "Vision India@2047" announced in August 2021. Furthermore, at COP26 (26th Conference of Parties of the United Nations Framework Convention on Climate Change) held in Glasgow, UK, in October-November 2021, the government also emphasized the importance of renewable energy and the transition to a carbon-neutral nation under the Panchamrit policy. In response, SIDBI has formulated a business mission that includes "improving energy efficiency." Therefore, the sustainability on the basis of the policy and system is considered high.

3.4.2 Institutional / Organizational Aspect

SIDBI, established in 1990 with the aim of promoting the development of small-scale enterprises in India, functions as a key financial institution for the promotion, financing, and development of the MSME sector. It also coordinates functions among institutions engaged in similar activities. The largest shareholder is the Government, holding 20.85% of the shares as of March 31, 2023, while the remaining 79.15% is owned by other government-owned banks and financial institutions. Although SIDBI is under the jurisdiction of the Ministry of Finance, it is also closely related to the Ministry of MSMEs in its operations, with the Reserve Bank of India overseeing its overall functions in the financial aspect.

The primary business of SIDBI is providing loans to MSMEs, either directly or indirectly through other government-owned or private financial institutions. Moreover, to promote lending to MSMEs, SIDBI, through its subsidiaries, engages in credit rating and credit guarantee services. SIDBI has 96 branches across India, with a total workforce of 1,037 full-time employees as of March 2023.

The responsibilities of each department related to the loan operations related to JICA's ODA loans are as follows:

- Headquarters: A department called Direct Credit Vertical (DCV), which manages such matters as policy / guideline creation, product / scheme development, and pricing, is responsible for ODA loan operations. (Note: No department specializes in yen loan operations. Loans under the yen loan program are reviewed as those for eligible companies first; then, if certain criteria are met, they are regarded as loans related to the yen loan program.)
- Regional Offices: They provide necessary guidance to branches and supervise their operations.
- Branches: They conduct credit analysis and approve loans for individual cases (including determining the eligibility of loan projects under the ODA loan program), prepare necessary documents, disburse funds, and monitor loan accounts during the loan period.

The future ODA loan-related operations are expected to be managed by the same departments (headquarters and branches) as before. However, it has been indicated that for future energy-saving-related operations, the responsible department at the SIDBI headquarters will likely be Green Climate Finance Vertical (GCFV) instead of the aforementioned DCV. SIDBI as a whole is smoothly managing loan operations using the Make in India Fund, which are conducted in parallel with the project and include a significant number of sub-loans, and there is no shortage of personnel. Moreover, the turnover rate of SIDBI employees is low.

Considering the above, SIDBI's institution / organization are highly sustainable.

Figure 4 indicates the flow of loan operations in the project.

(Precondition) The SIDBI HQ issues an announcement on the loan opportunity (the project) to all SIDBI branches and offices.

1. Conference on a loan between an end user and a SIDBI branch is held (contact is initiated from either side).

2. Loan potential for the end user is confirmed by the SIDBI branch.

3. The end user submits a digital application to the SIDBI branch. (A new customer without previous transactions must submit multiple documents with detailed information.)

4. The Relation Manager (RM) of the branch conducts risk assessment, credit analysis, an interview with, and a visit to the end user.

5. The General Manager (or Deputy General Manager), and the Credit Committee conduct appraisal of the end user.

6. If no problem is found in the above process, SIDBI issues a Letter of Intent (LOI) that specifies the loan conditions.

7. (After a series of modifications and adjustments on the loan conditions) the Loan Agreement (L/A) is concluded.

8. Loan drawdown (disbursement)

9. The end user purchases equipment and has it installed.

The SIDBI branch communicates with the HQ regarding how to manage this loan case. (This communication actually starts at step 5.)
If the case satisfies the JICA conditions, it is categorized as a JICA loan.

10. The SIDBI branch conducts post-installation verification on the equipment by visiting the end user.

Figure 4: Flow of Loan Operations in the Project

3.4.3 Technical Aspect

Although it was not possible to obtain the actual operational guidelines and manuals for SIDBI employees, it was confirmed that the loan operations were conducted smoothly in accordance with the existing guidelines and manuals, as shown in Figure 4. In the project, the key difference from regular corporate loans is the assessment of the eligibility of energy-saving equipment as loan targets, which was based on the ESEL. Thanks to the ESEL, loan officers at each SIDBI branch were able to make credit decisions with confidence. If such a list remains available in the future, similar operations are expected to be managed smoothly (SIDBI is currently revising the ESEL). Most loan officers join the bank after graduating from university and have accumulated sufficient work experience.

