

People's Republic of Bangladesh
Sustainable and Renewable Energy Development Authority (SREDA)
Power Division, Ministry of Power, Energy and Mineral Resources (MPEMR)
Infrastructure Development Company Limited (IDCOL)
Bangladesh Infrastructure Finance Fund Limited (BIFFL)

Technical Assistance Task for Energy Efficiency and Conservation Promotion Financing Project

Supplement to Completion Report

January 2019

Japan International Cooperation Agency

Mitsubishi Research Institute, Inc.

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 **MITSUBISHI RESEARCH INSTITUTE, INC.**

Executive Summary

Soon after the completion of the T/A task team's activity in Bangladesh, JICA made a decision to extend the team's activity period for 5 months, up to January 2019. The major aim of the extension was to mobilise the team further for the formulation of the "Phase 2 Project" of the EE&CPF. The idea of this Phase 2 Project arose in response to an enthusiastic demand from the industries for additional funding source for a low interest loan to be provided through this existing Project. JICA, having confirmed this strong demand and also recognising the smooth and quick implementation of the Project (under the criteria that more than 70% of the Project fund will be utilised by November 2018), decided to seek for a possibility to formulate the Phase 2 Project. The Phase 2 Project intends to make full use of the platform created for the existing EE&CPF Project. It is expected to be a top-up of loan fund onto the current fund, to be utilised under the same rules and process. Improvement and scope enhancement will also be considered during the project formulation and implementation.

This supplementary report to the task completion report is prepared to keep the record of the activities conducted during this period. Major portion of the extension period task was the formulation of the Phase 2 Project, just as with JICA's preparatory surveys for a Yen Loan project. A large portion of the team's work was conducted in Bangladesh to collect updated information on the market, executing agencies and other stakeholders for the existing Project. Then, the team's work to prepare and submit supporting documents for JICA Headquarters' fact finding mission and appraisal mission for the Phase 2 Project formulation was mostly conducted in Japan, so as to support the JICA missions' discussions and negotiations with the Government of Bangladesh (GoB).

1. Update on Relevant Data and Information for Phase 2 Project

1.1 Assistance for Routine Project Implementation

The T/A Task Team, after a month's interval of work in Bangladesh, resumed their activities from October 2018. Although the major task was the formulation of the Phase 2 Project, the team's activities in Bangladesh enabled them to continue their support for the project implementation, especially for SREDA, who is yet to procure their Project implementation supporting consultants. Major implementation works conducted include: (i) further NOC issuing, (ii) support for Project Coordination Committee (PCC) meetings, (iii) publishing of their national energy balance document, and (iv) on-site observation of sub-projects. There was also an additional support for the implementing financial institutions (IFIs) on (v) verification of their application appraisal procedures.

Table I Status of Sub-Projects and Applications

(Data as of January 2018)

(No.) Proponent	NOC issued date	Equipment code and description	Loan amount in BDT million
(01) Meghna Cement Mills Ltd	24 May 2017	5.1 Vertical Roller grinding mill for cement clinker and slag OK54-6	1,270
(02) Odyssey Craft (Pvt) Ltd	24 Aug 2017	3.3 Sewing machine	753
		9.4.2 Air compressor	
		9.8.1 A/C	
		9.10.1 LED	

(No.) Proponent	NOC issued date	Equipment code and description	Loan amount in BDT million
(03) Aman Spinning Mills Ltd	13 Dec 2017	3.1 (1) Roving frames with pneuma-less waste collection system	253.95
		3.1 (3) Automatic winder with balloon controller	
		3.1 (2) Ring spinning frame with PM motor	
		9.8.1 Air conditioner (absorption chiller)	
(04) Roshawa Cotton Mills Ltd	26 Apr 2018	3.1 (1) Roving frames with pneuma-less waste collection system	983
		3.1 (2) Ring spinning frame with PM motor	
		3.1 (3) Automatic winder with balloon controller	
(05) Pahartali Textile & Hosiery Mills Ltd	10 Jun 2018	3.1 (1) Roving Frame Toyota FL200	515.3
		3.1 (3) Automatic Winder Muratec QPRO II Plus	
		3.1 (4) Air Jet Spinning Muratec Vortex 870	
		9.8.1 (2) Air Conditioner Absorption Chiller	
		9.12.2 Waste Heat Recovery (Exhaust gas boiler)	
		9.10.1 LED lamp (tube with Lamp shade)	
(06) Fair Electronics Ltd	21 Jun 2018	9.4.1 (2) Air Compressor (multiple)	10.51
(07) Tosrifa Industries Ltd	28 Jun 2018	3.3 Sewing machine	109.03
		9.6.2 Boiler	
		2CZ00 BEMS	
(08) Shun Shing Cement Industries Ltd	13 Sep 2018	5.1 Vertical Roller grinding mill for cement clinker and slag LM53.3+3CS	734
(09) Etafil Accessories Ltd	03 Oct 2018	9.11.1 Gas engine cogeneration (generator) G3516H	85.53
		(vapour absorption chiller)	
		9.10.1 LED light	
(10) Bandhab Tex Ltd	29 Oct 2018	3.1 (3) Automatic Winder Muratec QPRO II Plus	116.54
(11) Fakir Apparels Ltd	13 Jan 2019	3.3 Sewing machine	169.15

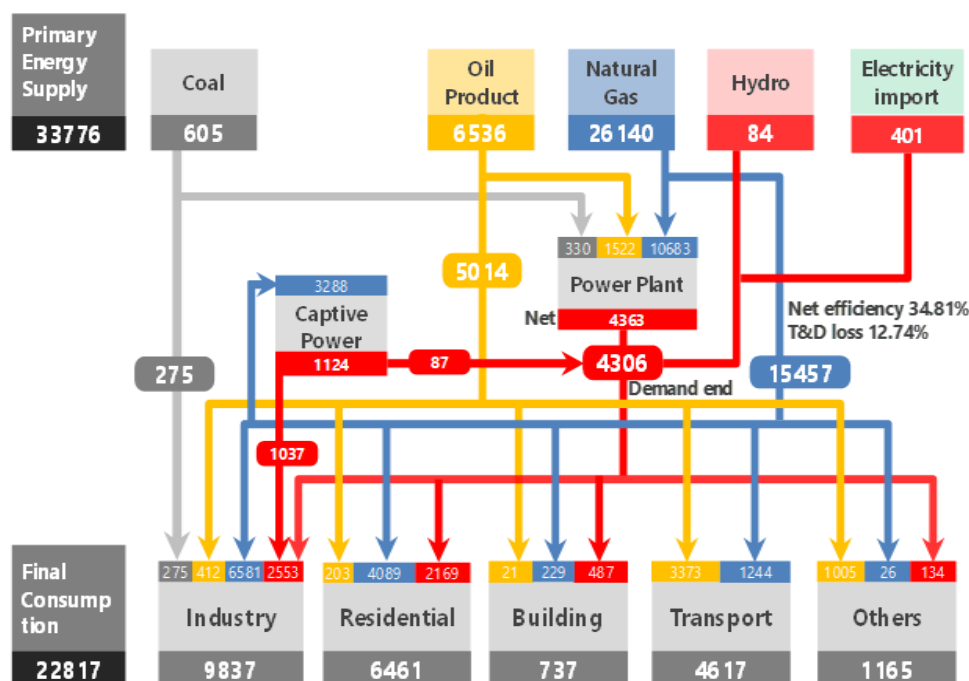
Source: Compilation by JICA T/A Task Team

1.2 Updates on Power and Energy Sector

The overall demand for energy in Bangladesh has been rapidly growing due to its stable economic development. Bangladesh depends its main source of energy on its indigenous natural gas. The latest data (FY 2016-17, compiled from nationally available data) shows that the indigenous natural gas supply of 26,140 ktoe comprised 77% of the total primary energy supply of 33,766 ktoe. The industry sector is the largest energy consuming sector, which consumes 26 million toe, nearly 50% of the entire energy consumption. The residential sector follows. There is significant scope to improve EE&C in both sectors.

The energy balance shows that nearly half of the whole country's primary energy supply is converted to electricity, either in power plants or captive generation in the industry sector. The biggest consumer of electricity is the industry sector. One characteristic is that more than 40% of

the electricity supplied to the industry sector comes as a form of captive power. The residential sector is the second biggest electricity consuming sector, followed by the building sector. Natural gas as a form of heat is consumed mostly by the industry and the residential sectors. More than 50% of oil products is consumed by the transport sector.



Note: Unit = ktoe

Excuding biomass & solar

Rectangles in Energy Balance Chart show: Upper - Total Primary Energy Supply (TPES), Middle - Energy Conversion, Bottom - Total Final Energy Consumption (TFEC) by Sector

Source: SREDA compilation from Power Division Hydrocarbon Unit, BPC, LPG association

Figure I National Energy Balance FY2016-17

In the Energy Efficiency and Conservation Master Plan of Bangladesh, the government aims to improve energy intensity (national primary energy consumption per gross domestic product) by 15% in 2021 and by 20% in 2030 compared to the 2013 level. The progress up to FY2016-17 (3.56 ktoe/BDT billion) shows that national energy intensity improved by 4% compared with that of the base year, which is FY 2013-14 (3.72 ktoe/BDT billion). There are several causes behind the declining trend. One factor is the growth of the service sector which includes wholesale and retail, real estate, financial intermediations, education and so on. In FY2017-18, the service sector accounts for 52% of the national GDP, followed by the industry sector (34%) and the agricultural sector (14%). However, if we look at the sectoral growth rate of each sector, the industry sector is most rapidly growing, showing 12% growth in FY 2017-18 compared to FY 2016-17, while the service sector grew for 6%. The largest contributor in the industry sector is the large and medium scale manufacturer, which indicates that in the future there will be more energy consumed in this energy intensive sector, therefore it is of crucial importance to achieve EE&C in the industry sector in the future.

1.3 Progress in Financial Sector

Bangladesh Bank performs functions of issuing licenses to banks and non-banks and making decision and implementing on regulations as financial sector regulator. According to BB, average lending rate for term-loan (which is utilized for investment in plant and equipment) of state-owned

commercial banks, private commercial banks and state-owned development financial institutions is 9.63% as of August 2018.

It is observed under the current corporate finance environment in Bangladesh, that loan outstanding has continued to increase by 18% from a year earlier backed by strong credit demand, while the growth rate of deposit which is the source of lending has lowered to 10% or 11%. As the result, advance deposit ratio (ADR: advance/deposit) stays at 77% which is higher than before. This requires tightening in growth of lending which resulted in introduction of private banks' clients to IDCOL and BIFFL or in requesting those IFIs to participate in loan syndication by private banks.

There are some other EE&C promotion facilities. One is the Global Climate Partnership Fund (GCPF). GCPF which was initiated in 2011 is the loan facility aiming to extend loans to projects owners for buildings and plants improving energy efficiency by more than 20% and renewable energy project such as small-scale solar power generation, small-scale hydropower, wind power generation and biomass power generation. However, provision of GCPF loan has been limited just one (1) project which was extended by co-financing of 2 two financial institutions. Asian Development Bank (ADB) initiated Industry Energy Efficiency Finance Program (IEEFP) in 2011. IEEFP covered only energy efficiency and conservation equipment while GCPF extended loan for not only energy efficiency and conservation equipment but renewable energy equipment. The team found out that IEEFP fund have comprised of technical assistance and loan facility of USD 30 million. However, it is indicated that no loan has been extended and ADB cancelled most of the fund. BB established Green Transformation Fund (GTF) in 2016. The size of fund is USD 200 million and is intended to facilitate access to financing to export-oriented textile & garment products and leather goods manufacturing industries when they import capital machinery relevant to environment-friendly/green attributes such as energy efficiency, renewable and so on. There are several loan facilities for energy efficiency and conservation promotion, higher lending interest rate and the time required for appraisal have hampered smooth implementation of loan projects. In this context, both minimizing the time for loan procedure through simplification of loan application and speedy appraisal and development of loan having concessional low interest rate and loan scheme will promote EE&C further.

1.4 IFIs' Project Implementation Status and Capacity

Looking at long-term loan outstanding of IDCOL by sector, renewable energy projects account for 52.6% while that of Infrastructure projects has 47.3%. The share of renewable energy projects has been decreasing from 69.4% in December 2015. The importance of financing to infrastructure project including energy efficient project is increasing. It implies that due to expected weaker demand for renewable energy project especially for solar home system, loan for infrastructure would become more significant sector of IDCOL in the future. IDCOL has not disclosed finance type-wise loan outstanding. According to interviews, it was indicated that corporate finance loan covers about 20% of infrastructure loan and all renewable energy loan is corporate finance type. As the result, it is estimated that more than 60% of total loan will conducted as corporate finance type.

From IDCOL's financial data, the total assets increased by 106% between June 2013 and December 2017 while loans and advances grew by 71%. If we compare these 3 years, growth rate is 14% for both assets. Observing profit and loss statements, total operating income have increased by 44% within 4 years, while profit before tax and provision have increase 44% as well during the same period. However, net profit has decrease from BDT 1,036 million to BDT 531 million.

BIFFL's sector-wise loan outstanding as of December 2017 shows that loan for private sector accounts for 61.4% and that for public sector accounts for 38.6%. Since BIFFL incepted loan activity in 2014, activity is now in the process of developing. BIFFL has not disclosed finance type-wise loan outstanding, but according to interviews, it was indicated that project finance type makes up about 95% while corporate finance type makes up only 5%.

Based on BIFFL's financial statements between 2013 to 2017, shareholders' equity exceeds liability by a large margin which demonstrates strong financial soundness. As the loan activity have got into gear, loan outstanding has been accumulated steadily from 2015. Although total operating income does not change so much, interest income from loans accounted 46% of total operating income in 2017 compared with 2015 when most of interest income accounted most of operating income. Net profit (Retained surplus) stays at stable level which was BDT 643 million in 2017.

Looking at financial indicators of both IFIs, ROE and ROA of IDCOL shows better than or almost same level as the Non-Bank average. Regarding Capital Adequacy Ratio (CAR), BB require at least 10% of total Risk Weighted Assets according to the guidelines. That of IDCOL was 11.18% in 2017 and more than 10% from 2014 to 2017. ROA of BIFFL indicates better achievement than the Non-Bank average during the period while ROE of BIFFL have short of the average. CAR reaches at more than 100% due to strong equity level.

Table II Financial indicators for 5 years

(1) IDCOL

	2013/6	2014/6	2015/12	2016/12	2017/12
ROE (%)	37.1	35.4	24.1	6.7	8.4
ROA (%)	2.8	3.0	2.0	0.5	0.7
Capital Adequacy Ratio (%)	9.05	12.40	11.87	12.44	11.18

Source: Annual report of IDCOL

(2) BIFFL

	2013/12	2014/12	2015/12	2016/12	2017/12
ROE (%)	11.7	13.3	4.7	3.5	3.6
ROA (%)	10.4	12.0	4.0	3.2	3.1
Capital Adequacy Ratio (%)	-	130.23	112.48	276.71	149.69

Source: Annual report of BIFFL

(3) Average financial indicators of Non-Bank Financial Institutions

	2013	2014	2015	2016	2017
ROE (%)	7.5	9.9	9.9	6.9	5.9
ROA (%)	1.5	1.8	1.8	1.0	0.8

Source Annual report of Bangladesh Bank

Credit rating obtained from credit risk assessment institutions is as follows:

IDCOL obtained AA-1 from Credit Rating Agency of Bangladesh;

BIFFL obtained AA-(minus) by Credit Rating Information and service Limited;

Both rating grade is ranked as first grade in the BB's rating rate.

Non-Performing Loans (NPL) ratio of IDCOL is increasing. The factors reflecting growth of NPL comes from increase of non-performing loans of renewable energy projects, mainly because of rapid change of market condition in solar home system project. According to an interview with

IDCOL, IDCOL is now discussing with BB and ERD on how to settle the issue and to decrease NPL.

The team have observed the following improvements in business process of the IFIs:

- (i) Both IFIs obtain CIB report from BB before name clearance stage and institutional loan decision stage in order to confirm no occurrence of default at any financial institutions.
- (ii) IDCOL has started focusing on appraising effect arising from investment of energy saving equipment.
- (iii) Both IFIs evaluate long-term cash flow projection for evaluating repayment capacity considering several economic scenarios.
- (iv) Both IFIs are conducting survey on property right of collaterals and evaluating value of collaterals cautiously.

On the other hand, following issues should be addressed in the future:

- (i) Accumulation of further experiences on credit appraisal through financial statement analysis;
- (ii) Development of know-how on evaluating production line operation status.

Although both IFIs still have above issues, it is recognised that both IFIs have sufficient capacity to implement the loan Projects in proper and efficient manner.

1.5 Fund Demand Estimation

The fund demand estimation for the next four years is about USD 30 billion. This amount means a demand of about USD 7.5 billion USD in average on a yearly basis. Even when the equipment categories are limited to those, chosen in the first phase of this project, the estimated potential is still around USD 25 billion (USD 6.25 billion per year). This means an increase of about 170% compared to the estimated fund demand for the first tranche (about USD 2.3 billion per year).

Table III Sector-wise Fund Demand Estimation for 4 years

(Amount in USD)	
Sector	Demand
Industry	2,728,390,900
Building	52,000,000
Residential	172,480,000
Common Technology	39,600,000
Total	2,992,470,900

Source: JICA T/A Task Team calculation

A huge majority of the fund demand is covered by the industry sector, which. Especially the garment and textile industry with USD 26.1 billion accounts for a percentage of 87.2% out of the whole demand. This number was evaluated based on the number of applicable factories and the average number of owned equipment by factory. It is assumed that equipment update demand will occur every 20 years of service life. We added an introduction rate of new equipment of 3% per year. This figure becomes the potential demand. But to keep this demand assumption conservative, we considered one third of the assumption as the real potential.

1.6 Consideration for Component III Implementation Promotion

During the first two years of implementation of the existing Project, there has been no case of Component III (loan extension for households and small businesses) application. On the occasion of the formulation of the succeeding Project, the Phase 2 Project, the T/A Task Team conducted a review on the significance of having this component in the Projects (existing and the Phase 2 Projects). The major review items were: (i) to grasp the current situation of Component III,

focusing on the attitudes of the IFIs; (ii) to identify the reason for stagnation, and; (iii) to recommend how the component should be handled in future.

The Existing Project is comprised of three components, which are: Component I for industry sector, Component II for building sector and Component III for residential sector. The rationality behind this composition is the report in the EE&C Master Plan up to 2030, referring to the present energy consumption status and the observed trend. It is for these reasons that these three components are included in the existing Project. As there is a rational background for having these three components in the Project, it has always been shared among the Project Executing Agencies that Component III is an integral part of the Project, necessary to be conducted.

The T/A Task Team, during the 2 years of implementation of this existing Project, has always been conscious of the stagnation of Component III, but has left the issue to the Executing Agencies to consider. The T/A Task Team has been cautious not to disperse the attention of the stakeholders during the initial period of the Project implementation, and facilitated whatever is being initiated by the Executing Agencies. In the meantime, the T/A Task Team has been elaborating the B-type loan execution business rules, to have clear rules and formats incorporated into the Business Process Manuals and the Project MIS. The T/A Task Team, therefore, regards the present situation as a natural reflection of the Executing Agencies' (especially the IFIs') inclination to Components I and II (functioning on A-type loan execution method) that the Component III is not yet taking off.

Component III, addressing to the need for EE&C promotion in residential sector is a requisite for the Phase 2 Project to be responsive to the EE&C Master Plan up to 2030. Without Component III, the Phase 2 Project will no longer be a comprehensive solution to the need for EE&C promotion as identified in the Master Plan. The eligibility criteria, which is inverter control requirement, may be kept as it is until internationally acceptable fundamental energy saving criteria for home air conditioners and refrigerators come into existence. With regards to the fact that B-type loan is not being favoured, especially in comparison with the A-type loan, the T/A Task Team recommends a simple and realistic approach to make use of A-type loan execution methodology to be utilised for Component III. As the result, all three components, I, II and III will all be implemented through a same methodology of A-type loan, without segregation, in a simple and unified manner. Suggested application cases are to extend the Component III loan for short term loan facility for the home appliances manufacturing and distribution companies selling their products to end users through dealership or their own distribution channels. Another idea was to make use of the fund as the working capital loan (revolving) for importing in bulk and selling the appliances to end users. (these applications may have to follow new criteria for eligibility, but fall under A-type loan execution methodology).

1.7 Activities by Other Development Partners

Through discussions with the Asian Development Bank (ADB), International Finance Cooperation (IFC), KfW, Agence Française de Développement (AFD) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), The T/A Task Team identified the other development partners' intention to support the promotion of EE&C in Bangladesh and to consider any coordination and cooperation measures. SREDA welcomes various international development partners' intention to contribute to the promotion of EE&C in Bangladesh. SREDA intends to coordinate these interventions through unified data collection methods, but allowing various activities to be conducted freely throughout the country. In this context, EE&CPF Projects (both existing and Phase 2 Projects) are likely to become a platform for energy related data collection, analysis and dissemination by means of MIS-DASH utilisation. Based on such notion, the technical transfer portion of the Phase 2 Project (specifically, consulting services for SREDA)

should desirably be focused on supporting SREDA to harmonise various EE&C promotion activities through data collection, analysis and reporting.

1.8 Project Effect Analysis

The number of visited sub-projects is four, among which two are financed by IDCOL (1-cement, 1-knit dying and sewing), and other two by BIFFL (1-manufacturing home appliances, 1-spinning). Installation and operation status of eligible equipment is as follows: First, the Vertical Roller Mill (VRM) was under construction with some parts already arrived and started to be installed. Second, at the ready-made garment factory, a part of sewing machines and all four sets of once-through boilers have been already installed and started their operation. The remaining sewing machines and BEMS were not to arrive at site yet. Thirdly, the home appliances assembling factory who has received NOC for two sets of compressors, had their equipment already installed and in operation. The fourth site, a spinning mill in Chittagong who received NOC for roving frames, automatic winders, spinning machines, LEDs, waste heat recovery boiler and absorption chillers, had the machines in the production line already being installed. LEDs have been installed partially and are in use. Waste heat recovery boiler and absorption chillers have not arrived yet at site as even their L/Cs have not yet been opened.

The first finding from the site-visits is that all the machines which have already arrived at site were all according to NOC. The second finding is that those machines which have already started operation are in good conditions, even though some cases some recommendations were made to improve operation efficiency. For example, it was observed that air pressure loss of installed air compressors was notably large, as the diameter of branch pipelines is thought to be too small. It was recommended to replace them with larger pipelines or to install additional pipelines. Another example was that heat loss from valves was observed in a set of once-through boiler. Thirdly, the T/A team had discussions with sub-project owners to develop monitoring plan as they will have to report production and energy consumption data on a quarterly basis in the future.

All four sub-project owners were given ID and password to access to MIS by IFIs and some already started to input data on MIS. However, in many cases, energy consumption in the whole factory or entire unit. Through discussions with sub-project owners, it was recommended that by using simple measurement devices such as watt meter, water flow meter and recording function of the equipment itself, simple but effective monitoring will be possible. IFIs, together with their own consultants, should start discussing with sub-project owners and support them developing an effective and efficient monitoring plan. Such discussions should take place at the initial stage of monitoring to avoid reporting of irrelevant or missing data.

2. Formulation of Phase 2 Project

2.1 Background

The idea of this Phase 2 Project arose in response to an enthusiastic demand from the industries for additional funding source for a low interest loan to be provided through this existing Project. JICA, having confirmed this strong demand and also recognising the smooth and quick implementation of the Project (under the criteria that more than 70% of the Project fund will be utilised by November 2018), decided to seek for a possibility to formulate the Phase 2 Project.