As evidence of the appropriateness of operations, most of the end users interviewed reported that the time from loan application to disbursement was one month or less, indicating that SIDBI's operations were extremely swift. Moreover, the satisfaction of individual end users with SIDBI's operations was high, with examples including the clarity of SIDBI's loan documentation procedures.[19] Furthermore, as mentioned above, the non-performing loan (NPL)

[19] Many expressed the view that the interest rate level was also lower and more attractive than borrowing from other banks.

ratio in the project, although higher than SIDBI's overall NPL ratio during the project period,[20] remained relatively low at 2.02% (based on both amount and number of cases), which further supports the accuracy of the credit assessment. (Note: The average NPL ratio for all commercial banks in India in 2023 was 3.87%.[21])

There are no particular issues or challenges in conducting operations like those in the project, but SIDBI consistently conducts a variety of skill training programs. (In 2023: a total of 99 sessions with 1,607 participants; in 2024: a total of 115 sessions with 1,470 participants.)

As stated above, the operations were conducted appropriately, and there are no particular technical problems. The smooth execution of loan operations in the project can be attributed to the ample knowledge and experience of SIDBI employees. (As mentioned earlier, the effective use of the ESEL also contributed to the smooth loan operations.)

3.4.4 Financial Aspect

Table 9 summarizes the major financial indicators of SIDBI in recent years.

Table 9: Major Financial Indicators of SIDBI

Unit: million INR

Indicator \ Fiscal year	2019-2020	2020-2021	2021-2022	2022-2023
Income	120,903	111,656	91,392	184,848
—Interest income	110,209	9,443	87,141	179,535
Expenditure	92,825	80,181	67,512	140,873
—Interest and financial charges	77,221	65,429	57,016	124,057
—Operation expenses	6,075	5,600	6,977	8,235
—Provisions and others	9,530	9,152	3,518	8,581
Profit before tax	28,078	31,475	23,880	43,975
Net profit	23,645	24,945	20,118	33,836
Total assets	1,875,390	1,923,224	2,473,787	4,023,827
Capital risk asset ratio*1 (%)	26.62	27.49	24.28	19.29
Nonperforming asset ratio*2 (%)	0.37	0.11	0.07	0.00

Source: SIDBI annual reports

[20] In SIDBI's portfolio, the ratio of loans to institutions such as other banks is far larger than the one of those to companies.

[21] Source: https://dbie.rbi.org.in/DBIE/dbie.rbi?site=publications#!4"Bank Wise and Bank Group-wise Gross Non-Performing Assets, Gross advances and Gross NPA Ratio of Scheduled Commercial Banks"

Note
*1. Capital Adequacy Ratio (CAR) or Capital to Risk Weighted Assets Ratio (CRAR)
*2. Net NPAs to Net Assets

Looking at the key financial performance of SIDBI from the 2019-2020 fiscal year to the 2022-2023 fiscal year, the scale of assets has steadily expanded over time. Although income slightly decreased in the 2021-2022 fiscal year owing to the then-declining interest rate trend and more competitive lending rates, it rebounded sharply the following year. Regarding profit, net income also slightly decreased in the 2021-2022 fiscal year, but it also saw a sharp recovery the following year.

The NPL ratio has been on a gradual decline over the past four years, reaching an extremely low level of 0.00% in the 2022-2023 fiscal year. Generally, a NPL ratio below 1% is considered desirable, and compared to the average NPL ratio of 3.87% for all commercial banks in India in 2023, this is an exceptionally favorable level. Moreover, the capital risk asset ratio, which indicates the extent to which financial institutions comply with capital standards set by regulatory authorities, is generally considered stable if it is above 10%. SIDBI has maintained a stable ratio of around 20% consistently.

Accordingly, the recent financial condition of SIDBI is favorable, and considering the Indian government's likely continued support for SIDBI as a core institution responsible for funding the MSME sector, there are no financial sustainability concerns for the project with regard to supporting MSMEs.