2.2 Objectives

The title of the Phase 2 Project is “Energy Efficiency and Conservation Promotion Financing

Project (Phase 2)”. The Objectives of the Phase 2 Project are to promote EE & C measures, and to facilitate installation of EE&C equipment in Bangladesh as well as to support the promotion of policy in EE&C by Government of Bangladesh through extending concessional loans and other support, thereby securing the balance between the energy supply and demand and contributing to the reduction of greenhouse gas.

2.3 Scope

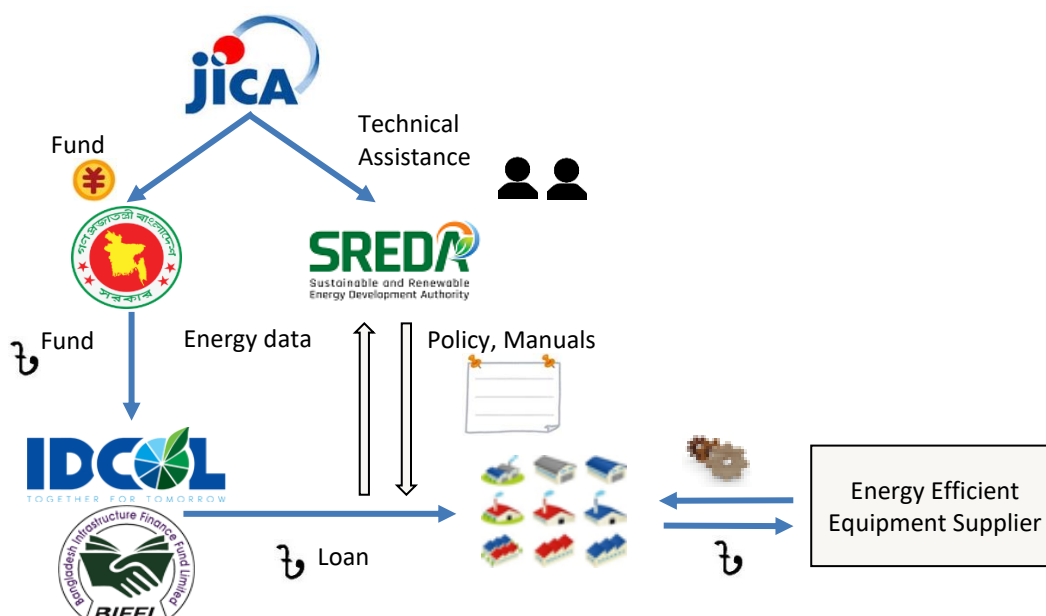
The Phase 2 Project will be comprised of only the Type A loan, to be applied to all three components, (i) to (iii). In the Phase 2 Project, individuals and households will be excluded from the eligible lenders, in order to focus on the industry and organisations, which have larger demand.

Table IV Three Components Comprising the Phase 2 Project

Component	Component name and target area
I	Industry / commercial sector component
II	Building sector component
III	Electronic appliance component

2.4 Structure

The Phase 2 Project Structure, in overall, remains the same as that of the existing Project. The concessional loan provided in JPY denomination from JICA to the Finance Division (FD) will be extended to the IFIs (IDCOL and BIFFL) in BDT currency. The IFIs will on-lend the fund to the industries which are investing on eligible EE&C equipment (sub-project owners). SREDA will receive technical assistance for the implementation of the Phase 2 Project so as to ensure that the fund is being utilised in accordance with the EE&C promotion policy, following the business process requirements stipulated in the manuals, and that required data is being collected from the sub-project owners and the IFIs.



Source: JICA T/A Task Team

Figure II Overall Structure of the Project

2.5 Conditions

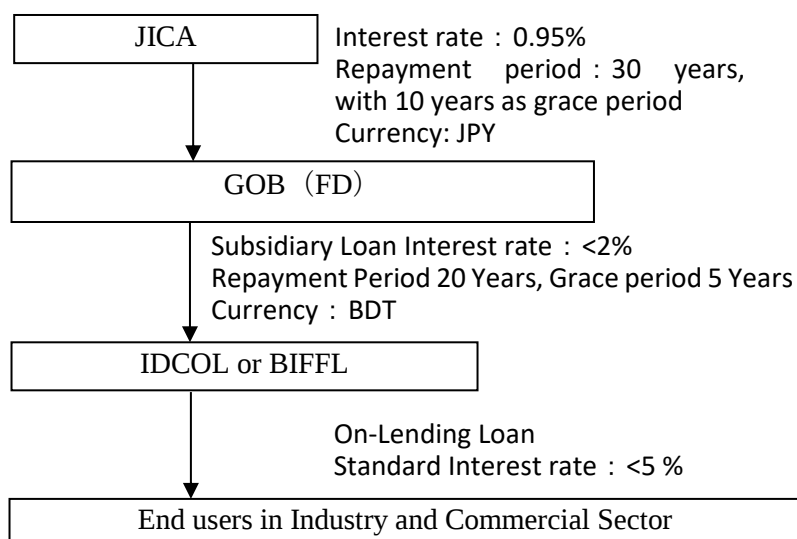
The main component loan for the Project will be extended to the Government of Bangladesh under 0.95% interest rate for 30 years tenure among which 10 years will be the grace period. There is a significant change from the loan condition for the existing Project, which was extended at 0.01% interest rate for the tenure of 40 years among which the first 10 years is the grace period. The following terms and conditions will be applied to the Phase 2 Project. The conditions reflect Japanese ODA loans standard effective from October 2018, in accordance with the income categorizations of Bangladesh.

Table V Terms and Conditions of the Loans

Category	Interest Rate	Repayment Period	Grace Period	Conditions for Procurement
Category 1 Provision of funds to end users	0.95%	30years	10 years	Untied
Category 2 Consulting services for Executing Agencies	0.01%	same as above		

Source: JICA T/A Task Team

Disbursement period is from 2019 to 2025, and no disbursement shall be made for the Project later than the same day and month eight (8) years after the effective date of the L/A, unless otherwise agreed between JICA and the Borrower. Disbursement Period will be discussed and agreed at the time of L/A negotiation.



Source: JICA T/A Task Team

Figure III Referential Lending Conditions

2.6 Implementation Timetable

The signing of the L/A for the Phase 2 Project will be taking place by June 2019. The signed L/A will be effectuated through internal procedure in GoB by September 2019. Soon after the effectuation of the L/A for the Phase 2 Project, (i) banking arrangements (and opening of new

bank accounts for the Phase 2 Project) are expected to be complete by October 2019. Also, (ii) the amendments of the contracts for the IFIs' consulting services for the Phase 1 Project will be prepared by each IFI, and will be submitted to JICA for its review and concurrence. Once the subsidiary grant agreements have been signed, the IFIs will be able to amend their consulting services contract to include the Phase 2 Project tasks. Meanwhile, SREDA needs to have the New TAPP for the Phase 2 Project consulting service approved by January 2022.

Table VI Key Initial Events and Timetable

Items	Timing
Loan Agreement (L/A)	by June 2019
Loan Effectuation	by September 2019
Contract amendments for IFIs consultants to be submitted to JICA for concurrence	by September 2019
Banking arrangements (opening of new bank accounts for the Phase 2 Project)	by October 2019
Signing of Sub Grant Agreements for the Consulting Service Contracts for the Phase 2 Project between FD and IFIs	by October 2019
Reallocation of remaining balance of Category 2 (Consulting Services for IFIs) to Category 1 (Provision of Fund to End Users) under the L/A of the Phase 1 Project	by December 2019
The Approval of New TAPP for Consulting Services of the Phase 2 Project	by January 2022
SREDA's TAPP approval for Phase 2 Project	by January 2022
Selection of Consultant for SREDA	January 2022 - December 2022
Consulting Services for IFIs* ¹	- November 2025
Consulting Services for SREDA	End of the Consulting Service for the Phase 1 Project - November 2025
Provision of Funds to End Users	October 2019 - November 2025
Project Completion Date* ²	November 2025

*1 To ensure smooth implementation of the Phase 2 Project, and also for the sake of integrity with the Phase 1 Project, the consulting services for the executing agencies should also cover the entire Phase 2 Project duration.

*2 Project Completion was defined as (i) the timing of the final disbursement JICA or (ii) the expiry of the L/A period of the Phase 2 Project, whichever comes earlier

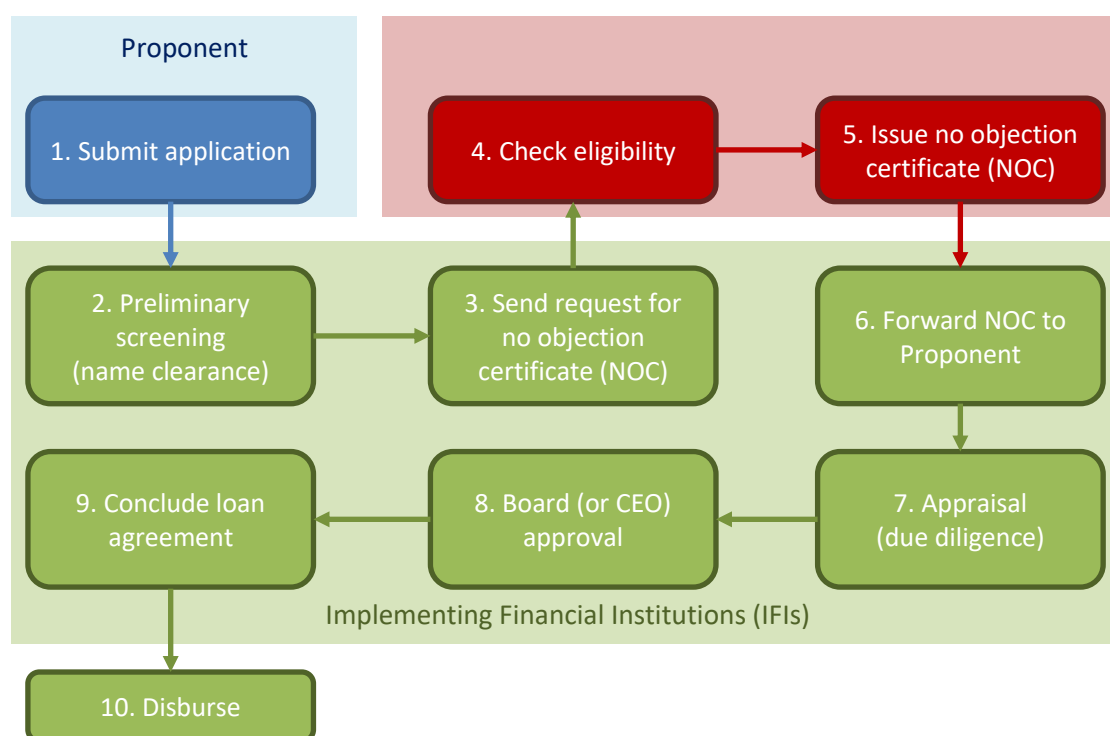
Source: JICA T/A Task Team

2.7 Business Process Manuals and Management Information System (MIS)

In order to administrate the concessional loan scheme in a transparent and timely manner, SREDA, IDCOL and BIFFL will perform the Phase 2 Project business processes in accordance with the Business Process Manuals and on the Management Information System (MIS), which were prepared and shared by SREDA in the existing Project.

2.8 Appraisal Procedure

The borrowing procedure for end users which will remain the generally the same as in the existing Project. The appraisal procedure is as in the figure on the next page:



Source: JICA T/A Task Team recommendation based on existing Project practices

Figure IV Appraisal Procedure

2.9 Consulting Services for SREDA

SREDA's consulting services, in the Minutes of Discussions (M/D) for the existing Project, was stipulated to be selected at least 9 months prior to the completion of the JICA T/A Task Team's assignment (i.e., by January 2018). SREDA is therefore urged to complete the procurement for the existing Project consulting service by January 2019. It will be after the procurement of the consultants that the issue of contract amendment for accommodating the works for the Phase 2 Project will be discussed. The sequence will be: (i) effectuation of the L/A for the Phase 2 Project, (ii) preparation and approval of a new TAPP to include the work scope to cover the whole project period of the Phase 2 Project until November 2025, then, (iii) procurement of the Phase 2 Project consultants.

The basic idea of the Phase 2 Project consultants' TOR is to terminate whatever work already completed during the existing Project period, but including the work items which require continued support, and add new items which will be beneficiary for SREDA to further enhance the Project effects. The overall support activities will be discontinued after the completion of the existing Project while capacity development activities will be continued. Further, it is suggested to add support for integration of the Project with the Energy Audit practices and for coordination of data management.

2.10 Consulting Services for IFIs

Current TORs for both IDCOL and BIFFL cover three major task groups, which are: (1) facilitating implementation, (2) monitoring, and (3) review & improvement. After completion of current 6 years' service provision, routine operation support works are most likely to become manageable by local consultants. It will be the (3) review and improvement which will have to be looked after by international consultants on interval basis. In overall, consulting services for

IDCOL and BIFFL are expected to be localised, with some creative works continued by the international consultants. Under the current circumstances and with regards to the competence of the consultants, marketing activities as a promotion of the Project has also become an essential task for the IFIs' consultants. With the maturing of the implementation support activities, the consultants' marketing functions are anticipated become more and more important to sustain the Project activities.

2.11 Environmental and Social Considerations

The Phase 2 Project will be categorized as "FI" under JICA Guidelines for Environmental and Social Considerations (April 2010) (JICA Guidelines), as none of the sub-projects within the Phase 2 Project will involve land acquisition, resettlement, sensitive sectors, characteristics, and areas, and will have negative environmental and social impacts. The Environmental and Social Safeguards Framework (ESSF) of IDCOL and the Environmental and Social Monitoring Framework (ESMF) of BIFFL were found adequate in the light of the standard JICA requires as the Environmental and Social Management Systems (ESMS).

3. Outcome from the Extension Period of the T/A Task

The T/A task extension works were conducted to achieve an expected level of contribution to the Phase 2 Project formulation as well as for support for implementation for the existing Project. Further, the Task also attained further advancement of implementation capacities though reviewing activities especially at IFIs. It should be noted here that the cause for non-achievement of the expected outcome are mostly due to the responsibilities of the executing agencies. The T/A Task Team, nevertheless, will continue its support for the executing agencies until the task completion. The Phase 2 Project preparation left issues to be solved by the Executing Agencies, notably by SREDA. Major issues that need to be followed up are: (i) immediate procurement of consulting services and (ii) formulation of the Steering Committee (SC) and the Technical Advisory Committee.

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Acronyms

AFD	Agence Française de Développement
ADB	Asian Development Bank
ADR	Advance deposit ratio
AR	Annual Report
BAU	Business as usual
BB	Bangladesh Bank
BEMS	Building Energy Management System
BFC	Blast furnace slag cement
BIFFL	Bangladesh Infrastructure Finance Fund Limited
BoD	Board of Directors
BPC	Bangladesh Petroleum Corporation
CAR	Capital adequacy ratio
CEO	Chief executive officer
CFL	Compact Fluorescent Lamp
CIB	Credit Information Bureau
CO ₂	Carbon dioxide
CRAB	Credit Rating Agency of Bangladesh Limited
CRISL	Credit Rating Information & Services Limited
DASH	Data Analysis and Statistics Handling
degC	Degrees Celsius
EE&C	Energy Efficiency and Conservation
EE&CPF	Energy Efficiency and Conservation Promotion Financing
EPS	Earnings per share
ERD	Economic Relations Division
ESMF	Environmental and Social Management Framework
ESMS	Environmental and Social Management System
ESPR	Environmental and Social Performance Report
ESSF	Environmental and Social Safeguards Framework
FD	Finance Division
FSRU	Floating storage and regasification units
F/S	Feasibility Study
FY	Fiscal Year
GCPF	Global Climate Partnership Fund
GDP	Gross Domestic Product
GIZ	German International Development Corporation
GHG	Greenhouse gas
GoB	Government of the People's Republic of Bangladesh
GTF	Green Transformation Fund
ICT	Information Communication Technology
IMED	Implementation Monitoring and Evaluation Division
IDCOL	Infrastructure Development Company Limited
IEEFP	Industry Energy Efficiency Finance Program
IFC	International Finance Corporation
IFI	Implementing Financial Institution
IIDFC	Industrial and Infrastructure Development Finance Company
INDC	Intended National Determined Contribution
ISO	International Organization for Standardization
JICA	Japan International Cooperation Agency

KfW	KfW Group (KfW Development Bank DEG and KfW IPEX-Bank)
L/A	Loan Agreement
L/C	Letter of Credit
LED	Light emitting diode
LEED	Leadership in Energy & Environmental Design
LNG	Liquified natural gas
LPG	Liquified petroleum gas
MIS	Management Information System
M/D	Minutes of Discussion
MOEF	Ministry of Environment and Forests
MOF	Ministry of Finance
MOHPW	Ministry of Housing and Public Works
M/P	Master Plan
MPEMR	Ministry of Power, Energy and Mineral Resources
NOC	No Objection Certificate
NPL	Non-performing loan
ODA	Official Development Assistance
OJT	On-the-job training
OPC	Ordinary Portland cement
PaCT	Partnership for Clean Textile
PCC	Project Coordination Committee
	Portland composite cement
PD	Participating Distributor
PIU	Project Implementation Unit
PSR	Project Status Report
QPR	Quarterly Progress Report
RMG	Ready-made garment
ROA	Return on asset
ROE	Return on equity
SC	Steering Committee
SHS	Solar home system
SLA	Subsidiary Loan Agreement
SOE	Statement of expenditure
SREDA	Sustainable and Renewable Energy Development Authority
T/A	Technical Assistance
TAC	Technical Advisory Committee
TAPP	Technical Assistance Project Proposal
TFEC	Total Final Energy Consumption
TOR	Terms of Reference
TPES	Total Primary Energy Supply
VFD	Variable frequency drive
VRM	Vertical roller mill
WB	World Bank

Energy Units

cf _d	Cubic feet per day
GB	Gigabyte
GHz	Gigahertz
GWh	Gigawatt hour
ktoe	Kilo ton oil equivalent
kVA	Kilo Volt-Ampere
kWh	Kilowatt hour
mmcf _d	Million cubic feet per day
MW	Megawatt
MWh	Megawatt hour
toe	Ton oil equivalent

Currency Units

BDT	Bangladesh taka
JPY	Japanese yen
USD	US dollar

Exchange rate applied to Phase 2 Project formulation works:

USD = BDT 83.9

BDT = JPY 1.35

Base Year for Cost Estimation: November 2018

Background for Extension of the Technical Assistance Task

The Energy Efficiency & Conservation Promotion Financing (EE&CPF) Project (or, the “Project”) started in 2016, soon after signing of the loan agreement (L/A) in June of that year. In line with the Project implementation arrangement requirements as stipulated in the Minutes of Discussions signed between JICA and the three executing agencies in the Project, namely Sustainable and Renewable Energy Development Authority (SREDA), Infrastructure Development Company Limited (IDCOL) and Bangladesh Infrastructure Finance Fund Limited (BIFFL), each procured their monitoring and Project implementation promotion consultants. It was a special arrangement for SREDA, as the administrative authority of the Project to have their consultants provided under JICA funding for the first two years of the Project implementation. JICA assigned a team of consultants (the technical assistance task team, or the T/A task team) who had been supporting SREDA, two other executing agencies as well as other Project stakeholders from June 2016 to August 2018 (period as of activities in conducted in Bangladesh).

Soon after the completion of the T/A task team’s activity in Bangladesh, JICA made a decision to extend the team’s activity period for 5 months, up to January 2019. The major aim of the extension was to mobilise the team further for the formulation of the “Phase 2 Project” of the EE&CPF.¹ The idea of this Phase 2 Project arose in response to an enthusiastic demand from the industries for additional funding source for a low interest loan to be provided through this existing Project. JICA, having confirmed this strong demand and also recognising the smooth and quick implementation of the Project (under the criteria that more than 70% of the Project fund will be utilised by November 2018), decided to seek for a possibility to formulate the Phase 2 Project. The Phase 2 Project intends to make full use of the platform created for the existing EE&CPF Project. It is expected to be a top-up of loan fund onto the current fund, to be utilised under the same rules and process. Improvement and scope enhancement will also be considered during the project formulation and implementation.

The following table lists up the additional work items that were assigned for the T/A task team’s extension work period, to be conducted between September 2018 and January 2019. This supplementary report to the task completion report is prepared to keep the record of the activities conducted during this period. Major portion of the extension period task was the formulation of the Phase 2 Project, just as with JICA’s preparatory surveys for a Yen Loan project. A large portion of the team’s work was conducted in Bangladesh to collect updated information on the market, executing agencies and other stakeholders for the existing Project. These works mostly fall under additional work items 2 to 8. Then, the team’s work to prepare and submit supporting documents for JICA Headquarters’ fact finding mission and appraisal mission for the Phase 2 Project formulation was mostly conducted in Japan, so as to support the JICA missions’ discussions and negotiations with the Government of Bangladesh (GoB). This part of the works fall under additional work items 9 and 10.

This supplementary report, first focuses on additional work items 1 to 8. The findings are documented and edited in chapters numbered in line with the additional works items 1 to 8. Chapter 9 consists mostly of the compiled documents submitted under additional work items 9 and 10, as a project formulation document for the Phase 2 Project. Further, Chapter 10 lists up the annexes to the project formulation, that are harmonised with the existing Project’s Business Process Manuals (annexes in Chapter 10 are intended to be the revisions to the Business Process Manuals that may be incorporated into them once Phase 2 Project starts). There are also

¹ The official name for the Phase 2 Project is “Energy Efficiency and Conservation Promotion Financing Project (Phase 2)”. This new project is referred to as the “Phase 2 Project”, while the ongoing current Project, which may be called the Phase 1 Project as a comparison, is referred to as the “existing Project” in this report.

attachments in Chapter 11 which are the documents referred to in the Phase 2 Project formulation but not necessarily included in the Project implementation tools such as the Business Process Manuals. Finally, Chapter 12 provides overall result of the work, together with some issues to be addressed.

Table 1 Additional Work Items in the Extension Period of the T/A Task

No	Additional work item	Description
1	Assistance for Routine Project Implementation	The T/A task team shall extend advice and assistance to the executing agencies reflecting the implementation status of the Project as identified through monitoring activities.
2	Data collection on energy efficiency and electricity sector	The T/A task team shall collect: (i) Updated data on energy efficiency and electricity demand side sector; (ii) Implementation status and remaining issues concerning the achievement of targets stipulated in the Energy Efficiency & Conservation Master Plan up to 2030; (iii) Updated status of energy efficiency & conservation promotion through activities of other development partner organisations and financial institutions, and; (iv) Developments in statutory, organisational and policy instruments concerning energy efficiency & conservation promotion.
3	Updating information on financial sector in relation to the Project	The T/A task team shall collect: (i) Latest information on interest rate, lending conditions and other supportive measures (including subsidies) for promotion of EE&C, and; (ii) Relevant statutory and institutional arrangements in relation to EE&C promotion.
4	Confirmation of the implementing financial institutions (IFIs)' Project implementation capacity and other status	The T/A task team shall collect: (i) Latest financial results of the IFIs, and; (ii) Information on additional IFI candidates, if any.
5	Revision of fund flow and potential fund demand for the Project	The T/A task team shall confirm: (i) Outlook for L/C opening and actual disbursement status, and; (ii) Potential demand for the Project fund (to be identified through interview with the IFIs and any other means).
6	Reconsideration for the B-type loan designed for households and small businesses	The T/A task team shall investigate on the prospect for the utilisation of B-type loan mechanism and analyse the benefit to be brought about to the market.