3.4.5 Environmental and Social Aspect

In the project, there are no cases classified under category A in the "JICA Guidelines for Environmental and Social Considerations" and SIDBI has selected sub-loan projects with strict environmental considerations, fully understanding the JICA guidelines. There have been no reports or complaints at the branch level regarding the negative environmental impact of the equipment used in the loan projects.

According to the "Environmental and Social Impact Analysis" (part of SAPI), site visits were conducted for 50 sub-projects belonging to 8 representative industrial sectors to monitor environmental and social considerations. Overall, there were no significant issues, but minor problems were identified in a survey item (noise). (For details, refer to Appendix 2 "Environmental Impact Assessment Analysis.")

As mentioned above, sufficient consideration has been given to the environment. However, regarding the minor issues related to a survey item (noise), it is desirable to take preventive measures in the future.

On the social side, as seen in the impact section, interviews with SIDBI confirmed that there is no discrimination in the loan screening process against "people who are likely to be left behind" and since there are no negative impacts, there are no issues with social sustainability.

3.4.6 Preventative Measures to Risks

Although there were no risks associated with fluctuations in energy-saving demand or changes in regulations, as mentioned above, the use of the Make in India Fund by the Government of India made it impossible to fully utilize the ODA loan line provided by JICA. The COVID-19 pandemic during the project period did affect business activities in such ways as the closure of factories and offices by various companies during its peak, but such period was not prolonged. Furthermore, regarding the loan operations related to the project, SIDBI and the end users were able to negotiate remotely and communicate via phone and email; thus, the negative impact was limited. Additionally, according to SIDBI, a system was in place that allowed them to consult with JICA at any time if there was a risk of hindering the project, and there were no significant issues with risk management.

3.4.7 Status of Operation and Maintenance

All loans to end users have been completed, and the recovery status is as indicated by the figures for non-performing loans mentioned above. Moreover, all loans to intermediary financial institutions have been recovered.

The ESEL was revised twice in the project as follows:

Version 9.0: June 2016

Version 9.1: September 2016

The ESEL is still in use (the “Energy Efficiency Technology List” developed by BEE is also in use). However, as long time has passed since the last update, a review of the ESEL is currently underway with the cooperation of BEE.

Regarding the operation and maintenance status at the end user level, nearly all companies interviewed reported that the equipment they installed is operating smoothly. The remaining lifespan of the equipment, though depending on the type, is expected to be around 10 years on average, suggesting that the energy-saving effects will continue for the foreseeable future (It should be noted many of the companies interviewed had purchased the equipment relatively recently). Moreover, most companies expressed a strong interest in continuing to purchase energy-saving equipment.

As mentioned above, there were no issues with the operational state of SIDBI. Moreover, the energy-saving equipment purchased and installed by the companies is operating extremely well, and the sustainability of its effects at the micro and site levels is high. Furthermore, there is a strong expectation that most companies will continue to use energy-saving equipment in the future.

In conclusion, regarding the status of operation and maintenance of the project, no issues have been observed in the policy / system, institutional / organizational, technical, financial, and environmental and social aspects. Preventive measures have been taken regarding environmental and social considerations, as well as risks. Therefore, sustainability of the project effects is very high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project aimed to enhance energy utilization efficiency by primarily providing medium to long-term funding for energy efficiency initiatives, with a focus on micro, small, and medium-sized enterprises (MSMEs), which faced challenges in optimizing energy use. Regarding relevance, the project's objective of promoting energy conservation in the MSME sector aligns well with India's development policy. During the period between the ex-ante evaluation and the ex-post evaluation, the importance of energy conservation in this sector—namely, the development needs—remained high. While there were no fundamental problems with the basic approach of the project, challenges were observed in the pilot initiatives for lending in the health sector and the involvement of intermediary financial institutions in the project. Regarding coherence, the project's alignment with Japan's development cooperation policy is strong, and there are no particular issues with both internal and external coherence. Therefore, the project's relevance and consistency are high. Although the project duration exceeded the initially scheduled period, the project costs stayed within the planned budget, indicating that efficiency is high. Regarding effectiveness, both the loan amount and the number of loans to MSMEs fell short of the initial plans, resulting in the energy-saving achievements being below the targets. As for impact, the anticipated effects, such as cost reductions and productivity improvements for individual companies, have been realized to a certain extent. Therefore, the effectiveness and impact are moderately low. Regarding sustainability, there are no particular problems in aspects such as policies and systems, organizational structure, technology, finance, and environmental and social considerations. Thus, sustainability is very high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

- In the project, supporting companies in the health sector was also a goal, and it was planned to allocate approximately 10% of the total loan amount to this sector on a trial basis. However, in the end, only one sub-loan was made in this sector. If similar initiatives are implemented in the future, it will be necessary to more accurately assess the demand for funding in such specific support sectors to fully achieve the objectives of the pilot study, and promotional activities such as seminars should also be enhanced.

- After the repayment of loan funds from the intermediary financial institutions, there were no business relationships between SIDBI and one such institution. As a result, it was difficult to obtain project indicators from one of the two institutions in the ex-post evaluation, and the other did not provide detailed information on the sub-loans. This situation not only reflects a lack of information for evaluation purposes but also may suggest insufficient monitoring of the intermediary financial institutions by SIDBI. If intermediary financial institutions are to be included in future projects of this kind, it is recommended to ensure in writing the need for these institutions to report on such matters as sub-loan numbers and loan amounts in order to achieve more accurate project impact measurement.
- Although not severe, minor noise issues caused by the installed energy-saving equipment were identified. To minimize any adverse effects on the environment and human health, it is recommended that, when conducting loan operations for similar energy-saving equipment in the future, SIDBI explain the need for noise monitoring and corrective measures to take at the time of equipment installation to individual end users.

4.2.2 Recommendations to JICA

It is recognized at the appraisal stage that “the criteria for listing on the energy-saving equipment list (energy-saving effect of 10% or more) will be introduced, and it will be monitored whether the criteria are met in the project” (source: JICA document). However, there is a case where another donor has set a target of “20% energy-saving effect.” Moreover, the activities conducted in the project primarily involved the addition of new equipment rather than the replacement of existing equipment with energy-saving devices, resulting in a net increase in energy consumption both at the individual company level and overall. Therefore, in the process of promoting energy savings in India as a whole, it would be beneficial to engage in further discussions and exchanges of opinions among donors regarding the target indicators, considering the impact of a project's effects on a sector.

4.3 Lessons Learned

<u>Highly Replicable Energy-Saving Support Financing</u>

Not only in the project but also in Phases 1 and 2, the energy-saving support projects were successfully implemented as mentioned above, achieving certain effects. The three main factors contributing to this success are as follows:

- The introduction of energy-saving equipment directly contributes to the business performance of individual companies through cost reduction and improvement in production efficiency, thereby creating a strong motivation for end users to adopt energy-saving equipment.

- Technical analysis, which is the most challenging aspect of credit operations related to the introduction of energy-saving equipment, was made easier by the introduction of the ESEL.
- SIDBI, the executing agency, had many client companies, giving it an advantage in securing end users.

Projects that meet the three factors mentioned above will be highly replicable and feasible in other countries as well. As the project, which is directly related to global environmental issues, is highly meaningful, it would be worthwhile to conduct similar undertakings in more countries based on the project's successful experiences.

5. Non-Score Criteria

5.1 Performance

5.1.1 Objective Perspective

From the following perspectives, the roles and contributions of the project stakeholders (mainly JICA), in achieving the project objectives during the planning, appraisal, and implementation stages are recognized as appropriate:

- JICA provided necessary support to SIDBI, the executing agency, as needed, and SIDBI is satisfied with the guidance and support from JICA.
- Communication was maintained regularly between SIDBI and the JICA India Office, and both parties recognized that they had a positive and cooperative relationship.
- Regarding the monitoring system during and after project implementation, JICA conducted monitoring primarily through the review of the Project Status Report (PSR). (The confirmation of the status of the purchased equipment after the loan disbursement and the regular monitoring of companies' debt repayments were conducted appropriately by SIDBI.) Notably, no external environmental factors arose during the project implementation that required JICA's support.