No	Additional work item	Description
7	Collaboration and coordination with other development partners	The T/A task team shall look into the possibility of collaboration and coordination with the interventions for EE&C promotion by development partners such as ADB, GIZ and others (collaboration includes both in terms of financial assistance and technical cooperation). Discussion with the relevant development partners should also be conducted as required.
8	Collection of relevant information on the effect of the Project	The T/A task team shall collect and analyse quantitative and qualitative data on the Project effect.
9	Collection of any other relevant information as requested from JICA	The T/A task team shall collect information other than those related to additional work items 1 to 8, but relevant to the Project as requested from JICA.
10	Preparation of report as requested from JICA in relevance to additional work items 1 to 9	The T/A task team shall submit in the form of written report, any information relevant to the work items 1 to 9, as requested from JICA.

Source: JICA T/A task team, with reference to their TOR

1 Assistance for Routine Project Implementation

The T/A Task Team, after a month's interval of work in Bangladesh, resumed their activities from October 2018. Although the major task was the formulation of the Phase 2 Project, the team's activities in Bangladesh enabled them to continue their support for the project implementation, especially for SREDA, who is yet to procure their Project implementation supporting consultants. Major implementation works conducted include: (i) further NOC issuing, (ii) support for Project Coordination Committee (PCC) meetings, (iii) publishing of their national energy balance document, and (iv) on-site observation of sub-projects. There was also an additional support for the implementing financial institutions (IFIs) on (v) verification of their application appraisal procedures. Among these activities, (i) to (iii) are explained in this Chapter, in three sections below, while record of activity (iv) is included in Chapter 7. Record of activity (v) is provided to the IFIs for them to report to JICA Bangladesh Office at later stage.

SREDA, being approached from various international development partners, is now considering more activities to promote EE&C in Bangladesh. The T/A Task Team worked together with SREDA to identify the possibilities to harmonise and integrate some of these activities. During the team's collaboration with SREDA, there were also new findings and information gathered which can be useful for further EE&C promotion. The findings and information are documented in Chapter 3 of this report.

1-1 SREDA's NOC Issuing

During the extension period, there were four additional NOCs issued by SREDA. One was in September 2018 for a cement factory in Chittagong, where a vertical roller mill installation is being planned. The second was in October 2018, for installation of a gas cogeneration power generation using vapour absorption chiller and LED lighting in a ready-made garment (RMG) factory. The third was also in October 2018, for a spinning mill adjacent to a textile factory, where automatic winder is being additionally installed. Then, in December 2018, the fourth additional NOC was issued for a ready-made garment (RMG) factory, utilising energy efficient sewing machines (altogether, 18 types of direct-drive servo motor driven sewing machines of three brands: JUKI, Brother and Kansai were included in the final equipment list).

Also, during the extension period, one existing application from IDCOL's proponent was declared to be shifted to pending status. This was due to an unexpected time consuming factor of the application, where loan process for other elements (building, other equipment, etc.) are affecting the process of the potential sub-project. IDCOL, in with regards to this delay, has preferred to prioritise other upcoming applications.

As the consequence, there are total of eleven ongoing applications and sub-projects under the existing Project. The current status of the applications and sub-projects are as in Table 2 on the following page. Information on Loan amount, approved equipment, purchasing, payment and installation status are also reported in the table. Energy saving effect of these sub-projects are separately listed in Chapter 8. Overall progress of the Project, in terms of the fund utilisation status is also reported in Chapter 8.

There are also few more NOC applications pending under SREDA all of them returned for correction and re-submission. With the clearance of these pending NOCs, much of the remainder of the available fund from the existing Project is expected to be earmarked for sub-projects, with other proponents having have to wait for the mobilisation of the Phase 2 Project fund.

Table 2 Status of Sub-Projects and Applications

(Data as of January 2018)

(No.) Proponent	NOC issued date	Equipment code and description	Brand (Country)	Loan amount in BDT million	L/C opened amount in BDT million	L/A concluded date	Disbursed amount in BDT million	Installation plan
(01) Meghna Cement Mills Ltd	24 May 2017	5.1 Vertical Roller grinding mill for cement clinker and slag OK54-6	FL Smidth (DK)	1,270	1,270	13/6/2017	1,270	Sep-19
(02) Odyssey Craft (Pvt) Ltd	24 Aug 2017	3.3 Sewing machine	JUKI (JP) KANSAI (JP) HAMS (JP)	753	753.5		753.5	
		9.4.2 Air compressor	Atlas Copco (SE)					
		9.8.1 A/C	Daikin (JP)					
		9.10.1 LED	Osram (DE)					
(03) Aman Spinning Mills Ltd	13 Dec 2017	3.1 (1) Roving frames with pneuma-less waste collection system	Toyota (JP)	253.95	224	7/2/2018	224	Nov-Dec 2018
		3.1 (3) Automatic winder with balloon controller	Muratec (JP)					
		3.1 (2) Ring spinning frame with PM motor	Toyota (JP)					
		9.8.1 Air conditioner (absorption chiller)	Ebara (JP)					
(04) Roshawa Cotton Mills Ltd	26 Apr 2018	3.1 (1) Roving frames with pneuma-less waste collection system	Toyota (JP)	983	983	3/10/2018	0	
		3.1 (2) Ring spinning frame with PM motor	Toyota (JP)					
		3.1 (3) Automatic winder with balloon controller	Muratec (JP)					
(05) Pahartali Textile & Hosiery Mills Ltd	10 Jun 2018	3.1 (1) Roving Frame Toyota FL200	Toyota (JP)	515.3	474	Nov-18	0	Mar-19
		3.1 (3) Automatic Winder Muratec QPRO II Plus	Muratec (JP)					
		3.1 (4) Air Jet Spinning Muratec Vortex 870	Muratec (JP)					
		9.8.1 (2) Air Conditioner Absorption Chiller	Ebara (JP)					
		9.12.2 Waste Heat Recovery (Exhaust gas boiler)	Schneider (DE)					
		9.10.1 LED lamp (tube with Lamp shade)	OSRAM (DE)					

(No.) Proponent	NOC issued date	Equipment code and description	Brand (Country)	Loan amount in BDT million	L/C opened amount in BDT million	L/A concluded date	Disbursed amount in BDT million	Installation plan
(06) Fair Electronics Ltd	21 Jun 2018	9.4.1 (2) Air Compressor (multiple)	Comp Air (US)	10.51	10.51	Jul-18	10.51	
(07) Tosrifa Industries Ltd	28 Jun 2018	3.3 Sewing machine	JUKI (JP) KANSAI (JP)	109.03	53.9	13/11/2018	53.9	Feb-18 Oct-19
		9.6.2 Boiler	Miura (JP)					
		2CZ00 BEMS	Alaska (IN)					
(08) Shun Shing Cement Industries Ltd	13 Sep 2018	5.1 Vertical Roller grinding mill for cement clinker and slag LM53.3+3CS	Loesche (DE)	734	734	Dec-18		Starting from Feb/Mar-19
(09) Etafil Accessories Ltd	03 Oct 2018	9.11.1 Gas engine cogeneration (generator) G3516H	Caterpillar (US)	85.53	72.3	Jan-19		
		(vapour absorption chiller)	Thermax (IN)					
		9.10.1 LED light	GRG 格日光电 (CN)					
(10) Bandhab Tex Ltd	29 Oct 2018	3.1 (3) Automatic Winder Muratec QPRO II Plus	Muratec (JP)	116.54	116.54			
(11) Fakir Apparels Ltd	13 Jan 2019	3.3 Sewing machine	Brother (JP) JUKI (JP) Kansai (JP)	169.15	20.93			

Note: JP=Japan, DE=Germany, SE=Sweden, US=USA, CN=China, DK=Denmark, IN=India

Source: Compilation by JICA T/A Task Team based on SREDA PIU information

1-2 Seventh, Eighth and Ninth Project Coordination Committee Meetings

It was in the 6th PCC meeting held on 14 August 2018 that the JICA T/A Task Team has bid farewell to the Executing Agencies. With the extension of the work period, the team resumed the work, first of all, by attending and supporting SREDA to convene the seventh PCC meeting on 9 October 2018. The major issue in the meeting agenda was to share information on JICA's intention and condition to consider the formulation of the Phase 2 Project. The Executing Agencies welcomed the move, and closely considered meeting the criteria for JICA to start considering the Phase 2 Project. Against these requirements, the Executing Agencies reconfirmed the need to accelerate NOC issuing and L/C opening.

A month later in November, the 8th PCC was convened, focusing on the issues which were not sufficiently discussed up to now, including the promotion of Component III (without employing B-type loan which will require significant preparations) and considerations for environmental and social considerations for ongoing and planned sub-projects. Then, in December a final PCC with the support of the T/A Task Team was held as the 9th meeting. The meeting focused on handing over the team's immediate works to SREDA, as there was still no consultant appointed to take over the implementation supporting work. The meeting adjourned with a decision to hold the 10th meeting in January 14th.

As decided in the previous meeting, the 10th PCC meeting was held. This meeting, held on 14th January 2019, was the first of the PCC meeting to be held without support from the T/A Task Team. Under SREDA PIU's coordination, the meeting was held, fulfilling the aim, to follow up the issued that were listed up in the time-bound action plan during the formulation of the Phase 2 Project. These were: (i) convening the first Steering Committee (SC) meeting, (ii) formulation of the Technical Advisory Committee (TAC), and (iii) appointment of SREDA's Project consultants.

Table 3 Project Coordination Committee Meetings

No.	Date	Main agenda
07	09 Oct 2018	- Information sharing on Phase 2 Project preparation and condition - Need for accelerating NOC issuing and L/C opening
08	14 Nov 2018	- Considerations for Component III - Reminder on Environmental and Social Considerations reporting
09	06 Dec 2018	- Reporting on Phase 2 Project formulation status - Annual Report (QPR10) preparation instructions
10	14 Jan 2019	- Follow-up of time-bound action plan issues for Phase 2 Project - Preparation for on-site observations

Source: Compilation by JICA T/A Task Team

1-3 Publishing of National Energy Balance Document

SREDA, on the occasion of organising a national meeting on the energy balance study in Bangladesh, has drafted a document to be distributed widely among the participants. The aim of this national energy balance document was to exhibit SREDA's activities to contribute to managing the demand side of energy in the country, mainly by promoting EE&C. The document included information not only on the EE&CPF Project but also on SREDA's other EE&C promotion activities such as the introduction of Energy Audit & Management Programme, awareness raising works, development of energy efficient building certification and home appliances labelling programmes.

The T/A Task Team worked to support SREDA in the drafting of this national energy balance document by providing data and information on the updated national energy demand / supply status (c.f. Chapter 2 of this report). The team also worked closely with SREDA on identifying the possibilities to integrate these various activities for promotion of EE&C.

2 Updates on Power and Energy Sector

2-1 Energy Demand and Supply

The overall demand for energy in Bangladesh has been rapidly growing due to its stable economic development. Bangladesh depends its main source of energy on its indigenous natural gas. The latest data (FY 2016-17, compiled from nationally available data) shows that the indigenous natural gas supply of 26,140 ktoe comprised 77% of the total primary energy supply of 33,766 ktoe. Figure 1 illustrates the primary energy supply by fuel source for the past 4 years.

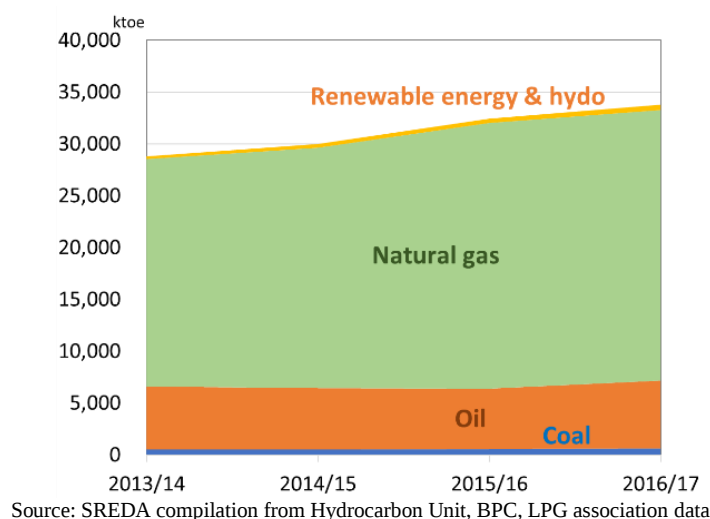
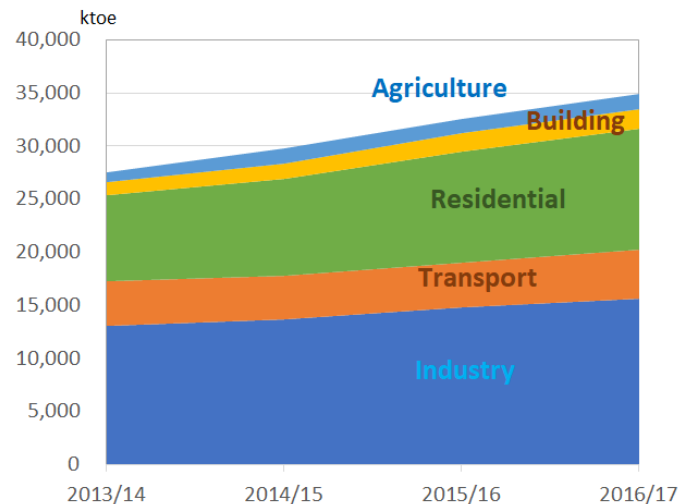


Figure 1 National Total Primary Energy Supply by Fuel Source

Domestic national gas has started to deplete. Now the government has a forecast that domestic gas will deplete in 8 to 9 years, unless new gas fields are successfully developed. To solve gas shortage, Bangladesh started to import LNG having the contracts with two different suppliers so far, with RasLaffan Liquefied Natural Gas Company (Qatar) for 2.5 million tons/year for 15 years, and with Oman Trading International (Oman) for 1 million tons/year for 10 years. The first imported LNG from Qatar was regasified and supplied through gas pipeline in October 2018. Petrobangla has also been in discussions with other potential exporters such as AOT Energy (Switzerland) and Pertamina (Indonesia). Those imported LNG will fill the gap between declining domestic gas supply and increasing demand, but at higher costs. The imported LNG need to be regasified at the floating storage and regasification units (FSRUs). The first FSRU started to operate from August 2018 at Moheshikali with capacity of 500 mmcfd. The terminal is operated by Excelerate Energy. The second FSRU's commissioning schedule is planned in the first quarter of 2019. However, after bitter experience of FSRU operations which could not realize stable and on-time gas supply, there will be no more permissions for FSRUs. Land-based terminals will be the alternative solution, but will take some more years to be developed.

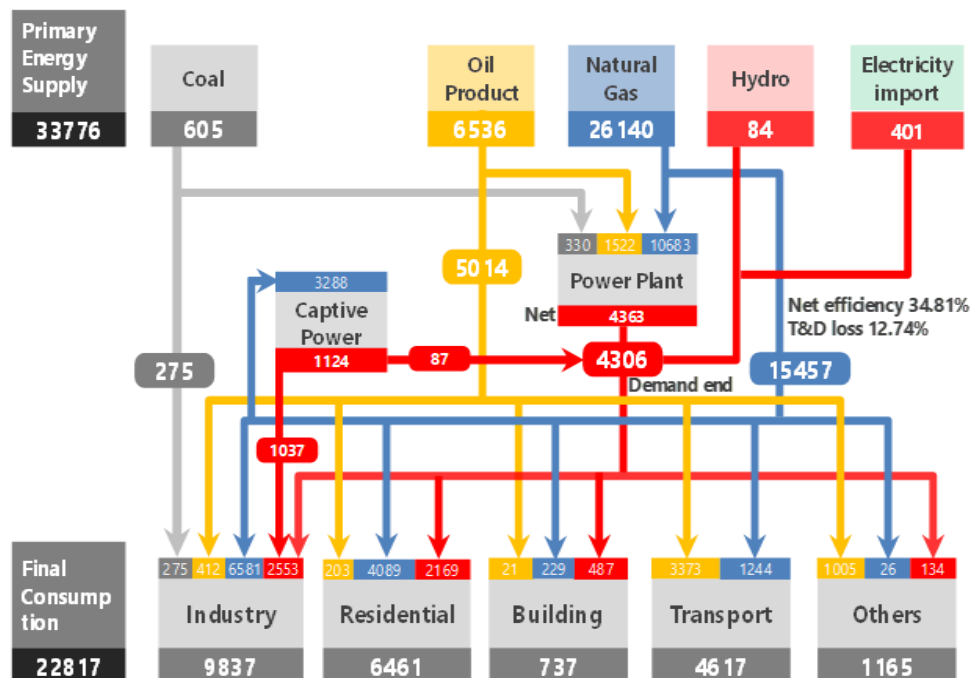
According to the sector-wise energy consumption, the industry sector is the largest energy consuming sector, which consumes 26 million toe, nearly 50% of the entire energy consumption. The residential sector follows. There is significant scope to improve EE&C in both sectors.



Source: SREDA compilation from Power Division, Hydrocarbon Unit, BPC, LPG association data

Figure 2 National Energy Consumption by Sector (Primary Energy Supply Basis)

The energy balance figure below pictures the overall energy supply, conversion and demand by fuel source in FY2016/17. It is notable that nearly half of the whole country's primary energy supply is converted to electricity, either in power plants or captive generation in the industry sector. The biggest consumer of electricity is the industry sector. One characteristic is that more than 40% of the electricity supplied to the industry sector comes as a form of captive power. The residential sector is the second biggest electricity consuming sector, followed by the building sector. Natural gas as a form of heat is consumed mostly by the industry and the residential sectors. More than 50% of oil products is consumed by the transport sector.



Note: Unit = ktoe

Excuding biomass & solar

Rectangles in Energy Balance Chart show: Upper - Total Primary Energy Supply (TPES), Middle - Energy Conversion, Bottom - Total Final Energy Consumption (TFEC) by Sector

Source: SREDA compilation from Power Division Hydrocarbon Unit, BPC, LPG association

Figure 3 National Energy Balance FY2016-17

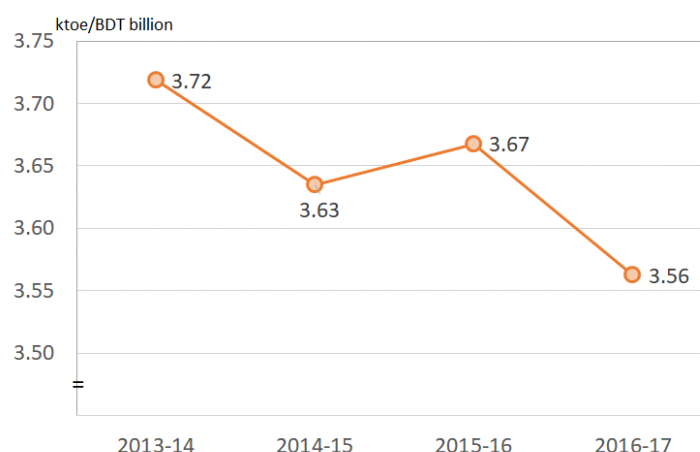
2-2 Energy Efficiency and Conservation target

In the Energy Efficiency and Conservation Master Plan of Bangladesh, the government aims to improve energy intensity (national primary energy consumption per gross domestic product) by 15% in 2021 and by 20% in 2030 compared to the 2013 level. The table and figure below show the progress up to FY2016-17. It is noted that energy consumed in transport sector is currently out of scope from the national EE&C target, therefore achieved energy intensity is calculated excluding energy (oil and gas) consumed in the transport sector.

Table 4 National Energy Intensity

FY	2013-14	2014-15	2015-16	2016-17
Oil	6,088	5,907	5,834	6,536
Oil excluding transport	2,947	2,859	2,824	3,164
Gas	21,927	23,228	25,600	26,141
Gas excluding transport	20,865	22,092	24,369	24,898
Coal	526	510	559	605
Power from Hydro & Import	245	339	411	485
Total Primary Energy Supply (TPES)	28,787	29,984	32,404	33,768
TPES excluding transport	24,583	25,800	28,163	29,151
Real GDP in billion Tk	7,741	8,249	8,835	9,479
Energy Intensity (TPES/GDP)	3.72	3.63	3.67	3.56
Energy Intensity excluding transport	3.18	3.13	3.19	3.08
Trend	1.00 (base)	0.98	0.99	0.96
Trend excluding transport	1.00(base)	0.98	1.00	0.97

Source: SREDA compilation based on various national statistical data

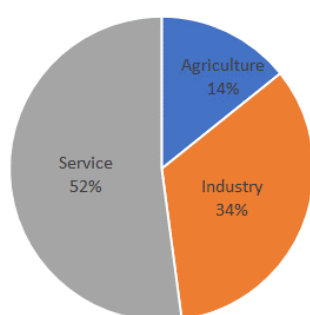


Note: Non-tradable biomass (domestic firewood, etc) is excluded while tradable renewable energy (solar, bioethanol, etc. are included)
Source:

- (1) TPES: SREDA compilation from Hydrocarbon Unit (natural gas, coal), BPC (oil & petroleum), LPG association (LPG) data
- (2) GDP (constant 2010): Bangladesh Bureau of Statistics

Figure 4 National Energy Intensity Trend

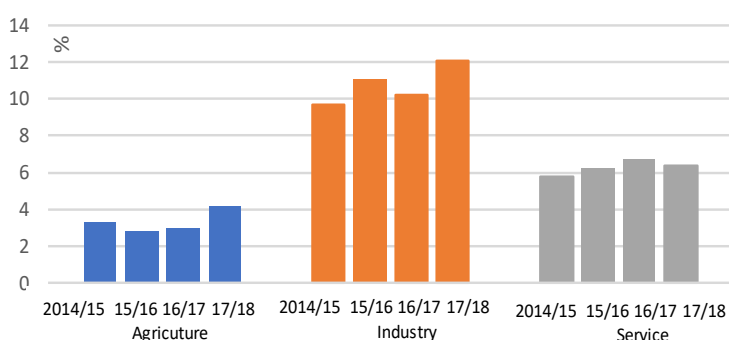
The observation here is that in FY 2016-17 (3.56 ktOE/BDT billion), national energy intensity improved by 4% compared with that of the base year, which is FY 2013-14 (3.72 ktOE/BDT billion). There are several causes behind the declining trend. One factor is the growth of the service sector which includes wholesale and retail, real estate, financial intermediations, education and so on. In FY2017-18, the service sector accounts for 52% of the national GDP, followed by the industry sector (34%) and the agricultural sector (14%). However, if we look at the sectoral growth rate of each sector, the industry sector is most rapidly growing, showing 12% growth in FY 2017-18 compared to FY 2016-17, while the service sector grew for 6%. The largest contributor in the industry sector is the large and medium scale manufacturer, which indicates that in the future there will be more energy consumed in this energy intensive sector, therefore it is of crucial importance to achieve EE&C in the industry sector in the future.



Note: GDP at constant price

Source: BBS "Gross Domestic Product (GDP) of Bangladesh (Final) 2017-18"

**Figure 5 Sectoral Share of GDP
(FY 2017-18)**



**Figure 6 Sectoral Growth Rate of GDP
(from FY 2014-15 to FY 2017-18)**

3 Progress in Financial Sector

3-1 Current status of financial sector in Bangladesh

Bangladesh Bank (hereinafter called “BB”) which was established in 1972 as a body corporate by the Bangladesh Bank Order, 1972 (P.O. No. 127 of 1972) performs functions of issuing licenses to banks and non-banks and making decision and implementing on regulations as financial sector regulator. Table 5 shows lending interest rate of scheduled banks in Bangladesh. According to BB, average lending rate for term-loan (which is utilized for investment in plant and equipment) of state-owned commercial banks, private commercial banks and state-owned development financial institutions is 9.63%² as of August 2018.

Table 5 Announced Interest Rate (lending rate) Chart of the Scheduled Banks

(As of August 2018)

Types of Banks	Names of banks	Outstanding of loans and advances (In million BDT) As of dec., 2017	Loan to large and medium-scale industry (%)		Small industry (%)		Export (%)
			Investment on plant and equipment	Working capital	Investment on plant and equipment	Working capital	
State-owned Commercial Bank : SCB	Agrani Bank	318,559	9.0	9.0	9.0	9.0	7.0
	Jamata Bank	462,125	9.0	9.0	9.0	9.0	7.0
	Sonali Bank	425,492	9.0	9.0	9.0	9.0	7.0
Private Commercial Bank	Islami Bank Bangladesh	705,729	9.0	9.0	9.0	9.0	7.0
	United Commercial Bank	262,582	9.0-12.0	9.0-12.0	12.5-15.5	12.5-15.5	7.0
	Southeast Bank	234,317	9.0-12.0	9.0-12.0	9.0-12.0	9.0-12.0	7.0
	Dutch Bangla Bank	207,257	9.0-12.0	9.0-12.0	9.75-12.75	9.75-12.75	10.5-13.5
	Brac Bank	203,431	9.0-12.0	9.0-12.0	15.0-18.0	13.0-16.0	7.0
	The City Bank	197,073	10.5-14.5	10.5	17.0	14.5	7.0
	Dhaka Bank	153,868	9.0-12.0	9.0-12.0	9.75-12.75	9.75-12.75	7.0
	One Bank	170,441	10.0-13.0	9.0-12.0	12.0-15.0	11.5-14.5	7.0
	Mutual Trust Bank	145,607	10.0-13.0	9.0-12.0	12.0-15.0	11.5-14.5	7.0
	The Premier Bank	134,728	9.0-12.0	9.0-12.0	11.0-14.0	9.0-12.0	7.0
State-owned Development Financial Institution	Bangladesh Krishi Bank	193,673	-	-	-	-	7.0
	RAKUB	52,143	13.0	12.00-13.0	13.0	12.0-13.0	7.0
Foreign Banks	HSBC	N.A.	8.5-11.5	8.5-11.5	10.5-13.5	11.0-14.0	-
	Standard Chartered Bank	N.A.	6.75-9.75	6.75-9.75	14.0-17.0	9.0-12.0	7.0
	Citi N.A.	N.A.	8.25-11.25	5.75-8.75	-	-	-

Source: Bangladesh Bank, Annual Report of respective banks in 2017

It is observed under the current corporate finance environment in Bangladesh that loan outstanding has continued to increase by 18% from a year earlier backed by strong credit demand, while the growth rate of deposit which is the source of lending has lowered to 10% or 11%. As

² Figure is the weighted average of all banks and financial institutions shown in Table 5.

the result, advance deposit ratio (ADR: advance/deposit) stays at 77% which is higher than before. This requires tightening in growth of lending which resulted in introduction of private banks' clients to IDCOL and BIFFL or in requesting those IFIs to participate in loan syndication by private banks.

3-2 Other Energy Efficiency and Conservation Promotion Financing Instruments

Among the loan facility for EE&C promotion focused on industry sector in Bangladesh, Global Climate Partnership Fund (GCPF) is pointed out. GCPF which was initiated in 2011 is the loan facility aiming to extend loans to projects owners for buildings and plants improving energy efficiency by more than 20% and renewable energy project such as small-scale solar power generation, small-scale hydropower, wind power generation and biomass power generation. However, provision of GCPF loan has been limited just one (1) project which was extended by co-financing of 2 two financial institutions. Reasons for poor achievement could be considered as follows: Firstly, higher lending rate for end-user was raised. As is shown in table-2, lending rate in BDT denomination was set as about 12%, which is higher than term-loan rate for industry, after considering credit risk cost. Secondary, difficulty in raising fund timely is hampering factor. Financial institutions require longer time to conduct technical appraisal which takes more than 3 months. Thirdly, condition of the loan which needs to meet more than 20% conservation of energy is big hurdle.

Asian Development Bank (ADB) initiated Industry Energy Efficiency Finance Program (IEEFP) in 2011. IEEFP covered only energy efficiency and conservation equipment while GCPF extended loan for not only energy efficiency and conservation equipment but renewable energy equipment. The team found out that IEEFP fund have comprised of technical assistance and loan facility of USD 30 million. However, it is indicated that no loan has been extended and ADB cancelled most of the fund.

BB established Green Transformation Fund (GTF) in 2016. The size of fund is USD 200 million and is intended to facilitate access to financing to export-oriented textile & garment products and leather goods manufacturing industries when they import capital machinery relevant to environment-friendly/green attributes such as energy efficiency, renewable and so on.

The initial lending rate to IFI was set at 3 Month Libor + 2.25% which was lowered to 3 Month Libor + 1% from August of 2017. The team estimates lending rate to end-users from IFI will reach 6-8%³. Following issues are pointed out from financial institution on GTF:

- (i) Since the loan facility is USD denominated and Libor-based floating rate loan, borrowers will be affected by change of exchange rate and interest rate;
- (ii) Lot of documents are requested from BB;
- (iii) About half year to 1 year is spent for loan decision, and;
- (iv) Completion of plant and equipment is the condition of loan disbursement.

IDCOL and BIFFL explain that demand for JICA EE&CPF Project loan remains high due to its attractiveness in lower lending rate and fixed interest scheme. This high demand is reflected in the fact that the private banks approach to IDCOL and BIFFL, asking these IFIs to participate in large plant and equipment as a loan syndication partner by financing eligible energy efficient equipment with JICA loan.

³ The estimation is calculated by adding 3-4% margin from IFI to end-user.

Table 6 Comparison of Energy Efficiency and Conservation Promotion Financing

Name of loan facility	IFIs	Lending rate to end-user	Tenor	Use of loan
GCPF (Global Climate Partnership Fund)	City Bank	About 12%	5~7 years	Energy Efficiency and Conservation equipment Renewable energy equipment
	Southeast Bank			
Industrial Energy Efficiency Finance Program (ADB)	Industrial and Infrastructure Development Finance Company (IIDFC)	N.A.	N.A.	Energy Efficiency and Conservation equipment
Green Transformation Fund (Bangladesh Bank)	Commercial Banks	6~8%	N.A.	Capital machinery relevant to environment-friendly/green attributes such as energy efficiency, renewable

Source: JICA “Preparatory Survey for Energy Efficiency and Conservation promotion Financing Project Final Report”, Bangladesh Bank “press release”

As mentioned above, although there are several loan facilities for energy efficiency and conservation promotion, higher lending interest rate and the time required for appraisal have hampered smooth implementation of loan projects. In this context, both minimizing the time for loan procedure through simplification of loan application and speedy appraisal and development of loan having concessional low interest rate and loan scheme will promote energy efficiency and conservation in Bangladesh further.

4 IFIs' Project Implementation Status and Capacity

4-1 Loan Activities of IDCOL and BIFFL

IDCOL, a government owned public company, incorporated on 14 May 1997, started its activity as a non-bank financial institution on February 1998. Since its inception, IDCOL is playing a major role in bridging the financing gap for large infrastructure, renewable energy and energy efficiency project in Bangladesh. The primary object of the company is to promote significant participation of the private sector in investment and operation, ownership and maintenance of new infrastructure facility.

Looking at long-term loan outstanding of IDCOL by sector (Table 7), it shows loan for renewable energy projects account for 52.6% while that of Infrastructure project has 47.3% (as of December 2017). The share of renewable energy project has been decreasing from 69.4% in December 2015. The importance of financing to infrastructure project including energy efficient project is increasing. It explains that due to expected weaker demand for renewable energy project especially for solar home system, loan for infrastructure is likely to become more significant sector of IDCOL in the future.

Table 7 Sector-wise Long-term Loan Outstanding of IDCOL

(Amount in Million BDT)

	2015/12	2016/12	2017/12
Infrastructure loan	11,144 (30.5%)	16,456 (40.8%)	19,513 (47.3%)
Renewable energy	25,338 (69.4%)	23,851 (59.1%)	21,700 (52.6%)
Employee	10 (0.0%)	49 (0.1%)	48 (0.1%)
Total	36,491 (100%)	40,356 (100%)	41,261 (100%)

Source: Annual Report of IDCOL 2017

IDCOL has not disclosed finance type-wise loan outstanding. According to the interview, it was indicated that corporate finance loan covers about 20% of infrastructure loan and all renewable energy loan is corporate finance type. As the result, it is estimated that more than 60% of total loan will conducted as corporate finance type.

BIFFL, a government-owned public company, incorporated on 11 March 2011, obtained license from BB on October 2011. BIFFL was formed as special purpose vehicle for financing to accelerate economic growth by leveraging relative strength of the public and private sector in financing infrastructure and sustainable development projects. Sector-wise loan outstanding is shown in Table 8. On December 2017, loan for private sector accounts for 61.4% and that for public sector accounts for 38.6%. Since BIFFL incepted loan activity in 2014, activity is now in the process of developing.

Table 8 Sector-wise Long-term Loan Outstanding of BIFFL

(Amount in Million BDT)

	2015/12	2016/12	2017/12
Public sector	0 (0.0%)	3,099 (39.8%)	4,140 (38.6%)
Private sector	4,358 (69.4%)	4,691 (60.2%)	6,580 (61.4%)
Total	4,358 (100%)	7,790 (100%)	10,720 (100%)

Source: Annual Report of BIFFL 2017

BIFFL has not disclosed finance type-wise loan outstanding as well. According to the interview, it was indicated that project finance type makes up about 95% while corporate finance type makes up only 5%.

4-2 Financial Data

Financial data of IDCOL is shown in Table 9. Based on the tables, the total assets of IDCOL increased by 106% between June 2013 and December 2017 while loans and advances grew by 71%. If we compare these 3 years, growth rate is 14% for both assets. Observing profit and loss statements, total operating income have increased by 44% within 4 years, while profit before tax and provision have increase 44% as well during the same period. However, net profit has decrease from BDT 1,036 million to BDT 531 million due to following factors:

- (i) Drastic increase of provision for loans and advances which reached to BDT 1,255 million in 2017 from BDT 104 million in 2013, and;
- (ii) Increased imposition of tax.

Table 9 Financial Data of IDCOL

(1) Profit and Loss Statement for 5 years (Amount in BDT Million)

	2013/6	2014/6	2015/12	2016/12	2017/12
Total operating income	2,124	2,826	2,950	2,970	3,066
Total operating expenses	156	135	200	209	234
Profit/(Loss) before provision & Tax	1,968	2,691	2,750	2,761	2,832
Provision for loans and advances	104	86	234	1,221	1,255
Net profit/(loss) before Tax	1,864	2,605	2,516	1,540	1,577
Net profit/(loss) after tax	1,036	1,453	1,366	398	531
Earnings Per Share (EPS)	39.83	37.73	27.32	7.96	9.65

(2) Balance Sheet for 5 years (Amount in BDT Million)

		2013/6	2014/6	2015/12	2016/12	2017/12
Total assets		37,240	48,843	66,980	73,025	76,636
Loans and advances		24,513	28,855	36,964	41,017	42,037
Total liabilities		34,447	44,737	61,307	67,057	70,338
Total shareholders' equity	Paid-up Capital	1,720	2,600	5,000	5,000	5,500
	Statutory reserve	-	-	-	-	-
	Retained earnings	1,073	1,506	673	968	798
(Total)		(2,793)	(4,106)	(5,673)	(5,968)	(6,298)
Total liabilities and shareholders' equity		37,240	48,843	66,980	73,025	76,636

Source: Annual Report of IDCOL 2017

Financial data of BIFFL is shown in Table 10. Based on financial statements between 2013 to 2017, shareholders' equity exceeds liability by a large margin which demonstrates strong financial soundness. As the loan activity have got into gear, loan outstanding has been

accumulated steadily from 2015. Although total operating income does not change so much, interest income from loans accounted 46% of total operating income in 2017 compared with 2015 when most of interest income accounted most of operating income. Net profit (Retained surplus) stays at stable level which was BDT 643 million in 2017.

Table 10 Financial Data of BIFFL

(1) Profit and Loss Statement for 5 years (Amount in BDT million)

	2013/12	2014/12	2015/12	2016/12	2017/12
Total operating income	2,257	2,756	1,842	1,547	1,650
Total operating expenses	38	33	41	101	126
Profit/(Loss) before provision & Tax	2,219	2,724	1,801	1,447	1,524
Provision for loans and advances	0	0	33	60	81
Total profit before income tax	2,219	2,713	1,768	1,387	1,443
Net profit after Tax & Provision	1,275	1,417	1,002	773	804
Statutory reserve	0	0	200	155	161
Retained surplus	1,021	1,133	802	619	643
Earnings Per Share (EPS)	7.97	8.85	4.99	3.76	3.91

(2) Balance Sheet for 5 years (Amount in BDT Million)

	2013/12	2014/12	2015/12	2016/12	2017/12
Total assets	21,249	22,548	24,996	24,430	25,822
Loans and advances	-	1,033	4,358	7,790	10,720
Total liabilities	2,231	2,113	3,660	2,440	3,178
Total shareholders' equity	Paid-up Capital	16,000	16,000	19,400	20,100
	Statutory reserve	604	887	1,087	1,242
	Retained earnings	2,414	3,547	849	648
(Total)	(19,018)	(20,434)	(21,336)	(21,990)	(22,644)
Total liabilities and shareholders' equity	21,249	22,548	24,996	24,430	25,822

Source: Annual Report of BIFFL 2017

4-3 Project Implementation Capacity

Soundness

Firstly, Table 11 shows financial indicators of both IFIs. ROE and ROA of IDCOL shows better than or almost same level as the Non-Bank average. Regarding Capital Adequacy Ratio (CAR), BB require at least 10% of total Risk Weighted Assets according to the guidelines. That of IDCOL was 11.18% in 2017 and more than 10% from 2014 to 2017. ROA of BIFFL indicates better achievement than the Non-Bank average during the period while ROE of BIFFL have short of the average. CAR reaches at more than 100% due to strong equity level.

Table 11 Financial indicators for 5 years**(1) IDCOL**

	2013/6	2014/6	2015/12	2016/12	2017/12
ROE (%)	37.1	35.4	24.1	6.7	8.4
ROA (%)	2.8	3.0	2.0	0.5	0.7
Capital Adequacy Ratio (%)	9.05	12.40	11.87	12.44	11.18

Source: Annual report of IDCOL

(2) BIFFL

	2013/12	2014/12	2015/12	2016/12	2017/12
ROE (%)	11.7	13.3	4.7	3.5	3.6
ROA (%)	10.4	12.0	4.0	3.2	3.1
Capital Adequacy Ratio (%)	-	130.23	112.48	276.71	149.69

Source: Annual report of BIFFL

(3) Average financial indicators of Non-Bank Financial Institutions

	2013	2014	2015	2016	2017
ROE (%)	7.5	9.9	9.9	6.9	5.9
ROA (%)	1.5	1.8	1.8	1.0	0.8

Source Annual report of Bangladesh Bank

Secondly credit rating obtained from credit risk assessment institutions is as follows:

(i) IDCOL obtained AA-1 from Credit Rating Agency of Bangladesh

(ii) BIFFL obtained AA-(minus) by Credit Rating Information and service Limited

Both rating grade is ranked as first grade in the BB's rating rate.⁴

Thirdly, data on Non-Performing Loans (NPL) is shown in Table 12. As in Table 12, NPL ratio of IDCOL is increasing. The factors reflecting growth of NPL comes from increase of non-performing loans of renewable energy projects, mainly because of rapid change of market condition in solar home system project. According to the interview with IDCOL, IDCOL is now discussing with BB and ERD on how to settle the issue and to decrease NPL.

Table 12 Non-Performing Loan Ratio

(Classified loan outstanding / Total loan outstanding, %)

	2013/6	2014/6	2015/12	2016/12	2017/12
IDCOL	0.81	0.80	6.22	9.45	10.91
BIFFL	-	-	0.0	0.0	0.0
Non-Bank Average	6.1	5.3	8.92	7.29	8.93

Source: Annual report of Bangladesh Bank, IDCOL and BIFFL

Credit appraisal capacity

As stated in previous section 4-1, both IFI has conducted corporate finance and accumulated experiences in credit appraisal of company. Although BIFFL has fewer experiences than IDCOL, BIFFL developed organization to smoothly operate JICA EE&CPF Project including recruiting staffs. The team have observed following improvements in business process of IFIs:

(i) Both IFIs obtain CIB report from BB before name clearance stage and institutional loan decision stage in order to confirm no occurrence of default at any financial institutions.

⁴ Bangladesh Bank "Prudential Regulations for Banks: Selected Issues" (2014)

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-
- (ii) IDCOL has started focusing on appraisal of effect arising from investment of energy saving equipment.
 - (iii) Both IFIs evaluate long-term cash flow projection for evaluating repayment capacity considering several economic scenarios.
 - (iv) Both IFIs are conducting survey on property right of collaterals and evaluating value of collaterals cautiously.

On the other hand, following issues should be addressed in the future:

- (i) Accumulation of further experiences on credit appraisal through financial statement analysis
- (ii) Development of know-how on evaluating production line operation status

Although both IFIs still have above issues, it can be recognised that both IFIs have sufficient institutional capacity to implement EE&CPF Projects in proper and efficient manner.

5 Fund Demand Estimation

The fund demand estimation for the next four years is about USD 30 billion. This amount means a demand of about USD 7.5 billion in average on a yearly basis. Even when the equipment categories are limited to those, chosen in the first phase of this project, the estimated potential is still around USD 25 billion (USD 6.25 billion per year). This means an increase of about 170% compared to the estimated fund demand for the first tranche (about USD 2.3 billion per year).

Table 13 Sector-wise Fund Demand Estimation for 4 years

(Amount in USD)

Sector	Demand
Industry	2,728,390,900
Building	52,000,000
Residential	172,480,000
Common Technology	39,600,000
Total	2,992,470,900

Source: JICA T/A Task Team calculation

5-1 Estimation Methodology

The numbers for the fund demand were estimated in broadly four steps. First, the number of already installed equipment and the cost per acquisition for each equipment was calculated by the information gathered through the actual results in the first phase of the running EECPPF Project. Second, the demand of the local business operators was estimated by analysing related statistics published by the manufacturers in combination with intense discussions with local experts. Third, the estimations done in the second step were tightened by adding the actual application status at the financial institutions BIFFL and IDCOL. To make the mid-term perspective more accurate, possible demands that came up in first talks between the local business operators and the financial institutions also analysed during this step. As the fourth step, the JICA T/A Task Team had several discussions with other development partners about challenges and trends in the market. To complement the estimation, we compared our information about the demand situation of the local business operators with those development partners. The Asian Development Bank (ADB) and the International Finance Cooperation (IFC) were among our discussion partners.

To estimate the market potential of energy efficient equipment that can become a target for investment by this project, the JICA T/A Task Team focused on 20 equipment categories. The categories were mainly adopted from the study which was done in the first phase of this project. Newly added were “knitting loom” for the garment and textile industry, “regenerative burner”, “endless rolling mill”, “large size inverter” and “large pump and cooling fan” for the iron and steel making industry, as well as the “green building” category. By adding these new categories, a wider range of industry areas could be covered, which allowed us to get a better insight into Bangladesh’s economic potential.

Incorporating opinions from local experts, manufacturer officials and local business operators, helped the JICA T/A Task Team not only in selecting the adequate energy-saving technologies, which were subject of the survey. But it also helped to get a detailed picture about the actual installation situation and to grasp the needs and demands of the business operators, who are the actual consumers of the equipment. All 20 equipment categories were yet again sorted into the four sectors: “Industry, Building, Residential and Common Technology”.

5-2 Estimation Results

A huge majority of the fund demand is covered by the industry sector, which. Especially the garment and textile industry with USD 26.1 billion accounts for a percentage of 87.2% out of the whole demand. This number was evaluated based on the number of applicable factories and the average number of owned equipment by factory. It is assumed that equipment update demand will occur every 20 years of service life. We added an introduction rate of new equipment of 3% per year. This figure becomes the potential demand. But to keep this demand assumption conservative, we considered one third of the assumption as the real potential.

For cement equipment, the main target was the replacement of ball mills to more energy efficient vertical roller mills. Due to the continuing construction boom in Bangladesh, the estimated demand for this category ascended from USD 5 million per year in the survey for the existing Project, to USD 14 million per year. It should be mentioned though, that the estimation can vary strongly, as the unit price of USD 7 million for vertical roller mills is respectively high.

Even though the addition of new categories (which numbers marked with * in the tables below) improved our estimation's accuracy of Bangladesh's market potential for energy efficient equipment, it is still far from complete. For future surveys, categories that are considered as highly promising industries for Bangladesh like glass manufacturing, paper mills, or pharmaceuticals should also be included into the "Industry"-sector.

Table 14 Market Potential (Industry)

	Industry Category	Major EEC equipment	No. of equipment expected per 4 years	Unit	Unit price (USD)	Investment amount (USD/4 years)	
Industry							
1	Textile & garment	Spinning	Roving frame, winder, air jet spinning	800	unit	140,000	112,000,000
2		Textile	Air jet loom	26,667	unit	50,000	1,333,350,000
3*			Knitting loom	8,533	unit	75,000	639,975,000
4		Garment	servo motor direct drive sewing machine	229,333	unit	2,300	527,465,900
5	Cement		ball mill → vertical roller mill replacement	8	unit	7,000,000	56,000,000
6*	Iron & steel making	thermal	regenerative burner	60	unit	50,000	3,000,000
7*			Endless rolling mill	8	unit	3,500,000	28,000,000
8*		electrical	Large size inverter (200kW~2000kW)	20	unit	130,000	2,600,000
9*			large pump & cooling fan	20	unit	850,000	17,000,000
10	Food		Cooling & chilling equipment	20	unit	450,000	9,000,000
	Sub Total						2,728,390,900

Note: * Sub-sector additional to those in the existing Project

Source: JICA T/A Task Team calculation

The demand for the “Building”-sector is highly dependent on SREDA’s progress on its Green Building Rating. In this estimation, we assumed that about 40,000 m² of newly constructed green buildings will be furnished with the respective scale of energy efficient windows over the four years period. Considering the high number of LEEDs certified buildings build in Bangladesh (94)⁵ in the past years, the actual number of relevant green buildings can skyrocket within the phase 2 Project period.

Table 15 Market Potential (Building)

	Industry Category	Major EEC equipment	No. of equipment expected per 4 years	Unit	Unit price (USD)	Investment amount (USD/4 years)
Building						
11	AC	High efficiency inverter AC	20,000	RT	1,000	20,000,000
12*	Green Building	SREDA Rating	40,000	Sq.m	800	32,000,000
Sub Total						52,000,000

Note: * Sub-sector additional to those in the existing Project

Source: JICA T/A Task Team calculation

The unit prices for equipment in the “Residential”-sector were identically adopted from the survey of the existing Project. The expected numbers of sold equipment were adjusted upwards, which is mainly a result of the steadily growing economy. This means, that the estimation for the yearly demand of energy efficient equipment in the “Residential”-sector increased about 23% from USD 33.4 million to USD 43 million.

Table 16 Market Potential (Residential)

	Industry Category	Major EEC equipment	No. of equipment expected per 4 years	Unit	Unit price (USD)	Investment amount (USD/4 years)
Residential						
13	AC	High efficiency inverter AC	67,200	RT	900	60,480,000
14	Refrigerator		160,000	unit	700	112,000,000
Sub Total						172,480,000

Source: JICA T/A Task Team calculation

The estimated demand of USD 39.6 million in four years for the “Common Technology”-sector is comparatively small. But this sector covers several types of equipment, that can be applied in a variety of industries. Waste heat recovery equipment is essential to run an energy efficient factory, as well as LEDs that are installed in their thousands. Local business operators depend on these components, to run their plants and factories with energy efficient facilities. Therefore, it is important to include these technologies into fund’s estimation.