5.2 Additionality

None

(End)

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs		
(1) Sub-loan cases	2,000	1,626
(2) Loan conditions		
Sub-projects eligible for financing	1) Energy conservation field Investment in items such as equipment listed in the list of energy-saving equipment (ESEL) created for the project and approved as eligible for financing 2) Health sector (10% or less of total financing, positioned as a pilot project) Capital investment in such items as medical equipment, buildings, and interiors. For medical equipment units, those on the medical equipment list to be prepared for the project will be recommended.	Conduced as planned
Eligible end users for loan	Companies classified as either small-scale enterprises, medium-scale enterprises, or micro-enterprises based on the definitions established by the Ministry of MSMEs and recognized as eligible by SIDBI for loans.	Conducted as planned
Subject industries	No specific restrictions. However, weapons, drug trafficking, and other illegal industries are excluded.	Conducted as planned
Subject area	India as a whole	Conducted as planned
Loan interest rate and repayment period	Loan from SIDBI to end users: Set considering the credit and other risks of the end user. The repayment period is approximately 3-7 years. On average, a repayment period of 5 years is assumed.	Annual interest rate: 7.6%-16.5% Repayment period: 3-5 years in general
	Loan from SIDBI to Intermediary Financial Institutions: An interest rate of 11.5-12.75% with a repayment period of approximately 3-7 years in INR is expected.	To Intec Capital Limited (INR 250 million) Interest rate: 11.25% Repayment period: 4 years and 3 months To IKF Finance Limited (INR 65 million) Interest rate: 12.5% Repayment period: 3 years and 9 months (INR 100 million) Interest rate: 11.15% Repayment period: 3 years and 10 months
2. Project Period	April 2014-March 2019 (60 months)	September 2014-December 2021 (88 months)
3. Project Cost		
Amount Paid in Foreign Currency	30,060 million yen	14,466.93 million yen
Amount Paid in Local Currency	3,000 million yen (1,923 million INR)	0 million yen (0 million INR)
Total	33,060 million yen	14,466.93 million yen

ODA Loan Portion Exchange Rate	30,000 million yen 1 INR = 1.56 yen (As of October 2013)	14,436.93 million yen 1 INR = 1.63 yen (Average between 2014 and 2021)
4. Final Disbursement	December 2021	

Appendix 1. Results of SAPI

The comprehensive report for SAPI (PCR, Project Completion Report) summarizes SAPI's activities into a total of 10 items as shown in the table below. In reality, it seems that the detailed content of SAPI was refined after the project commenced, and the initially agreed-upon content was further reviewed in accordance with the project's progress. As a result, items 9 and 10 were not part of the original plan.

(Originally planned activities)
① Awareness activities such as holding seminars on energy-saving initiatives for MSMEs
② Support for creating and updating the ESEL and medical equipment list
③ Support for monitoring environmental and social impacts
④ Support for calculating energy-saving effects
⑤ Strengthening the energy-saving loan assessment capabilities of intermediary financial institutions

The comparison between the above five items and the actually conducted SAPI activities is indicated below.

Table: Comparison between the Conducted SAPI Activities and the Above Five Items

SAPI activities	Correspondence to the planned items (①-⑤)
1. Monitoring of operation and effect indicators	④
2. Monitoring of environmental and social consideration	③
3. Formulation of ESEL (Energy Saving Equipment List)	②
4. Formulation of EMEL (Eligible Medical Equipment List)	②
5. Holding awareness campaigns and focused group meetings	①
6. Website hosting and maintenance	①
7. Training and capacity building of SIDBI staff	⑤
8. Public relation activity such as issuing newsletters	①
9. Amendment in scope of SAPI 9-1. Development of handbooks in specific sectors 9-2. Training program for machine operators 9-3. Supporting MoU agreement of SIDBI with energy-saving equipment suppliers	—
10. Sub-project loan analysis	—

The following table presents the importance and results of each of SAPI activity items.