⁵ Green Building Information Gateway (2019.01)

Table 17 Market Potential (Common Technology)

	Industry Category	Major EEC equipment	No. of equipment expected per 4 years	Unit	Unit price (USD)	Investment amount (USD/4 years)
Common technology						
15	Chiller	100 RT equivalent	80	unit	60,000	4,800,000
16	Waste heat recovery	Waste heat recovery boiler and absorption chiller	40	unit	600,000	24,000,000
17	Once through boiler	2 t equivalent	80	unit	60,000	4,800,000
18	LED	Fixture 40W equivalent	80,000	unit	35	2,800,000
19	Centrifugal compressor		20	unit	110,000	2,200,000
20	Inverter	40kW equivalent	200	unit	5,000	1,000,000
	Sub Total					39,600,000

Source: JICA T/A Task Team calculation

6 Consideration for Component III Implementation Promotion

During the first two years of implementation of the existing Project, there has been no case of Component III (loan extension for households and small businesses) application. On the occasion of the formulation of the succeeding Project, the Phase 2 Project, the T/A Task Team conducted a review on the significance of having this component in the Projects (existing and the Phase 2 Projects). The major review items were: (i) to grasp the current situation of Component III, focusing on the attitudes of the IFIs; (ii) to identify the reason for stagnation, and; (iii) to recommend how the component should be handled in future. The following sections report on the outcomes of the review.

6-1 Component III Implementation Status

Background

The Existing Project is comprised of three components, which are: Component I for industry sector, Component II for building sector and Component III for residential sector. The rationality behind this composition is the report in the EE&C Master Plan up to 2030, referring to the present energy consumption status and the observed trend. Component-wise, the reasons are as follows:

- (a) Component I: Industry sector is the biggest energy consuming sector in Bangladesh. The fact that almost a half of the energy consumption in the country is for the industry sector implies that the primary target of the EE&C measures must be this industry sector;
- (b) Component II: with the rapid growth of the service sector in the country's economy, energy consumptions in office buildings, commercial and public facilities is anticipated to rise sharply, and therefore the EE&C promotion measure may function efficiently for this building sector, and;
- (c) Component III: almost one third of the energy consumption is in the residential sector, as the second largest energy consuming sector in Bangladesh. With the rapid urbanisation trend, the energy consumption, especially for air conditioning and cooling is expected to rise sharply. EE&C promotion measures must be addressed to this growing sector.

It is for these reasons that these three components are included in the existing Project. As there is a rational background for having these three components in the Project, it has always been shared among the Project Executing Agencies that Component III is an integral part of the Project, necessary to be conducted.

Methodology

Component III loan in the existing Project is designed to be extended through B-type loan execution method. This requires a structuring of a fund channel, through "Participating Distributors" (PDs) who function as the intermediary between the IFIs and the end users (household and small businesses). It is only after some revisions of the Business Process Manuals and the Project MIS that precise procedure and formats for business transactions between the IFIs and the PDs were clearly stipulated. The structuring of the business process for B-type loan is relatively complicated and requires more effort of the IFIs. As the result, there has been no PD appointed so far for this existing Project.

Stance of the IFIs

The IFIs, from the Project formulation even period up to now, have enthusiastically been expressing their intentions to start implementing the Component III. Both IDCOL and BIFFL sees that there is an extremely significant demand for low interest loan in residential sector air conditioner market. Although the case, the IFIs have not started neither identifying not appointing the PDs for formulation of the B-type loan execution structure.

In October 2018, the IFIs were requested by SREDA to consider a way to implement the Component III through A-type loan execution mechanism. One idea was to use the fund as a short term loan facility for the home appliances manufacturing and distribution companies selling their products to end users through dealership or their own distribution channels. Another idea was to make use of the fund as the working capital loan (revolving) for importing in bulk and selling the appliances to end users (c.f. discussions in the 14 November Project Coordination Committee meeting PCC08). These ideas are being carried over to further discussions among the Executing Agencies as a consideration on how to mobilise Component III in the Phase 2 Project.

T/A Task Team View

The T/A Task Team, during the 2 years of implementation of this existing Project, has always been conscious of the stagnation of Component III, but has left the issue to the Executing Agencies to consider. The T/A Task Team has been cautious not to disperse the attention of the stakeholders during the initial period of the Project implementation, and facilitated whatever is being initiated by the Executing Agencies. In the meantime, the T/A Task Team has been elaborating the B-type loan execution business rules, to have clear rules and formats incorporated into the Business Process Manuals and the Project MIS. The T/A Task Team, therefore, regards the present situation as a natural reflection of the Executing Agencies' (especially the IFIs') inclination to Components I and II (functioning on A-type loan execution method) that the Component III is not yet taking off.

6-2 Stagnation of Component III

Priorities at IFIs

During the review conducted in the extension period of the T/A Task Team's work period, it was well identified that both IDCOL and BIFFL are comfortable to be concentrating on Components I and II, functioning on A-type loan execution method, which requires less special attention in comparison with the B-type loan. With consciousness on the scarcity of the fund even for Components I and II, it is inevitable that the IFIs are not incentivised to embark on the use of a new loan mechanism, even if there are to be abundant demand. A clear primary finding from the review is that the IFIs are prioritising the Components I and II against introduction of Component III through B-type loan.

Technical Eligibility of Home Appliances

There was a sense that SREDA wanted to reconfirm the eligibility criteria for Component III appliances. This is because the inverter control requirements for both air conditioners and refrigerators, have nowadays become relatively common practice compared to the time when this eligibility criterion was initially suggested (back in 2015). Against this background, the T/A Task Team, reviewed the recent global trend of EE&C technology definition for air conditioners and refrigerators for home use to find that the inverter control is still deemed to be the key element for an appliance to be defined as the EE&C type of equipment. Having checked this global trend requiring inverter control for EE&C equipment, the T/A Task Team discussed with SREDA and reconfirmed that there is not pressing demand to revise the eligibility criteria for EE&C home appliances (notably air conditioner and refrigerators). Technical eligibility is therefore no longer an issue which may stagnate the Component III implementation.

Influence from Recent Decline in Renewable Energy Development Programme

The T/A Task Team, through interview with IDCOL for their implementation status confirmation (of which the result is reported in Chapter 4 of this document) identified that their renewable energy development programme utilising JICA loan for promotion of sola home system, solar irrigation pump, among others, is slowing down in its pace of implementation. The B-type loan execution mechanism is designed to become similar with the loan extension mechanism in IDCOL's renewable energy development project, and for this reason, there may be an influence

from the renewable energy development project to B-type loan execution mechanism, with certain sceptical mind against the PDs' management ability. Although this could not be confirmed, the T/A Task Team has anticipated that the IFIs may have become prudent on the use of intermediary organisations for Component III implementation.

6-3 Recommendation for Phase 2 Project

Having acknowledged the present condition and possible impediments that may be present among the Executing Agencies, the recommendation from the T/A Task team's suggestion on handling the Component III is as follows:

Basic Policy

Component III, addressing to the need for EE&C promotion in residential sector is a requisite for the Phase 2 Project to be responsive to the EE&C Master Plan up to 2030. Without Component III, the Phase 2 Project will no longer be a comprehensive solution to the need for EE&C promotion as identified in the Master Plan.

Technical Aspects

The eligibility criteria, which is inverter control requirement, may be kept as it is until internationally acceptable fundamental energy saving criteria for home air conditioners and refrigerators come into existence.

Methodology

With regards to the fact that B-type loan is not being favoured, especially in comparison with the A-type loan, the T/A Task Team recommends a simple and realistic approach to make use of A-type loan execution methodology to be utilised for Component III. As the result, all three components, I, II and III will all be implemented through a same methodology of A-type loan, without segregation, in a simple and unified manner.

Application Cases

Already suggested application cases are to extend the Component III loan for short term loan facility for the home appliances manufacturing and distribution companies selling their products to end users through dealership or their own distribution channels. Another idea was to make use of the fund as the working capital loan (revolving) for importing in bulk and selling the appliances to end users. (these applications may have to follow new criteria for eligibility, but fall under A-type loan execution methodology).

SREDA, as the administrative authority for the Project suggests implementing Component III through exactly the same process and criteria, i.e., to lend money to companies who are investing on eligible EE&C equipment. It means that when a company engaged in developing, manufacturing, trading or distributing eligible home appliances utilises the Project loan, then the case is regarded as the Component III case. Here, it may be required to: (i) further consider avoiding double eligibility condition, and also, (ii) to develop a methodology for energy conservation calculation (a logic to identify contribution to energy saving) through promotion of penetration of EE&C home appliances.

7 Activities by Other Development Partners

During this extension period, the JICA T/A Task Team held meetings with several international development partner agencies. These were: Asian Development Bank (ADB), International Finance Cooperation (IFC), KfW, Agence Française de Développement (AFD) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Discussions were focused on identifying the other development partners' intention to support the promotion of EE&C in Bangladesh and to consider any coordination and cooperation measures. These development partners are eager to contribute to demand-side energy efficiency, as it is relevant to resources management, industrial and export promotion as well as many other aspects of development assistance domains. SREDA's EE&CPF Project, which has significantly influenced the country's awareness on the need to be efficient, is somewhat a model project for these development partner agencies. Major discussion points, ongoing and upcoming activities, as well as information collected are as in the respective sections:

7-1 Asian Development Bank (ADB)

ADB has been conducting a study under the name of "Improving Institutional Capacity on Preparing Energy Efficiency Investment" for South Asian countries, including Bangladesh. The work started in April 2018, and is expected to be completed by February 2019.⁶ In this study, ADB is planning to select some investment pipeline projects to promote EE&C effectively in Bangladesh. JICA T/A Task Team had several discussions with ADB and ADB consultants and shared the progress, knowledge and remaining issues in on-going EE&CPF Project and also on the prospect of embarking on the Phase 2 Project.

Referring to JICA's experiences / information and having discussions with SREDA, ADB has drafted its future scope of work for promoting EE&C projects in Bangladesh. As of the end of December 2018, the main orientation of the study are as follows:

- (a) ADB intends to establish a financing programme to promote demand-side EE&C projects in Bangladesh;
- (b) Proposed total loan amount is approximately USD150 million. Relevant technical assistance programme may also be implemented at the same time.

Expected time line for the project formulation is to conduct preliminary survey to design more detailed financial mechanism by 2019, and the earliest possible timing to introduce the loan programme is in 2020. The loan disbursement term is planned to be for four years.

The investment pipeline projects are listed in Table 18 as the candidates of ADB loan targets. The basic concepts of ADB the loan programme are:

- a) Having non-conflict with EE&CPF Project;
- b) Presenting ADB's originality and;
- c) having supplemental function for EE&CPF Project.

Furthermore, ADB is preparing to implement another programme intended to support SREDA to strengthen energy audit skills. The technical assistance will not only be for SREDA but also for some other relevant organisations in Bangladesh.

⁶ The target countries under this study are Bangladesh, Bhutan, Maldives, Nepal and Sri Lanka. And this study has been conducted under a knowledge partnership agreement with the Korea Energy Agency (KEA)

Table 18 Investment Pipeline Projects (draft) in ADB Study

	Investment pipeline projects	Note	Type of loan
1	Textile and garment	Still huge potential has been confirmed (no conflict with JICA loan), including knitting machine.	Two-step loan
2	Cement	Still huge potential has been confirmed (JICA loan cannot cover all)	Two-step loan
3	Green building & factory	SREDA has a plan to establish Green Building Rating Program in 2019. SREDA asked ADB to support realizing pilot projects to apply SREDA Green Building & Factory Certificate.	Two-step loan
4	Food, steel and others	Remaining energy consuming sectors.	Two-step loan or through private banks for SMEs
5	Public Building air conditioners replacement	By implementing this program, around 50 %EE&C ratio will be achieved.	Counterpart is Ministry of Public Works

Source: T/A Task Team interview with the ADB Consultants

7.2 International Finance Corporation (IFC)

IFC has been implementing “Partnership for Clean Textile (PaCT)”. PaCT is playing a leading role in driving the long-term competitiveness and environmental sustainability of the textile wet processing sector, by addressing high water, energy, and chemical use through the adoption of best practices in the textile sector. These best practices lead to declining resource consumption, soaring profits, and an enhanced image in the global apparel market.

JICA T/A Task Team was asked by IFC PaCT team to introduce eligible EEC textile technologies in October and November 2018. And this kind of communication and information exchange should be kept in the future.

Outline of PaCT project is as follows: Over the years, IFC has drawn on its global and local experience and has provided a combination of investments and advisory services in Bangladesh. As of June 2018, IFC’s committed portfolio in Bangladesh is around USD 1.52 billion (IFC invested USD 800 million in 2017 and USD 1 billion in 2018 for Bangladesh Textile Sector.).

IFC is promoting sustainable growth and private sector development in Bangladesh through investing in critical infrastructure; boosting financial inclusion; enhancing textiles competitiveness and supporting reforms to make doing business easier for private sector.

7-3 KfW and AFD

In Bangladesh, Intended National Determined Contribution (INDC) by 2030 under Paris Agreement are defined as the following two types. One is unconditional contribution as 5 % below BAU. The other is conditional contribution assuming international support as 15% below BAU. With reference to this background, KfW and AFD are each planning to formulate investment pipeline to reduce not only energy consumption but also GHG emission.

Table 19 Intended Nationally Determined Contribution- Mitigation

Unconditional contribution	Contribution assuming no additional international support	Bangladesh will reduce its GHG emissions in the power, transport, and industry sectors by 12 MtCO ₂ e by 2030 or 5% below BAU emissions for those sectors.
Conditional contribution	Contribution assuming additional international support	Bangladesh will reduce its GHG emissions in the power, transport, and industry sectors by 36 MtCO ₂ e by 2030 or 15% below BAU emissions for those sectors.

Source: Intended Nationally Determined Contributions (INDC) , September, 2015,
Ministry of Environment and Forests (MOEF) Government of the People's Republic of Bangladesh

7-4 GIZ

Not in financial support but in technical cooperation fields, GIZ has been continuously supporting SREDA in capacity development in promoting EE&C. Major focused issues are supporting establishment of legal frameworks to promote EE&C and strengthen energy audit skill etc.

7-5 Coordination with Other Development Partners' Activities

SREDA welcomes various international development partners' intention to contribute to the promotion of EE&C in Bangladesh. SREDA intends to coordinate these interventions through unified data collection methods, but allowing various activities to be conducted freely throughout the country. In this context, EE&CPF Projects (both existing and Phase 2 Projects) are likely to become a platform for energy related data collection, analysis and dissemination by means of MIS-DASH utilisation. Based on such notion, the technical transfer portion of the Phase 2 Project (specifically, consulting services for SREDA) should desirably be focused on supporting SREDA to harmonise various EE&C promotion activities through data collection, analysis and reporting.

8 Project Effect Observation and Analysis

With already 11 sub-projects approvals, the Project effect needs to be identified, and to be evaluated by means of indicators set during the formulation stage of the existing Phase 1 Project. The T/A Task Team, during the final month of its implementation supporting activities, conducted some site observations with SREDA and the concerned IFI. In this chapter, the expectation on the Project effect is discussed, followed by the findings from the recent site observations.

8-1 Progress and Expected Energy Saving Effects from On-going Sub-Projects

Progress

The quantitative progress from the viewpoint of the loan fund utilisation is as listed in the following table, which was prepared based on the T/A Task Team's routine monitoring activities on the Project MIS and additional information collected from the IFIs. The loan applications which the two IFIs received, each exceeds the available fund amount from the existing Phase 1 Project. The figure, on the lower side, is observed to be 163% in terms of the loan requirement amount against the available fund. The value of equipment for which SREDA's NOCs have been issued so far has reached 75% against the available fund amount. Almost all of the NOC approved equipment have been purchased through issuing of the letter of credit (L/C), resulting in 74% of the loan amount already earmarked on commercial transactions. Finally, the amount disbursed from the IFI to the sub-project owners (end users)'s fund is 36% of the available amount.

Table 20 Progress of the Phase 1 Project

(as of end November 2018)

Item	Achievement against the amount of loan (%)
The amount of the loan application	163
The amount of the NOC approved	75
The amount of the L/C opened	74
The amount of disbursement from IFIs to End Users	36

Source: JICA T/A Task Team monitoring data

Expected Effects of the Phase 1 Project

SREDA calculates energy conservation effect for all NOC issued sub-projects. Calculation result for the first 10 sub-projects and candidates (calculation for the latest 11th sub-project candidate is yet to be conducted) is shown in the following table. The figures are calculated by multiplication of the energy conservation rate (difference in per hour energy consumption against the conventional non-efficient equipment) and planned operating hours. The calculation results show that total of approximately 12.4 toe (= 43,721 MWh) will be conserved each year. By multiplying the unit cost of energy (highest rank in the electricity tariff rate for industry) of BDT 8,150 per kWh results in BDT 356 million direct cost saving from the calculated energy conservation effects. It should be noted here that this monetary benefit is only the energy bill saving, and therefore there can be more monetary benefits from higher productivity, lower maintenance cost and also reduction of CO₂ emissions. Further, it should also be considered that the effect calculation is based on the planned operation hours, and therefore longer operation hours due to stronger demand will bring about more energy consumption.

Once the actual energy consumption and production amount data becomes available from the sub-project owners, it will be possible to calculate the actual energy conservation. By comparing this actual energy conservation value and the theoretical value, SREDA will be obtaining implications

for possibility of further improvement on energy conservation calculation, while the sub-project owners may consider improving the energy efficiency of their production line.

Table 21 The Estimated Quantitative Effect from the Phase 1 Project

(as of end November 2018)

No.	Name of Sub-Project Owners	Amount of loan BDT million	Energy Saving Ratio	Energy Saving Effect		Economic Effects	CO2 reduction Effects
				toe / year	MWh / year	BDT million/year	tons of CO2/year
1	Meghna Cement Mills Ltd. [*]	1,270	34%	4,156	14,685	120	8,727
2	Odyssey Craft (Pvt.) Ltd.	753	49%	1,355	4,786	39	2,845
3	Aman Spinning Mills Ltd.	254	68%	761	2,689	22	1,598
4	Roshawa Cotton Mills Ltd	983	8%	377	1,332	11	791
5	Pahartali Textile & Hosiery Mills [*]	515	60%	1,036	3,662	30	2,177
6	Fair Electronics Ltd. [*]	10.5	21%	23	82	0.7	48
7	Tosrifa Industries Limited. [*]	109	17%	652	2,304	19	1,369
8	Shun Shing Cement Industries Ltd.	734	34%	3,527	12,463	101	7,407
9	Etafil Accessories Ltd.	85.5	75%	439	1,550	12	921
10	Bandhab Tex Ltd.	116	15%	47	168	1.4	100
11	Fakir Apparels Ltd.	-	-	-	-	-	-
Total		4,830		12,373	43,721	356	25,983

Note: On-site observations were conducted for the four sub-projects marked with [*].

Note: Energy conservation effect for Fakir Apparels Ltd is yet to be calculated.

Notes on MWh / M3 to toe conversion:

1 toe = 0.283 MWh of conserved electricity (source: Draft Energy Audit Regulation)

1 toe = 0.950 m3 of conserved gas (source: Draft Energy Audit Regulation)

Notes on electricity / gas price

1 MWh = BDT 8,150 (source: rounded from December 2017 Electricity tariff for medium voltage general purpose)

1 m3 = BDT 7.76 (industry) / 17.04 (commercial) / 9.62 (captive power) = rounded to BDT 8

(source: 30 July 2017 Public Notice for Gas Tariff)

Source: SREDA PIU calculation

8-2 Overall observation from the Sub-Projects site visits

The main objective of visiting sub-projects is to discuss with sub-project owners how to develop an efficient and effective monitoring plan. The number of visited sub-projects is four, among which two are financed by IDCOL (1-cement, 1-knit dying and sewing), and other two by BIFFL (1-manufacturing home appliances, 1-spinning).

Table 22 On-site Observations Conducted

Sub-project owner	Location	Date of visit	Activities
[1] Pahartali Textile & Hosiery Mills (Spinning)	Chottogram	20/Jan/2019	• Observation on installation of roving frames, winders, spinning machines and LEDs • Observation in existing units • Discussion on monitoring
[2] Fair Electronics (Home appliance)	Narsingdi	22/Jan/2019	• Measuring actual power consumption of air compressors • Discussion on monitoring
[3] Tosrifa Industries (Knit fabric and garment)	Gazipur	24/Jan/2019	• Measuring actual power consumption of sewing machines • Observation on operation of once-through boilers • Discussion on monitoring
[4] Meghna Cement Mills (Cement)	Mongla	27/Jan/2019	• Observation on installation of VRM • Observation in existing factories • Discussion on monitoring

Source: JICA T/A Task Team Compilation

Installation and operation status of eligible equipment is as follows: Firstly, Pahartali Textile & Hosiery Mills received NOC for roving frames, automatic winders, spinning machines, LEDs, waste heat recovery boiler and absorption chillers. The machines in the production line, namely roving frames, automatic winders, and spinning machines have already arrived at site and under installation. LEDs have been installed partially and are in use. Waste heat recovery boiler and absorption chillers have not arrived yet at site as even their L/C have not yet been open. Secondly, Fair Electronics received NOC for two sets of compressors, which have already been installed and started to operate. Thirdly, Tosrifa Industries received a NOC for sewing machines, once-through boilers and building energy management system (BEMS), among which part of sewing machines and all four sets of once-through boilers have been already installed and started their operation. The remaining sewing machines and BEMS were not to arrive at site yet. Lastly, Meghna Cement Mills will introduce one Vertical Roller Mill (VRM) which is under construction with some parts already arrived and started to be installed.

The first finding from the site-visits is that all the machines which have already arrived at site were all according to NOC. The second finding is that those machines which have already started operation are in good conditions, even though some cases some recommendations were made to improve operation efficiency. For example, it was observed that air pressure loss of installed air compressors was notably large, as the diameter of branch pipelines is thought to be too small. It was recommended to replace them with larger pipelines or to install additional pipelines. Another example was once-through boiler. As heat loss from valves was observed, insulation should be enhanced. Thirdly, the T/A team had discussions with sub-project owners to develop monitoring plan as they will have to report production and energy consumption data on a quarterly basis in the future. All four sub-project owners were given ID and password to access to MIS by IFIs and some already started to input data on MIS. However, monitoring methodology that sub-project owners are currently applying mostly fail to capture the exact energy consumption of eligible equipment. There is a need to revise these monitoring methodologies including setting appropriate measurement points and introducing measurement equipment. In most of the cases, production

volumes are monitored correctly, while energy consumption data for eligible equipment are not correctly monitored. In many cases, energy consumption in the whole factory or entire unit is measured which includes old machines and other irrelevant machines. Or in one case, as actual energy consumption is not recorded, sub-project owner was referring to the rated power of the equipment, which leads to overestimation of energy consumption. Through discussions with sub-project owners, it was recommended that by using simple measurement devices such as watt meter, water flow meter and recording function of the equipment itself, simple but effective monitoring will be possible. IFIs, together with their own consultants, should start discussing with sub-project owners and support them developing an effective and efficient monitoring plan. Such discussions should take place at the initial stage of monitoring to avoid reporting of irrelevant or missing data.

8-3 Sub-Projects On-Site Observations [1]: Pahartali Textile & Hosiery Mills

(1) Overview of Pahartali Textile & Hosiery Mills

Pahartali Textile & Hosiery Mills are located in Chottogram and started spinning business in 1954. They supply variety of yarn to export oriented knit and woven industry in the domestic market. There are currently 4 units (Units No.1 to No.4). The new unit (Unit No.5) is currently under construction, with expectation to start their operation in April 2019. The scale and production volume of each unit is summarized in the table below.

Table 23 Factory overview of Pahartali Textile & Hosiery Mills

Unit	No. of spindles	Daily production volume
No.1	19,680	• Com yarn: 13,000kg • Card yarn: 5,000kg • Slub yarn: 4,000kg • Melange yarn: 5,000kg • PC/CVC yarn: 9,000kg
No.2	23,280	
No.3	11,616	
No.4	14,688	
No.5	24,642	• Ring & Compact spinning: 14,250kg • Vortex spinning: 6,500kg

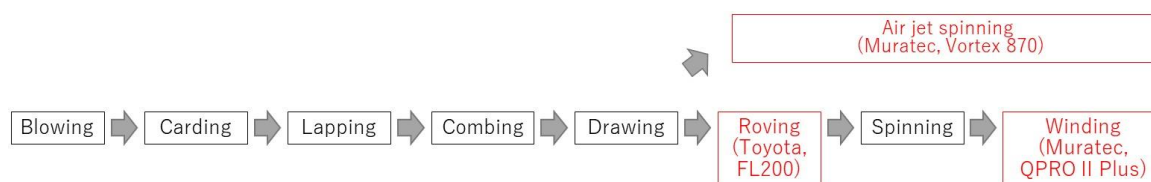
Source: JICA T/A Task Team based on on-site observation information



Source: JICA T/A Task Team

Figure 7 Exterior of the New Unit No.5

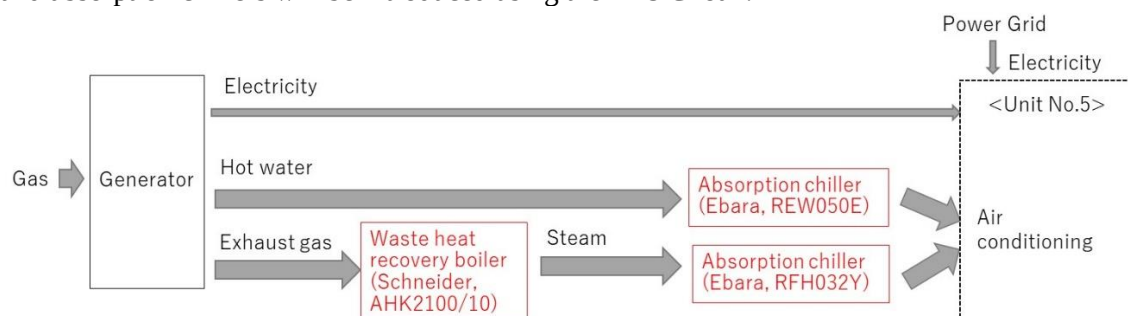
In the newly constructed Unit No.5, roving frame, automatic winder and air jet spinning, indicated in red in the figure below, will be introduced using the EE&C loan. In the production line, there are other machines that are out of the scope of the EE&C loan.



Source: JICA T/A Task Team based on on-site observation information

Figure 8 Production Line in the New Site

Supply of heat and electricity is designed as in the following figure. Waste heat recovery boiler and absorption chillers will be introduced using the EE&C loan.



Source: JICA T/A Task Team based on on-site observation information

Figure 9 Utility Design in the New Site

(2) NOC for Pahartali Textile & Hosiery Mills

SREDA issued NOC for Pahartali Textile & Hosiery Mills on 10/June/2018. The equipment which was determined as eligible was as in the following table.

Table 24 NOC for Pahartali Textile & Hosiery Mills

Sl. No.	Code number of equipment	Name of equipment	Brand	Model	Quantity	Eligibility	Quoted price (BDT)
1.	3.1 (1)	Roving frame	Toyota Industries	FL200	5	Eligible	86,394,000
2.	3.1 (3)	Automatic winder	Murata Machinery	QPRO II Plus	14	Eligible	176,577,520
3.	3.1 (4)	Air jet spinning	Murata Machinery	Vortex 870	6	Eligible	211,362,250
4.	9.8.1 (2)	Air conditioner	Ebara Refrigeration Equipment & Systems	REW050E, RFH032Y	1 1	Eligible	29,196,228
5.	9.12.2	Waste heat recovery boiler	Schneider	AHK2100/10	1	Eligible	10,889,268

6.	9.10.1	LED lamp	Osram	Ledvance Osram ST 8A-1.2M 18W/865	3,020	Eligible	2,802,938
7.	9.4.2 (1)	Air compressor	Kaeser	CSDX 140 SFC	7	Not Eligible (As the equipment is for spinning, significant air demand fluctuation cannot be expected)	18,293,200

Source: JICA T/A Task Team compilation based on SREDA PIU information

(3) Observation on installation and operation

On site observation conducted on 20/January/2019, arrival and partial installation of eligible equipment has been confirmed as follows:

Table 25 Installation and Operation Status at Pahartali Textile & Hosiery Mills

Sl. No.	Name of equipment	Brand	Model	Quantity	Installation	Operation
1.	Roving frame	Toyota Industries	FL200	5	All machines have arrived and under installation	Not yet
2.	Automatic winder	Murata Machinery	QPRO II Plus	14	All machines have arrived and under installation	Not yet
3.	Air jet spinning	Murata Machinery	Vortex 870	6	All machines have arrived and under installation	Not yet
4.	Air conditioner	Ebara Refrigeration Equipment & Systems	REW050E, RFH032Y	1 1	Not yet arrived at site	Not yet
5.	Waste heat recovery boiler	Schneider	AHK2100/10	1	Not yet arrived at site	Not yet
6.	LED lamp	Osram	Ledvance Osram ST 8A-1.2M 18W/865	3,020	Under installation (partially completed)	Partially started to operate

Source: JICA T/A Task Team compilation based on on-site observation activities

Photos of machines which have arrived at site are as shown in the next page.

1. Roving frame (Toyota FL 200) 	2. Automatic winder (Murata Machinery- QPRO II Plus) 
3. Air jet spinning (Murata Machinery- Vortex 870) 	6. LED lamp (Ledvance Osram ST 8A-1.2M 18W/865) 

Source: JICA T/A Task Team based on on-site observation activities

Figure 10 Photos of machines under installation

(4) Monitoring plan

The final objective of monitoring is to measure actual electricity consumption of machines under EE&C loan and to measure EE&C effects out of those machines. The monitoring point as well as monitoring device need to be carefully selected. Currently the new unit No.5 has only one watt meter for the whole unit. It is better to introduce watt meter per equipment type. Automatic winder and air jet spinning have a distribution panel covering the whole line of each equipment. Therefore measuring at distribution panel will be effective. On the other hand, roving frame does not have its own distribution panel. This is because on the floor where roving frames will be introduced exist many machines which are out of the scope of EE&C loan. In this case, it is suggested that watt meter will be attached to one of the roving frames, presuming that any roving frame consumes average amount of electricity. According to Pahartali, they need to discuss with supplier whether a watt meter can be attached to a roving frame. For waste heat recovery boiler and absorption chillers, it is not possible to monitor the exhaust gas input, instead it is suggested that inlet and outlet temperature of chilled water and chilled water flow volume (m^3/h) will be measured. Using the simple formula, caloric value of output can be calculated, later to be converted into saved power consumption (kWh).

Table 26 Monitoring Plan for Pahartali Textile & Hosiery Mills

No.	Name of equipment	Quantity	Measuring point	Measured item	Measuring device
0.	Unit No.5	-	• Watt meter for the Unit No.5	• Power consumption (kWh)	• Watt meter
1.	Roving frame	5	• Watt meter for one roving frame	• Power consumption (kWh)	• Watt meter
2.	Automatic winder	14	• Watt meter at distribution panel for all automatic winders	• Power consumption (kWh)	• Watt meter
3.	Air jet spinning	6	• Watt meter at distribution panel for all Vortex machines	• Power consumption (kWh)	• Watt meter
4.	Air conditioner	1	• Inlet and outlet of chilled water of absorption chillers	• Inlet temperature of chilled water (°C) • Outlet temperature of chilled water (°C) • Chilled water flow volume (m³/h)	• Thermometer • Water flow meter (Orifice)
5.	Waste heat recovery boiler	1			
6.	LED lamp	3,020	(EE&C effects will be calculated by rated input power and actual operating hours.)		

Source: JICA T/A Task Team based on on-site observation activities

(5) Observation from the existing factory

During the site visit, the existing four units were visited. Some observations were made by comparing the energy consumption situations in the existing units with the new one, especially regarding ring frame, generators and chillers and lighting.

Table 27 Generators and Chillers in the Existing Units

Generators		
Total Number	8 sets	
Total capacity	7,950 kW	
Brand	Caterpillar	
Model	G3516A	
Capacity (kW) and number of generators	1,030 kW x 4 sets, 1,025 kW x 1 set 965 kW x 1 set, 920 kW x 2 sets	
Absorption Chillers		
Total number	5 sets	
Type of chiller	Exhaust gas chiller	Hot water chiller
Number of chillers	3 sets	2 sets
Brand	Broad	Thermax
Model and capacity	202 KC (575RT) x 1 set BE150(495RT) x 2 sets	5G6MC (370RT) x 1 set Lt27S (270RT) x 1 set

Source: JICA T/A Task Team based on on-site observation activities

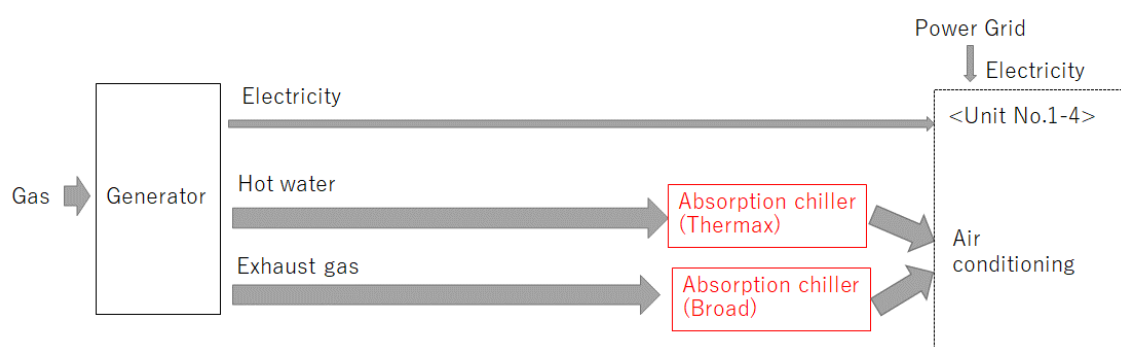
Ring frame

In the ring frame section of the existing unit (No.4), energy monitoring system of the power consumption of 9 sets of ring frames. It is recommended to install the same monitoring system in the new unit.

Generators and chillers

The existing generators and chillers quantities with capacities are given in the previous table (Table 27).

Supply of electricity and heat to the existing units is designed as in the following figure.



Source: JICA T/A Task Team based on on-site observation activities

Figure 11 Utility Design in the Existing Units

Lighting

EXISTING UNITS: The illuminance in different sections in the existing units measured during site observation conducted on 20 January 2019 are as follows (noted that the lux level is measured in area which is 4 feet height from the floor).

Table 28 Section-wise Illuminance in the Existing Units

No.	Section Name	Maximum lux level (lux)	Minimum lux level (lux)	Average lux level (lux)
Unit No.1 (Blending Production of Cotton Section)				
1.	Blowing	195	139	170
2.	Carding	195	135	167
3.	Combing	205	138	174
4.	Drawing	196	98	161
5.	Ring/Roving	212	101	165
6.	Winding	291	241	261
Unit No.2 (100% Cotton Production Section)				
1	Ring Section (Including Blowing, Carding, Combining and drawing)	205	290	248
Unit No.3				
1	Ring Zone	235	142	194
Unit No.4				
1	Ring zone	275	204	239

Source: JICA T/A Task Team based on on-site observation activities

NEW UNIT: The measured illuminance in the new site is as follows. It is noted that in the new unit, the installation of LEDs has not yet completed. Therefore, illuminance is expected to be improved after installation of all the LEDs.

Table29 Section-wise Illuminance in the New Unit

No.	Section Name	Maximum lux level (lux)	Minimum lux level (lux)	Average lux level (lux)
New unit (Unit No.5)				
1	Winder Section	411	301	358
2	Roving Section	475	305	381
3	Vortex Section	351	205	284

Source: JICA T/A Task Team based on on-site observation activities

From the above tables, it is clearly said that, the new unit has higher illuminance compared to the old units. LED lamps, which realize better illuminance with lower electricity consumption, are used in the new unit. A comparison of illuminance between the international standard, existing units and new unit are presented in the below table. All the lux level is an average.

Table 30 Comparison of Illuminance with the International Standard

International standard*	Existing Unit	New Unit**
500	Ring frame Section: Unit No.1: 165 Unit No.2: 248 Unit No.3: 194 Unit No.4: 239	Unit No.5 Winder Section: 358 Vortex Section: 284

Note: *Standard is according to ISO 8995-1: 2002 (E)- (for spinning factories).

Note: ** In the new unit, the installation of LEDs has not yet completed.

Source: JICA T/A Task Team based on on-site observation activities

From above table, the illuminance in the new unit is better than that of the existing units, however, it is far from reaching to the international standard of 500 lux as defined by ISO 8995: 2002 for spinning mills.

8-4 Sub-Projects On-Site Observations [2]: Fair Electronics Limited

(1) Overview of Fair Electronics Limited

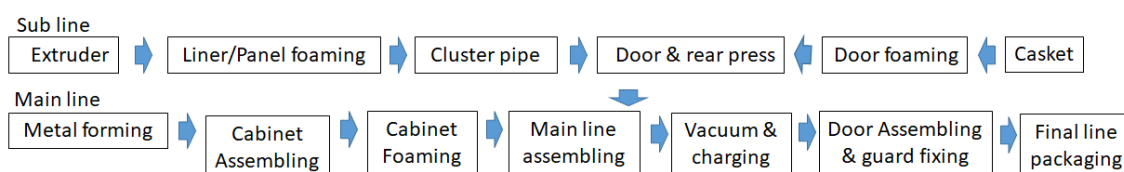
Fair Electronics started the assembling plant of home appliances in Narsingdi in 2017. They are producing Samsung brand's refrigerators, microwave ovens, air conditioners, and washing machines. They will start assembling TVs and mobile phones in the future. Their target is to produce 400,000 refrigerators, 250,000 microwave ovens, 120,000 air-conditioners, 200,000 TVs and 50,000 washing machines annually.



Source: Provided by Fair Electronics

Figure 12 Exterior of Fair Electronics

In the CKD unit where refrigerators are produced, air compressors are introduced using the EE&C loan. Compressed air is used in every process for pneumatic operations of machines, but especially in the process of Liner/panel forming line, requiring nearly 80% of the total required compressed air in the production line.



Source: JICA T/A Task Team based on on-site observation activities

Figure 13 Production line in refrigerator unit

(2) NOC for Fair Electronics

SREDA issued NOC for Fair Electronics on 21/June/2018. The equipment which was determined as eligible was as in the following table.

Table 31 NOC for Fair Electronics

SI. No.	Code number of equipment	Name of equipment	Brand	Model	Quantity	Eligibility	Quoted price
1	9.4.2 (2)	Air compressor	Comp Air	L160RS	2	Eligible	10,513,200

Source: JICA T/A Task Team compilation based on SREDA PIU information

(3) Observation on installation and operation

On site observation conducted on 22/January/2019, installation and operation of eligible equipment has been confirmed.

Table 32 Installation and Operation Status at Fair Electronics

SI. No.	Name of equipment	Brand	Model	Quantity	Installation	Operation
1	Air compressor	Comp Air	L160RS	2	All machines were installed in April/2018.	All machines are in operation.

Source: JICA T/A Task Team compilation based on on-site observation activities

On site, the total number of 4 air compressors were installed and have started operation. All of them are from CompAir and equipped with variable-frequency drive (VFD). Among them, two sets of larger capacity (160kW) are in the scope of the EE&C loan. While the other two sets of smaller capacity (37 kW) are out of the scope of the EE&C loan, therefore will not be subject to monitoring.

Table 33 Specifications of air compressors

Parameters	Air Compressor-1	Air Compressor-2	Air Compressor-3	Air Compressor-4
EE&C loan	Covered		Not covered	
Brand	CompAir	CompAir	CompAir	CompAir
Model	L160 RS	L160 RS	L37RS	L37RS
Capacity	160 kW	160 kW	37 kW	37 kW
RPM	1986 rpm	1986 rpm	3600 rpm	3600 rpm
Pressure	13 bar	13 bar	13 bar	13 bar
Flow rate	32.33 m ³ /min	32.33 m ³ /min	6.9 m ³ /min	6.9 m ³ /min
VFD driven	Yes	Yes	Yes	Yes

Source: JICA T/A Task Team compilation based on on-site observation activities



Source: Provided by Fair Electronics

Figure 14 Photo of Installed Air Compressors

(4) Monitoring plan

Present Monitoring System

Fair Electronics started to monitor electricity consumption of air compressors. Their current monitoring is done by monitoring the on-load running hours of air compressors, as such hours are shown in the display window of air compressors. And they multiply the on-load running hours into the rated power capacity of air compressors (160kW). That means they are assuming that air compressors are running on the full load in the entire on-load running hours.

Electricity consumption calculation:

Total electricity consumption = **P** kWh/month

On load running hours = **Q** hr/month

Compressor Power = 160 kW (rated power)

P = 160*Q kWh/month

If we calculate energy intensity based on their present monitoring system, we would have to presume that the factory is running at their maximum capacity, producing 400 sets of refrigerators per day, operating for 250 hours per month. Energy intensity, calculated as “electricity

consumption of air compressors per month (kWh) / number of refrigerators produced per month (set)”, will be 4.0 kWh/set.

Assumption for energy intensity calculation:

Assumed Production per day = 400 set/day (maximum capacity)

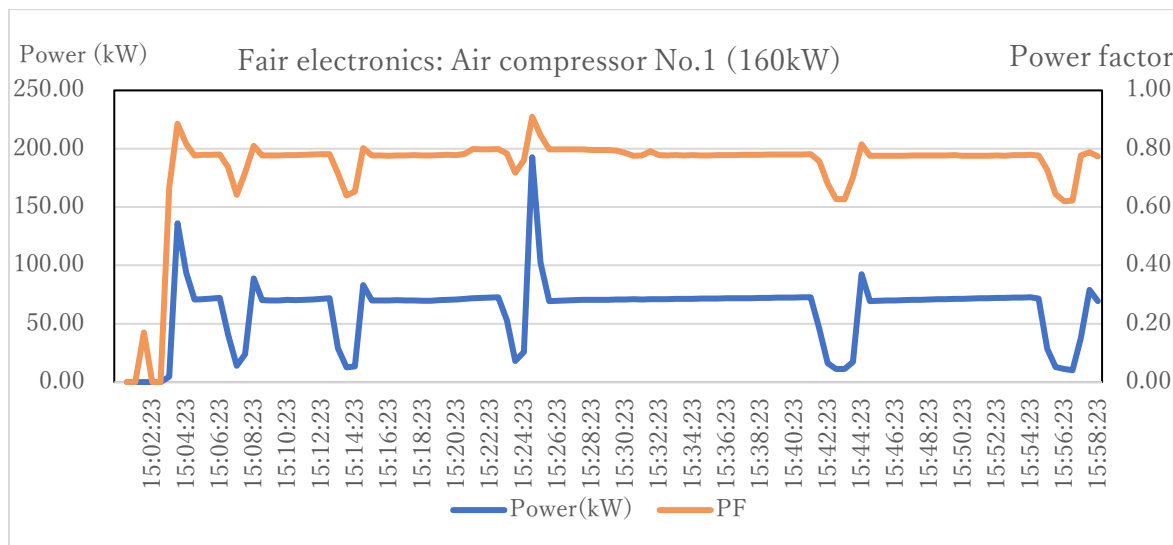
Assumed operation hours = 10 hr/day * 25 days/month = 250 hr/month

Energy Intensity calculation:

$$\begin{aligned} \text{Energy Intensity} &= \frac{\text{Power consumption of air compressors (kWh/month)}}{\text{Number of refrigerators produced (sets/month)}} \\ &= \frac{160 * 250 \text{ (kWh/month)}}{400 * 25 \text{ (sets/month)}} = \frac{40,000 \text{ (kWh)}}{10,000 \text{ (sets)}} = 4.0 \text{ kWh/set} \end{aligned}$$

The measurement result of electricity consumption

On site observation conducted on 22/January/2019, power and power factor of Compressor-1 is measured by power logger for 59 minutes. The result is shown in the figure and table below.



Source: JICA T/A Task Team measurement

Figure 15 Air Compressor power consumption (VFD Driven)

Table 34 The summary of the result for the Air Compressor-1

Starting Time	Ending Time	Average Power (kW)	Average Power Factor
15:00:53	15:58:23	62.09	0.74

*Sampling date: 22/January/2019

Source: JICA T/A Task Team measurement

It is observed that air compressors are running in low load condition of 39% (62kW/160kW). This might be due to the fact that the factory is not running at their full capacity since the market demand for refrigerators is comparatively low in winter season. In fact, the factory reported that they produced 240 sets/day. Based on the actual measured data and certain assumptions, energy intensity is calculated as follows.

Assumption for energy intensity calculation:

Assumed Production per day = 240 set/day (according to actual production in 2017)

Assumed operation hours = 8 hr/day * 25 days/month = 200 hr/month

Energy Intensity calculation:

$$\begin{aligned}\text{Energy Intensity} &= \frac{\text{Power consumption (kWh/month)}}{\text{Refrigerator production (sets/month)}} \\ &= \frac{62 * 200 \text{ (kWh/month)}}{240 * 25 \text{ (sets/month)}} = \frac{12,400 \text{ (kWh)}}{6,000 \text{ (sets)}} = 2.1 \text{ kWh/set}\end{aligned}$$

Recommended Monitoring System:

Comparing the energy intensity calculated by their current monitoring system (4.0 kWh/set) and by actual measurement data (2.1 kWh/set), it can be pointed out that their current monitoring system overestimates the electricity consumption as their assumption is that air compressors are always operating in full load. In this way, energy saving effects realized by VFD will not be counted.

Table 35 Comparison of Calculated Energy Intensity

	Electricity consumption (kWh)	Refrigerator Production (sets)	Energy Intensity (kWh/set)
Case-1 Current monitoring system	160 kW X 250 hr/month = 40,000 kWh	400 set/day X 25 days/month = 10,000 sets/month	40,000 / 10,000 = 4.0 kWh/set
Case-2 Actual measurement data	62 kW X 200 hr/month =124,00 kWh	240 set/day X 25 days/month = 60,00 sets/month	12,400 / 60,000 = 2.1 kWh/set

Source: JICA T/A Task Team compilation

As a result, we recommend that the actual electricity consumption of air compressors should be measured and recorded by utilizing the data recording function of air compressors using SD cards.

Table 36 Recommended Monitoring Plan for Fair Electronics Limited

No.	Name of equipment	Q'ty	Measuring point	Measured item	Data processing
1.	Air Compressor	2	• Displayed data of air compressor	• Load Current (A) • Cumulative running hours per month	• Data recording in SD card • Calculate average load current (A)

Source: JICA T/A Task Team recommendation

When the load current and running hours are recorded continuously for one month, the electricity consumption will be given by the following formula;

Electricity consumption of air compressor:

Electricity consumption for Air Compressor (kWh)

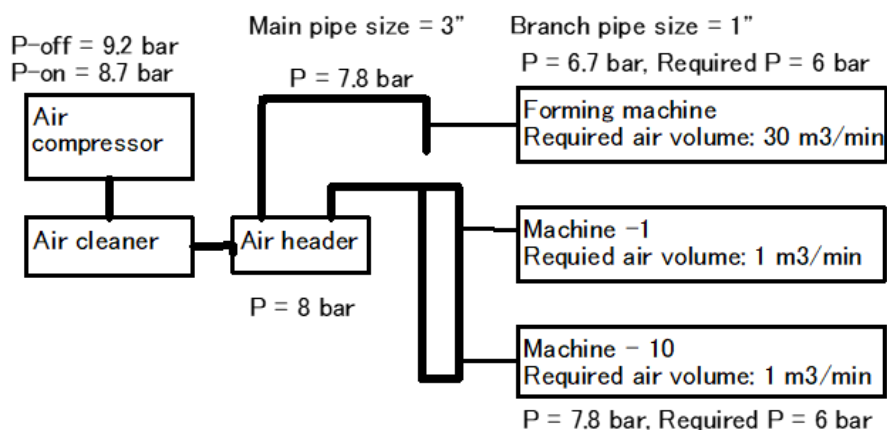
$$= \sqrt{3} * \text{average measured current (A)} * \text{voltage (V)} * \text{Power Factor (0.8)} * \text{running hours/month}$$

In using this formula, Fair Electronics will be able to obtain more accurate monitoring data.