Table: Importance and Results of SAPI Activities

SAPI activity	Importance and results
1. Monitoring of operation and effect indicators	This item was a critical activity for evaluating the effectiveness of the project. Specific performance indicators include operational indicators at the output level, such as the number of sub-loans, promotional activities, and the number of participants in awareness activities, as well as outcome-level indicators, such as the amount of energy consumption reduction and the reduction of greenhouse gas emissions.
2. Monitoring of environmental and social consideration	This item was also an important activity to confirm whether the project was implemented in accordance with JICA's guidelines without any issues. Specifically, 50 sub-projects belonging to 8 industrial sectors were selected, and field surveys and laboratory analyses of the collected samples were conducted.
3. Formulation of ESEL (Energy Saving Equipment List)	This list was created and updated twice during the project. The latest version of the ESEL (9.1) covers more than 750 types of energy-saving and renewable energy equipment.
4. Formulation of EMEL (Eligible Medical Equipment List)	This list, created for the first time within the series of projects (Phase 1 to Phase 3), is intended to support the development of healthcare-related equipment and primarily focuses on medical, diagnostic, and laboratory devices.
5. Holding awareness campaigns and focused group meetings	This activity was an awareness campaign on the importance of energy conservation and was crucial for recruiting end users. During the SAPI period, a total of 18 sessions were conducted (16 in the energy conservation sector and 2 in the health sector), against the target of 24 sessions. The total number of participants was 1,166.
6. Website hosting and maintenance	This website served as the project's public relations site, where users could access information on ESEL and case studies related to energy conservation. It also accepted inquiries on energy conservation.
7. Training and capacity building of SIDBI staff	In the initial stage of the project, five training sessions were planned for SIDBI employees. However, the training was eventually changed to two sessions each for equipment operators in automotive parts and the plastics sector.
8. Public relation activity such as issuing newsletters	The main public relations activities included the publication of newsletters and the production of a documentary. The former involved the release of three newsletters featuring project activities, achievements, policy trends, and the government's support measures. The latter included the creation of a video showcasing the energy-saving efforts of three companies as successful examples from Phase 2.
9. Amendment in scope of SAPI 9-1. Development of handbooks in specific sectors 9-2. Training program for machine operators 9-3. MoU of SIDBI with energy-saving equipment suppliers	The originally planned following three items were replaced by the three items shown on the left-hand side (9-1 to 9-3). This is because the JICA loan progress was slow owing to the influence of SIDBI's utilizing Make in India Fund provided by the Government of India to support MSMEs. - The remaining six awareness campaigns - Training programs for SIDBI personnel - The remaining three issues of newsletter and one documentary
10. Sub-project loan analysis	A detailed analysis of the financing continued until June 2017, and the results were summarized into four lessons.

Appendix 2. Environmental Impact Assessment Analysis

In the SAPI conducted as part of the project, an environmental impact assessment was conducted by a consultant by January 2016. Site visits were made to 50 sub-projects that belong to eight representative industrial sectors (auto-components, food products, forging, foundry, general engineering, plastics, printing, and textile) and are geographically dispersed, and an analysis of items such as ambient air quality, stack emission quality and ambient noise level was conducted. (The analysis of samples was conducted by a laboratory accredited by the National Accreditation Board of Laboratories (NABL).)

Results: The entire situation is summarized as follows.

Parameter	Related Component	Situation
PM10*[1]	ambient air quality,	- 6 out of 50 enterprises' parameters measured around the installed equipment exceeded the guideline.*[2] The average excess level is 12%. The corrective actions have been recommended. - The parameters of plant premises are within the guideline limit.
PM2.5*[1]	ambient air quality	- 2 out of 50 enterprises' parameters measured around the installed equipment exceeded the guideline. The average excess level is 29%. The corrective actions have been recommended. - The parameters of plant premises are within the guideline limit.
SO_2	ambient air quality, stack emission quality	- All the enterprises' parameters are within the acceptable limit regarding around the equipment and at plant premises.
NOx	ambient air quality, stack emission quality	- All the enterprises' parameters are within the acceptable limit regarding around the equipment and at plant premises.
Noise	ambient noise level	- 15 out of 50 enterprises' parameters exceeded the guideline. The average excess level of the 15 enterprises is 4%. Whether the parameters of plant premises are within the guideline limit is unclear, as the presented figures are those of the averages of figures measured in different points. - The corrective actions have been recommended.

*1. PM10 and PM2.5 both refer to particulate matter (PM) that is suspended in the air, but they differ in particle size. Both can cause various adverse effects on the environment, such as reduced visibility (haze), inhibition of plant growth, and deterioration of water quality.

*2. The national ambient air quality standards issued by Central Pollution Control Board (CPCB) New Delhi (Industrial, Residential, Rural and other Area Notification, dated November 18, 2009). The basis for the standard values is the same below.

Diagnosis: Situations differ according to the parameter category. Regarding SO_2 and NOx, there are few problems. Regarding PM and noise, there are small but not serious problems. Regarding PM, the parameters in plant premises are within the guideline limit.

Recommendation: A noise problem was recognized, although its extent is not serious. It is recommended that, in conducting similar loan operations related to energy conservation in the future, SIDBI explain to end users the necessity of monitoring noise and corrective action at the time of equipment installation.