(5) Observation from the factory

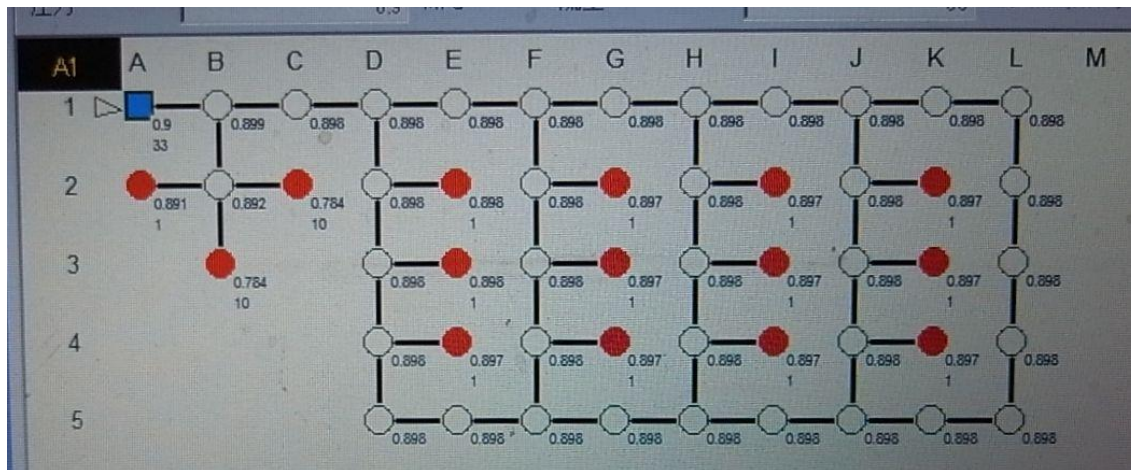
Pressure loss of compressed air pipe line in refrigerator unit

Delivery pressure of air compressors is 9.2 to 8.7 bar and inlet pressure of production machine is 6 bar. Pressure loss of compressed air line is 2 bar between outlet of air compressor room and inlet of forming machine transferred through pipe with length of 80m. The pressure loss is very large compared to the design standard of air piping in Japan which sets as 0.1 bar loss / 100m of pipe length. Main reason for pressure loss is too small size of branch pipe of forming machine as a result of pipe line network calculation and pipe network model diagram as shown the below figures. Recommended improvement plan is to replace branch pipe with 1.5" diameter instead of 1.0" diameter or to add several branch pipes. Delivery pressure of air compressors can be reduced by 1 bar, and so power consumption of air compressors can be reduced by 7%.



Source: JICA T/A Task Team

Figure 16 Calculation Result of Pressure Loss of Compressed Air Pipeline in Refrigerator Unit



Source: Energy Saving Program Ver 4.1, SMC Corporation, Japan

Figure 17 Pipe Network Model Diagram of Compressed Air Piping of Refrigerator Manufacturing Line

Air leakage of compressed air system

According to the manager of the maintenance section in Fair Electronics, air leakage of compressed air system is 2 to 3%. They have conducted detecting test for air leakage by measuring decreasing speed of air pressure when production machines come to stop operation. The ration is

remarkably good compared to 5% of air leakage in machine used in assembling factories in Japan.

8-5 Sub-Projects On-Site Observations [3]: Tosrifa Industries Limited

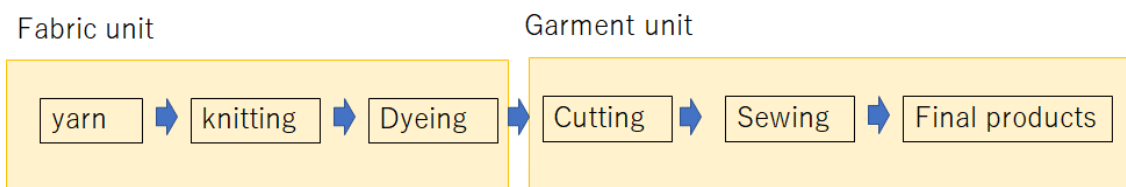
(1) Overview of Tosrifa Industries

Tosrifa Industries Limited is a concerned company of Northern Tosrifa group. The group started their steel business in 1967. Tosrifa Industries was established in 2002 in Gazipur with aim to produce 100% export oriented knit products. They knit and dye in the fabric unit and sew them into the final products in the garment unit. The knit products vary including ladies' wear, men's wear, sportswear and so on.



Source: JICA T/A Task Team

Figure 18 Garment unit (left) and fabric unit (right)



Source: JICA T/A Task Team

Figure 19 Production line in each unit

(2) NOC for Tosrifa Industries

SREDA issued a NOC for Tosrifa Industries back on 28/June/2018. The equipment which was determined as eligible are as in the table on the next page:

Table 37 NOC for Tsrifa Industries

Sl. No.	Code number of equipment	Name of equipment	Brand	Model	Quantity	Eligibility	Quoted price (mil BDT)
1.	3.3	Sewing machine	Juki	(various models)	17 648	Eligible	84.29
2.	3.3	Sewing machine	Kansai	(various models)	3 10	Eligible	1.54
3.	9.6.2	Multiple installation of Once-through boilers	Miura	SI-2000GVS	4	Eligible	16.4
4.	2CZ00	Building Energy Management System	Reliable Controls, and others	BEMS	1	Eligible	6.8

Source: JICA T/A Task Team compilation based on SREDA PIU information

(3) Observation on installation and operation

On site observation was conducted on 24/January/2019. The arrival and partial installation of eligible equipment has been confirmed as in the following table.

Table 38 Installation and Operation Status at Tsrifa Industries

Sl. No.	Name of equipment	Brand	Model	Quantity	Installation	Operation
1.	Sewing machine	Juki	(various models)	17 648	Partially 200 machines were installed.	Partially 200 machines are in operation.
2.	Sewing machine	Kansai	(various models)	3 10		
3.	Multiple installation of Once-through boilers	Miura	SI-2000GVS	4	All machines were installed in Dec/2017.	All machines are in operation.
4.	Building Energy Management System	Reliable Controls, and others	BEMS	1	Not yet arrived at site	Not yet

Source: JICA T/A Task Team compilation based on on-site observation activities

Photos of equipment taken during the on-site observation are as on the next page. These are the equipment that are either partly or fully in operation:

1. Sewing machine (Juki)



2. Once-through boilers (Miura- SI-2000GVS)



Source: Photos taken by JICA T/A Task Team during on-site observation activities

Figure 20 Photos of installed machines

(4) Monitoring plan

Garment Unit:

At present, sub-project owner is monitoring electricity and gas consumption for the entire garment unit, not segregating consumption of eligible equipment (i.e. sewing machines). Suggested monitoring system is to monitor electricity consumption of the floor where the new sewing machines is introduced by introducing watt meter to the floor distribution panel. As electricity consumption for light and fan is included in the floor electricity consumption, they should be deleted. A simple calculation method can be applied, as electricity consumption of light and fan seems stable in fixed volume.

Electricity consumption of sewing machines

= Floor wise total electricity consumption – (Light + Fan) electricity consumption assumed as fixed load.

Fabric Unit:

At present, sub-project owner is monitoring electricity and gas consumption for the entire fabric unit, not segregating consumption of eligible equipment (i.e. boilers). However, natural gas consumption of the boilers is available on operation display and recorded in boiler daily operation log book. Monthly natural gas consumption can be summed up from boiler daily operation log book, and input to MIS. For BEMS, it will contribute to monitor and control energy consumption

in the fabric unit. More detail configuration of BEMS is required for further analysis.

Table 39 Monitoring plan for Tosrifa Industries

No.	Name of equipment	Quantity	Measuring point	Measured item	Measuring device
Garment Unit					
1	Sewing machine	658	• Distribution panel of the new sewing shop floor	• Power consumption (kWh)	• Watt meter
Fabric Unit					
1	Once-through boilers	4	• Operation panel (Boiler daily operation log book)	• Natural Gas consumption	• Built-in Natural gas flow meter
2	BEMS	1	• BEMS	• Power consumption (kWh) • Natural Gas consumption	• Sensors of BEMS

Source: JICA T/A Task Team compilation based on on-site observation activities

(5) Observation from the units

Fabric unit:

Efficiency of once-through boilers

During the site visit, 4 sets of once-through boilers were observed. The boilers are equipped with economizer. The flue gas measured data are given below:

- Flue gas temperature at outlet of economizer (average) = 79.8 deg.C
- O₂% in the flue gas = 5.7 %
- Ambient temperature = 33.8 deg.C
- Measuring Instrument: E-Instruments E-6000 model

From the above data, calculation of the boiler efficiency is given below:

Table 40 Calculated efficiency of once-through boilers

S/N	Parameter	Value
1	Exhaust heat loss ratio	2.5 %
2	Radiation heat loss ratio	2.0 %
3	Other heat loss ratio	1.0 %
4	Boiler Efficiency	94.5 %

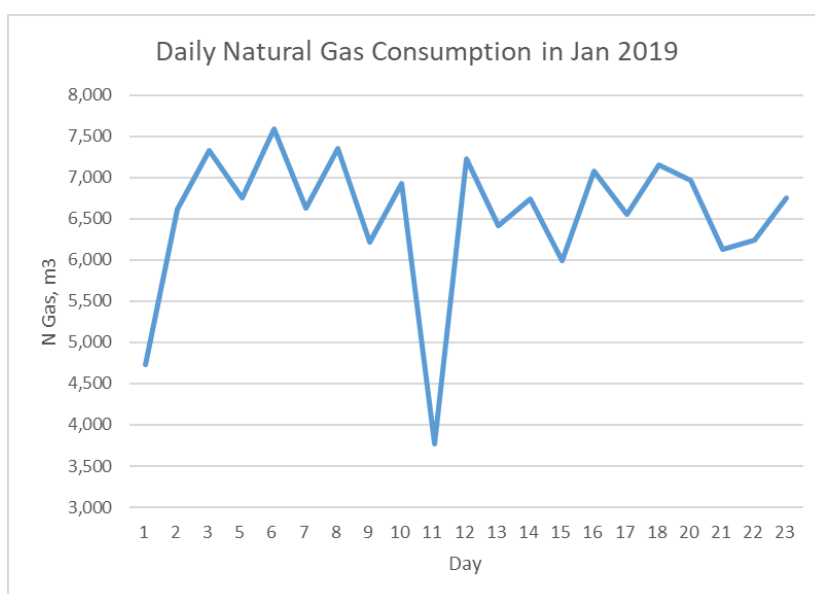
Note: Calculation method is according to JIS-B-8222 Land boiler heat balance

Load factor of once-through boilers

Daily gas consumption and steam generation were analyzed using records in the Boiler Daily Operation Log Book for January 2019:

- Average steam production = 99.56 ton/day
- Capacity of steam production = 192 ton/day
- Load ratio = 51.9 %

This load ratio is an average day and night where day time load ratio is higher than the night time. Based on the data, trend of natural gas consumption and steam generation are shown in the figure on the next page. Natural gas consumption is proportion to steam generation.



Note: January 2019

Source: Tosrifa Industries measurement

Figure 21 Natural Gas Consumption by Steam Boilers

Radiation heat loss from steam valves

Seven sets of steam valves are not insulated and cause large heat loss.as shown in the photos below:



Source: JICA T/A Task Team measurement

Figure 22 Thermal Image of Steam Valves of Header in Boiler Room

An example of insulation of steam valves is shown in the photo on the next page:



Source: JICA T/A Task Team

Figure 23 An example of insulation of steam valves

It is expected that the following heat will be recovered by installing insulation.

Measured surface temperature of valves: 170 degC

Assumed surface temperature after insulation: 45 degC

Assumed annual operation hour: 7,200 hour/year

Recovered heat calculation

A = Heat loss of steam pipe: data from monograph of steam pressure vs pipe diameter

B = Dissipation heat of insulated pipe given from the following equation

C = Recovered heat by insulation = A - B

Calculation equation of dissipation heat is:

$$Q = \frac{2 * 3.14 * (t_2 - t_1)}{(2 / d_2 / \text{Alfa} + 1 / \text{Ramda} * \ln(d_2 / d_1))}$$

Q = Dissipation heat from surface of insulation per meter in length (kcal/h/m)

t₁ = Steam temperature (degC)

t₂ = Circumstance temperature (degC)

d₁ = Diameter of steam pipe (m)

d₂ = Diameter of insulation (m)

Alfa = heat transfer index (kcal/m²/degC/h)

Ramda = Heat conductivity (kcal/m/degC/h)

As the calculation result, recovered heat by insulation is 48,200 Mcal/year as shown in the table. This is equivalent to 5,133 natural gas m³/year and 40,000 BDT/year in monetary terms. Payback period is 1 year.

Table 41 Recovered Heat Loss of Steam Valves by Insulation

Valve size	Equivalent length (m)	Q'ty	Surface temp. at present (°C)	Surface temp. after insulation (°C)	Recovered heat loss (Mcal/y)
3 inch	1.25	4	170	45	15,300
4 inch	1.27	1	170	45	12,900
6 inch	1.5	1	170	45	20,000
Total		6			48,200

Garments Unit:

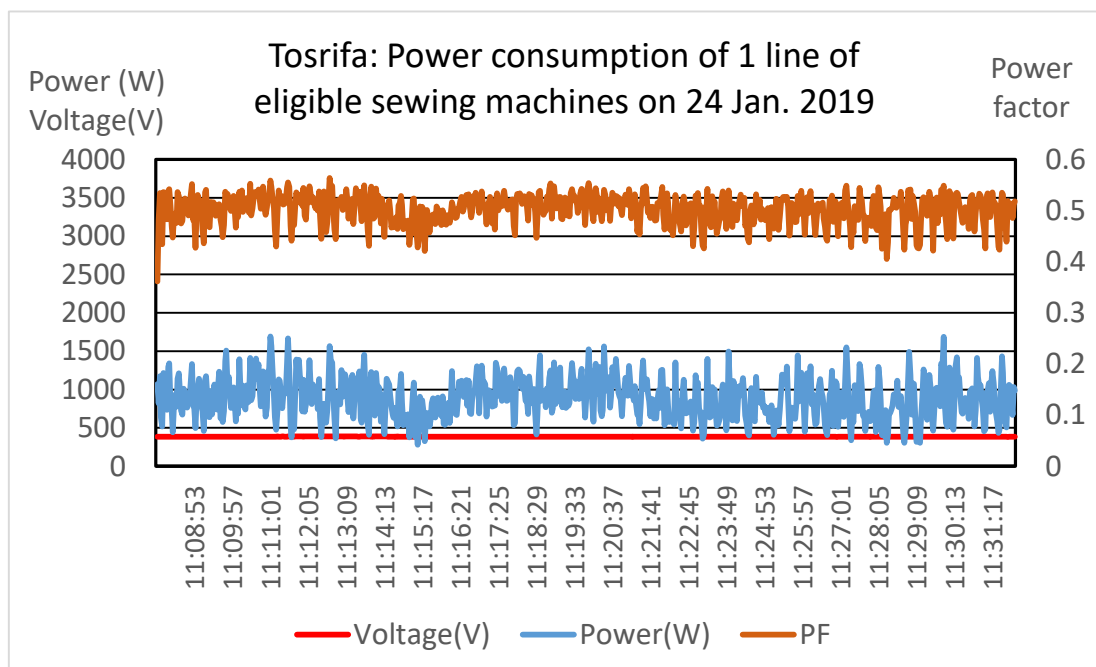
Energy saving effect of new sewing machines with direct drive of servo-motor

Actual electricity consumption of newly installed sewing machines was measured by a power logger of HIOKI 3360 in a line of sewing work with 23 sets of sewing machine. For comparison, load current of existing sewing machines was measured by the logger. Using the parameter of voltage and power factor, power consumption of existing sewing machines is calculated. As a result, average power consumption of new sewing machine is only 40% of existing sewing machines as shown in below Table.

Table 42 Power Consumption of Sewing Machines of New and Existing Types

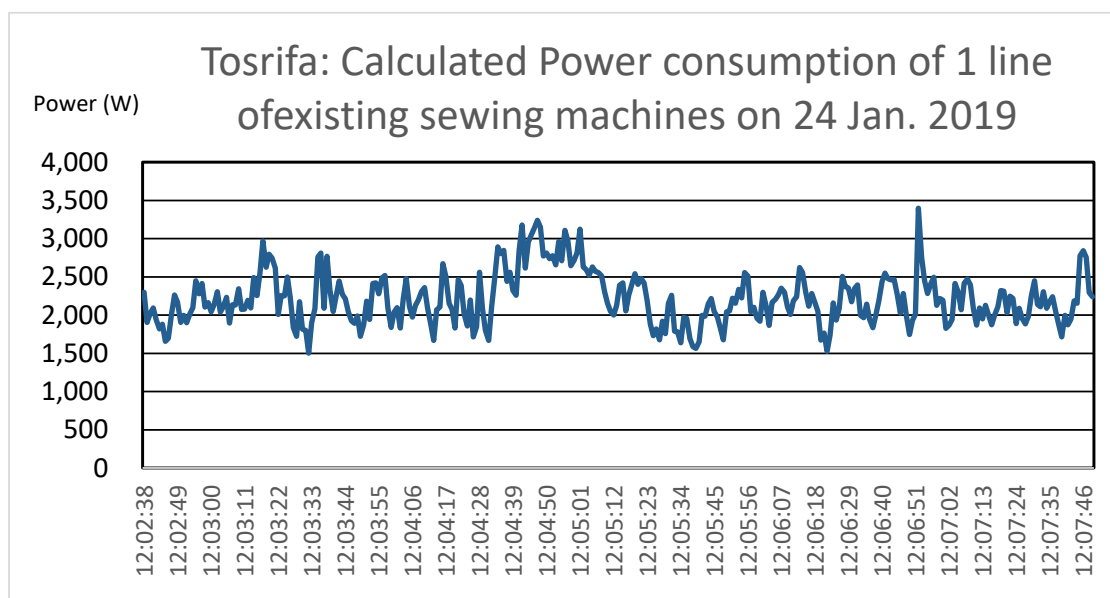
Measured item	New sewing machine	Existing sewing machine	Power consumption ratio
Average voltage	385V	385V	
Average power factor	0.5	0.5	
Average power	884 W	2,215 W	40%

Source: JICA T/A Task Team measurement



Source: JICA T/A Task Team measurement

Figure 24 Power consumption of a line of new sewing machine



Source: JICA T/A Task Team measurement

Figure 25 Current of a line of existing sewing machine

Lighting:

The illuminance in different floors in the garment unit was measured during site observation (noted that the lux level is measured in area which is 4 feet height from the floor)

Table 43 Floor wise illuminance in the garment's unit

No.	Section Name	Maximum lux level (lux)	Minimum lux level (lux)	Average lux level (lux)
1st Floor (new sewing shop)				
1.	Sewing Table	692	493	562
2.	Ironing Table	650	540	605
3.	Inspection Table	1354	941	1120
3rd Floor (existing sewing shop)				
1.	Sewing Table	407	331	354
2.	Inspection Table	1687	808	1345

Source: JICA T/A Task Team measurement

From the above table, it is clearly said that, the 1st Floor (new sewing shop) has higher illuminance compared to the 3rd Floor (existing sewing shop).

A comparison of illuminance between the international standard, 1st Floor (new sewing shop) and 3rd Floor (existing sewing shop) of the garment unit is presented in the below table. All the lux level is an average.

Table 44 Comparison of illuminance with the international standard

International standard*	1st floor (new sewing shop)	3rd floor (existing sewing shop)
750 lux	Sewing Table: 562 lux Ironing Table: 605 lux Inspection Table: 1120 lux	Sewing Table: 354 lux Inspection Table: 1345 lux

Note: *Standard is according to ISO 8995-1: 2002 (E) (for sewing).

Source: JICA T/A Task Team

In 1st floor (new sewing shop) task light is covering the working condition at the needle point. Therefore, the illuminance on the desk should be higher, likely to meet the international standard. The 3rd floor (existing sewing shop) needs to be increased.

8-6 Sub-Projects On-Site Observations [4]: Meghna Cement Mills

(1) Overview of Meghna Cement Mills

Meghna Cement Mills Limited is the enterprise of Bashundhara Group. It was established in 1992 and operates cement factories on the bank of Pashur River and Mongla Port. They are producing cement with “King cement” brand. The other cement producing enterprise of Bashundhara Group, which is Bashundhara cement, is also located in the same premises in Mongla and producing “Bashundhara cement” brand. Meghna Cement Mills is in the process of constructing the new Vertical Roller Mill (VRM) using the loan extended by the JICA EE&C project.

Table 45 Cement production mills of Bashundhara Group

Company	Location	Mill	Capacity	Product *	Installation
Meghna Cement Mills	Mongla	2 ball mills	80 TPH X 2 = 160TPH	OPC (main) PCC	2002
	Mongla	VRM (FLSmidth)	OPC - 380TPH PPC - 415TPH	OPC PCC (main) BFC	2020 (to be expected)
Bashundhara cement	Mongla	VRM (Loesche)	250 TPH		2012
	Dhaka	VRM (Loesche)	250 TPH		2015

*OPC= Ordinary Portland Cement, PCC=Portland Composite Cement, BFC=Blast Furnace Slag Cement
Source: Meghna Cement Mills

As shown in the table above, various cement products are produced. Product characteristics of each product is summarized below. VRM will enable various products to be produced depending on market demand.

Table 46 Composition of cement products

	OPC	PCC	PCC	BFC
Mill	Ball mill, VRM	Ball mill	VRM	VRM
Clinker	95-96%	65%	50-55%	50%
Slag	4-5%	15%	25-30%	46%
Fly ash	-	10%	10%	-
Lime stone	-	6%	6%	-
Gypsum	-	4%	4%	4%

Source: Meghna Cement Mills

(2) NOC for Meghna Cement Mills

SREDA issued NOC for Meghna Cement on 24/May/2017. The equipment which was determined as eligible was as in the following table.

Table 47 NOC for Meghna Cement Mills

Sl. No.	Code number of equipment	Name of equipment	Brand	Model	Quantity	Eligibility	Quoted price (million BDT)
1	5.1	Vertical roller grinding mil for cement clinker and slag (VRM)	FLSmidt	OK54-6	1	Eligible	1,270

Source: JICA T/A Task Team compilation based on SREDA PIU information

(3) Observation on installation and operation

On site observation conducted on 27/January/2019, some of the parts of VRM including base and rollers have started to be installed. The installation is expected to be complete by December/2019.

Table 48 Installation and Operation Status at Meghna Cement Mills

Sl. No.	Name of equipment	Brand	Model	Quantity	Installation	Operation
1	VRM	FLSmidt	OK54-6	1	Under installation	Not yet

Source: JICA T/A Task Team compilation based on on-site observation activities



Source: Photos taken by JICA T/A Task Team during on-site observation activities

Figure 26 VRM and Grinding Roller under Installation

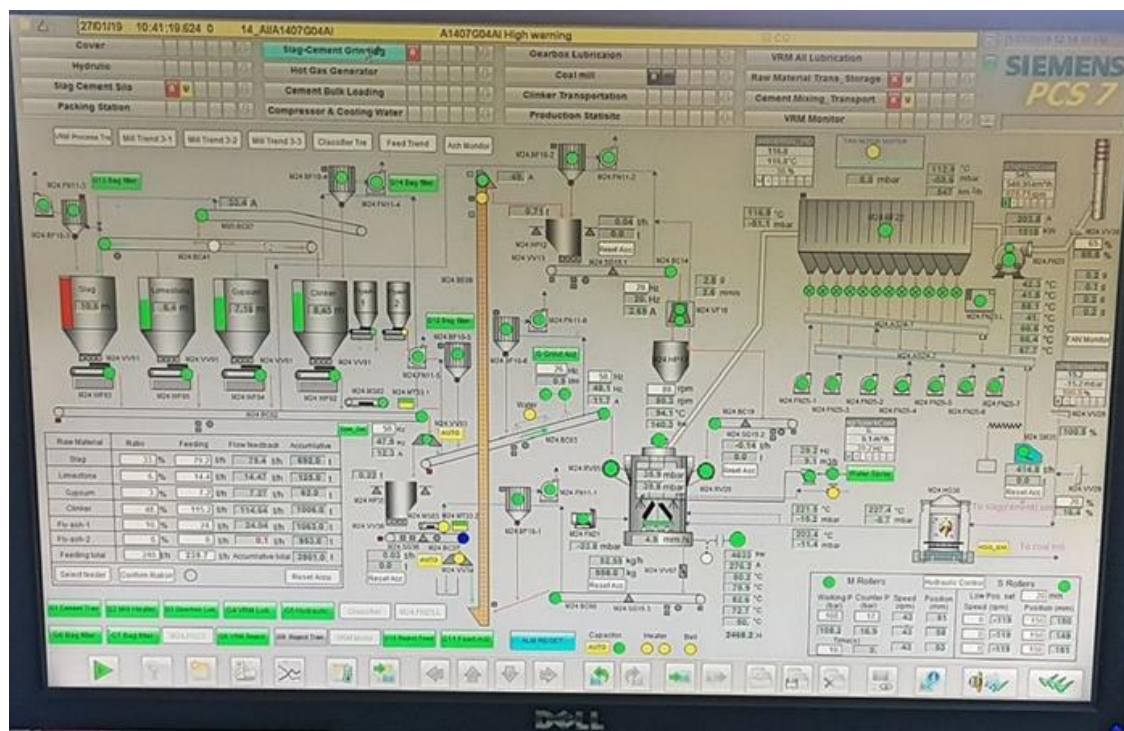
(4) Monitoring plan

Currently, all the mills have a real time monitoring system for electricity consumption and production. Such system will be installed in the new VRM, enabling to accumulate accurate electricity consumption data. On the other hand, coal is used to generate heat which is used during start up period of VRM. Even though coal related equipment such as coal grinding mill is out of the scope of EE&C loan, coal consumption should be monitored and reported as it is a part of VRM energy consumption.

Table 49 Monitoring plan for Meghna Cement Mills

No.	Name of equipment	Quantity	Measuring point	Measured item	Measuring device
1.	VRM	1	• VRM Monitoring system display	• Power consumption (kWh)	• VRM Monitoring system
			• Coal grinding mill	• Coal consumption (t)	• Coal mill operation data

Source: JICA T/A Task Team compilation based on on-site observation information



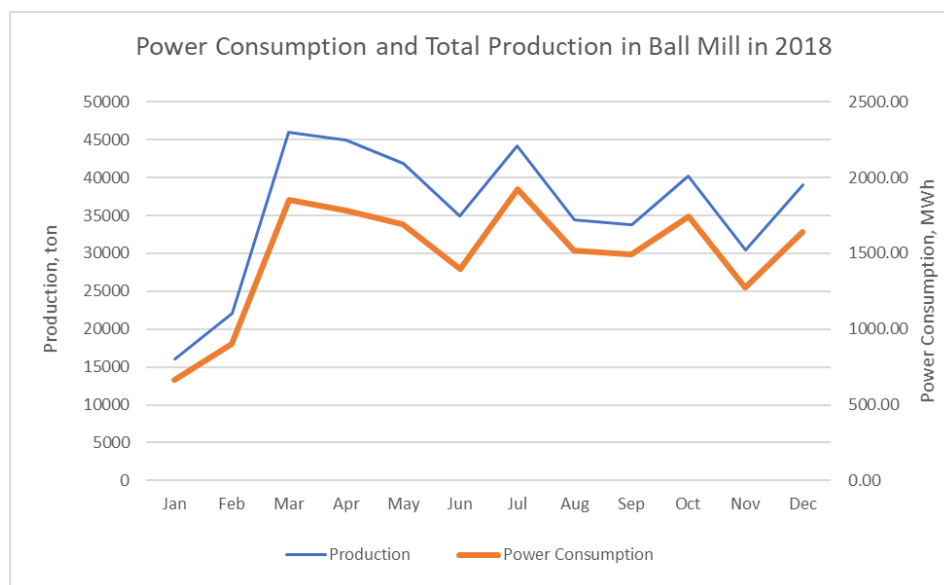
Source: Photo taken by JICA T/A Task Team during on-site observation activities

Figure 27 Energy and Production Monitoring System for the Existing VRM

(5) Observation from the existing factory

Production pattern

Production peak season is said to be from May to November, while production decreases in rainy season. According to the 2018 production record, the difference between the peak month (March) and off-peak month (January) is nearly three times. It is also shown from the figure below that electricity consumption of the ball mills is proportionate to production volume.



Source: Meghna Cement

Figure 28 Power Consumption and Total Production by Ball Mill in 2018

Electricity saving effect

Comparing average consumption of the existing VRM (owned by Bashundhara cement in Mongla) and that of the existing ball mills (owned by Meghna Cement mills in Mongla), VRM is 20% more energy efficient than the ball mills. Similar power saving effect is expected to be achieved from the newly constructed VRM.

Table 50 Comparison of average power consumption (kWh/ton)

Existing VRM	Existing BM	Average Savings on VRM
33.40	41.82	8.42 (-20%)

Source: Meghna Cement

9 Formulation of the Phase 2 Project

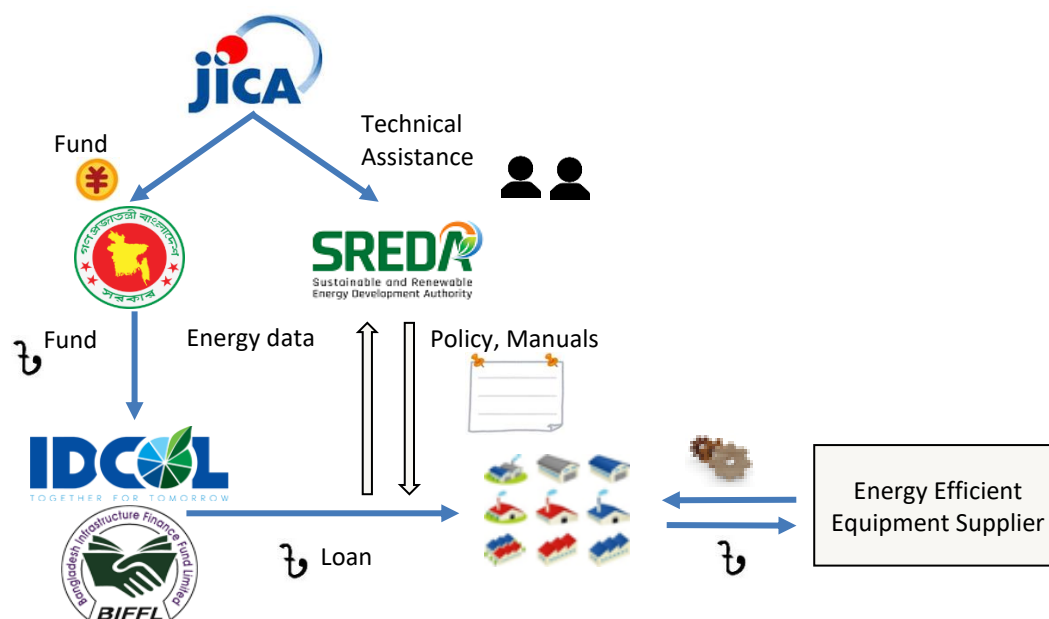
9-1 General Information of the Phase 2 Project

Objectives

The title of the Phase 2 Project is “Energy Efficiency and Conservation Promotion Financing Project (Phase 2)”. The Objectives of the Phase 2 Project are to promote EE&C measures, and to facilitate installation of EE&C equipment in Bangladesh as well as to support the promotion of policy in EE&C by Government of Bangladesh through extending concessional loans and other support, thereby securing the balance between the energy supply and demand and contributing to the reduction of greenhouse gas.

Structure

The Phase 2 Project Structure, in overall, remains the same as that of the existing Project. The concessional loan provided in JPY denomination from JICA to the Finance Division (FD) will be extended to the IFIs (IDCOL and BIFFL) in BDT currency. The IFIs will on-lend the fund to the industries which are investing on eligible EE&C equipment (sub-project owners). SREDA will receive technical assistance for the implementation of the Phase 2 Project so as to ensure that the fund is being utilised in accordance with the EE&C promotion policy, following the business process requirements stipulated in the manuals, and that required data is being collected from the sub-project owners and the IFIs.



Source: JICA T/A Task Team

Figure 29 Overall Structure of the Phase 2 Project

Executing Agencies

The Phase 2 Project will be implemented by the three organizations as the Executing Agencies, namely SREDA, IDCOL and BIFFL. Among these three Executing Agencies, SREDA takes the primary responsibility for the administration, supervision, and coordination among the Executing Agencies as the “Administrative Authority” and for the entire technical part of the Phase 2 Project as one of the Executing Agencies. IDCOL and BIFFL will act as the Implementing Financial

Institutions responsible for the financial administration of Component 1, 2, and 3 of Category 1 loan (for provision of fund to end users) at the sub project owners' level. The major roles and responsibilities of each agency is as in the following tables. Organogram of each Executing Agencies are as in the attached figures:

Table 51 Roles and Responsibilities of SREDA

SREDA is responsible for administration and supervision of the Phase 2 Project as the administrative authority and the regulatory body for EE&C measures.
Major roles and responsibilities of SREDA: • Formulate necessary policies, rules and regulations in relation to the Phase 2 Project; • Coordinate with government entities concerned (i.e. National Board of Revenue, MOF etc.); • Check technical eligibility of on lending loan applications; • Conduct awareness raising activities; • Convene PCC and TAC for the Phase 2 Project; • Coordinate with all the agencies of the Phase 2 Project including IFIs; • Issue and revise the EE&C Equipment List endorsed by JICA in accordance with recommendations from the Technical Advisory Committee; • Develop ICT environment whereby monitoring data from IFIs can be submitted online, in electronic format; • Monitor the progress and effect of the Phase 2 Project based on data which will be reported from the IFIs; • Collect and manage data on EE&C promotion activities conducted in the country; • Report the implementation status of the Phase 2 Project to the Power Division, including achieved energy saving and emissions reductions based on equipment installation and operation data, calculated by formula as specified for the Phase 2 Project; • Prepare and submit Quarterly Progress Reports (QPRs) to JICA by incorporating the reports submitted from the IFIs, and; • Recommend to IFIs on the necessity of technical appraisal capacity.

Source: JICA T/A Task Team compilation

Table 52 Roles and Responsibilities of IDCOL

IDCOL will act as an Implementing Financial Institution responsible for the administration of Component 1, 2 and 3 (two step loan for (i) industry / commercial sector, (ii) building sector and (iii) electronic appliances) with aim to achieve the Phase 2 project objective under Sub Loan Agreement (hereafter referred to as "SLA") (Attachment 4-1 and 4-2 as samples) concluded between MOF and IDCOL prior to the effectuation of the Loan Agreement.
Major roles and responsibilities of IDCOL: • Promote the Phase 2 Project by means of public relations and awareness raising activities; • Extend loan to end users directly by conducting appraisal based on appraisal manuals, and; • Conduct monitoring of sub-projects to be reported to SREDA/JICA periodically.

Source: JICA T/A Task Team compilation

Table 53 Roles and Responsibilities of BIFFL

BIFFL will act as an Implementing Financial Institution responsible for the administration of Component 1, 2 and 3 (two step loan for (i) industry / commercial sector, (ii) building sector and (iii) electronic appliances) with an aim to achieve the Phase 2 project objective under SLA concluded between MOF and BIFFL prior to the effectuation of the Loan Agreement.

Major roles and responsibilities of BIFFL:
--

- | |
|---|
| <ul style="list-style-type: none">• Promote the Phase 2 Project by means of public relations and awareness raising activities;• Extend loan to end users directly by conducting appraisal based on appraisal manuals, and;• Conduct monitoring of sub-projects to be reported to SREDA/JICA periodically. |
|---|

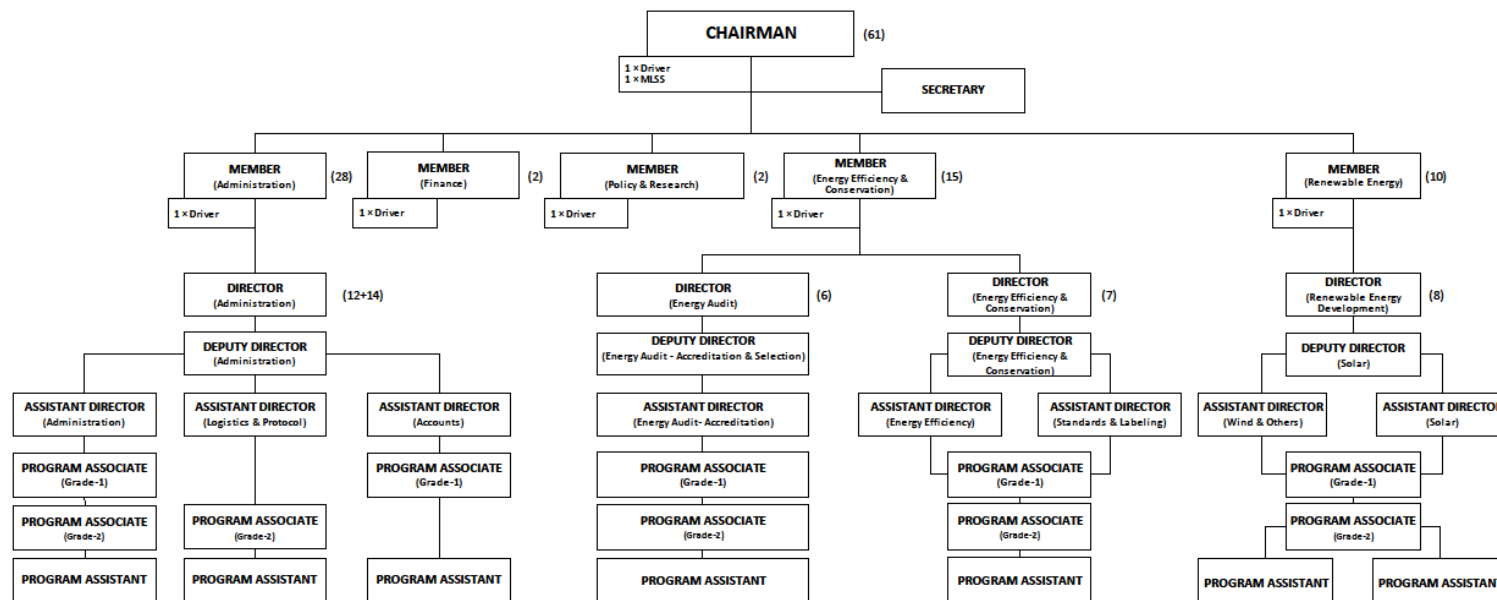
Source: JICA T/A Task Team compilation

APPROVED ORGANOGRAM OF SUSTAINABLE AND RENEWABLE ENERGY DEVELOPMENT AUTHORITY (SREDA)

Responsibilities and Functions of the Authority

Responsibilities and Functions of the Authority shall be as follows, namely:

- (1) To take necessary measures to create public awareness and motivation for efficient use of power and energy and its conservation;
- (2) To encourage the use of power and energy efficient equipment and take necessary steps for standardization and labeling of power and energy using equipment and appliances;
- (3) To establish testing laboratories or provide assistance in establishing laboratories in order to test and certify on standard equipments of using energy;
- (4) To encourage energy efficiency and conservation related research and development and to identify innovative financing for implementation of projects or associated works relating thereto, and arrange necessary training in this behalf;
- (5) To assist the Government in making and implementation of energy efficient building code;
- (6) To make regulation for qualification and competency of energy manager and energy auditors and selection of a accredited energy auditor firm;
- (7) To coordinate the implementation activities of energy efficiency and conservation in government, semi-government and autonomous bodies and create commercial market for sustainable energy in private sector through demonstration;
- (8) To assist the Government in making necessary laws, rules, regulations for sustainable energy development;
- (9) To identify energy inefficient equipment and take necessary measures to stop its production, import and sales;
- (10) To take necessary measures to declare designated consumers of different energy consumers or category of consumers;
- (11) To prepare and update inventory of renewable energy resources and associated technologies, indicating its geographical location of sites and verify its suitability for commercial use after assessing possibilities of its exploitation;
- (12) To provide necessary technical assistance in preparing CDM or similar type of activities;
- (13) To prepare short, medium and long term development project to extend the use of renewable energy with specific targets and take necessary steps to implement it;
- (14) To provide technical and financial assistance in research, development, demonstration and training on renewable energy;
- (15) To take necessary steps for creating public awareness and motivation in order to encourage the use of renewable energy in public and private sector;
- (16) To assist to identify sources of financing and make necessary arrangement to provide financial incentives to attract and encourage private investment in renewable energy sector;
- (17) To send tariff proposal of renewable energy to Bangladesh Energy Regulatory Commission established under section 4 of Bangladesh Energy Regulatory Commission Act, 2003 (Act No.13 of 2003), upon discussion with the Government;
- (18) To assist the Government to coordinate the implementation of renewable energy development related activities in government, semi-government and autonomous bodies;
- (19) To encourage commercialization of renewable energy and energy efficiency activities in private sector through implementation of pilot project;
- (20) To assist the Government to formulate, update and implementation of policies made under this Act, including revision of Renewable Energy Policy;
- (21) To coordinate with different Ministries, Divisions and organizations in matters related to sustainable energy;
- (22) To establish linkage with regional and international organizations on sustainable energy;
- (23) To perform such other functions as may be prescribed by rules or by the Government, from time to time.



Office Equipments and Vehicles of Sustainable and Renewable Energy Development Authority (SREDA)

Types of Vehicles	Types of Equipments
01. 4 x Jeep	01. 04 x Laptop Computer
02. 4 x Motor Car	02. 01 x Server
03. 3 x Microbus	03. 30 x Desktop Computer
04. 1 x Pickup	04. 15 x Printer (Normal)
	05. 04 x Printer Duplex (Heavy Duty)
	06. 02 x Photocopy Machine
	07. 01 x Multimedia Projector (With Screen)
	08. 01 x PA System (1+24)
	09. 01 x PABX (10+100)
	10. 16 x Direct Telephone Set
	11. 04 x PA Telephone Set
	12. 20 x Intercom Telephone Set
	13. 01 x Video Recording Camera
	14. 01 x Still Photography Camera

Manpower Setup of Sustainable and Renewable Energy Development Authority (SREDA)

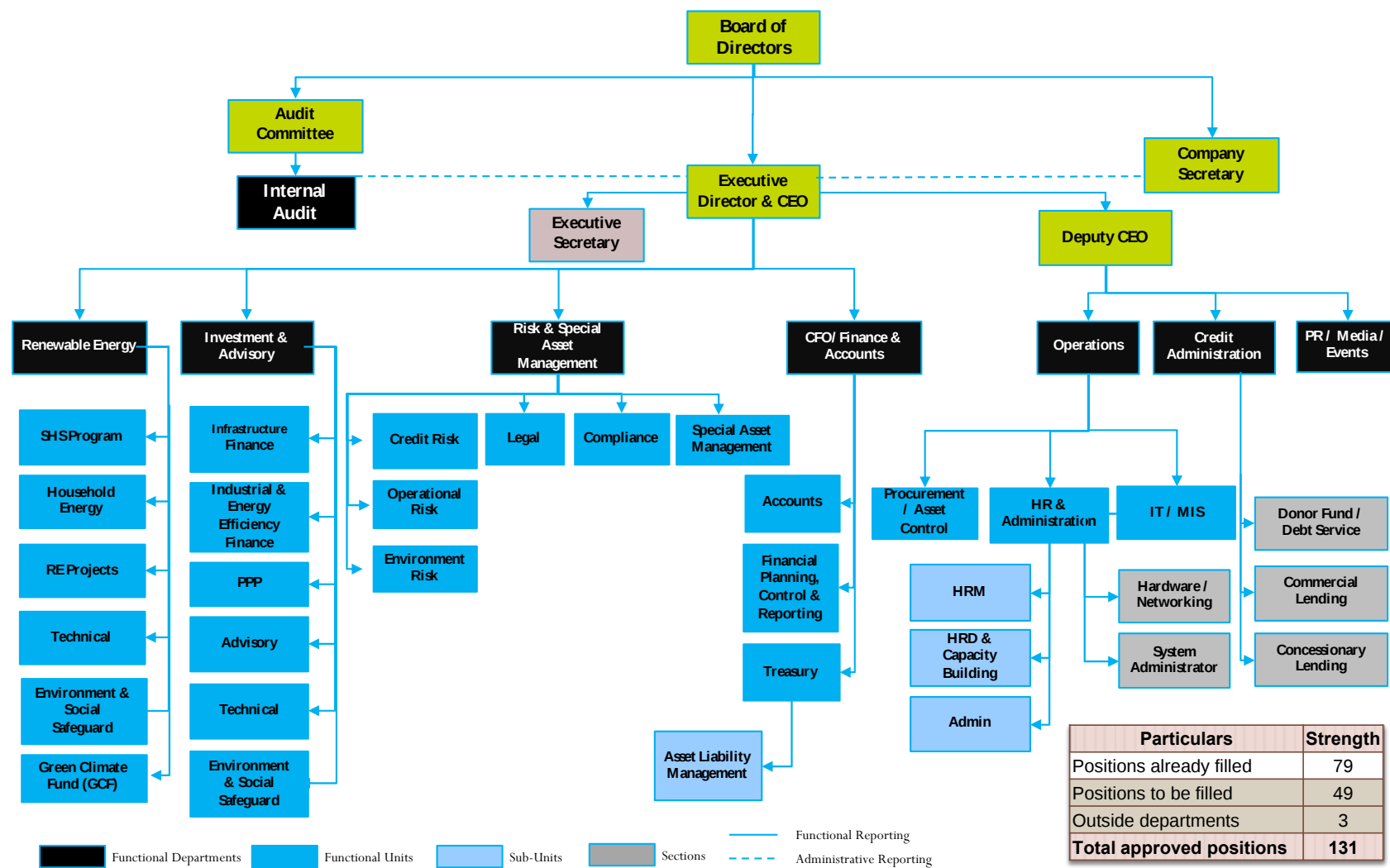
Designation	Number
01. Chairman	01
02. Secretary	01
03. Member	05
Total	07
04. Director	04
05. Deputy Director	04
06. Assistant Director	08
07. Program Associate	05
08. Program Associate (Grade-2)	05
09. Program Assistant	07
Outsourcing	
10. Driver	12
11. MLSS/Office Assistant	04
12. Security Guard	03
13. Cleaner	02
Total	54
Grand Total	07+54 = 61

Number - 14 (Under Pool)

6 x Driver
3 x MLSS
3 x Security Guard
2 x Cleaner

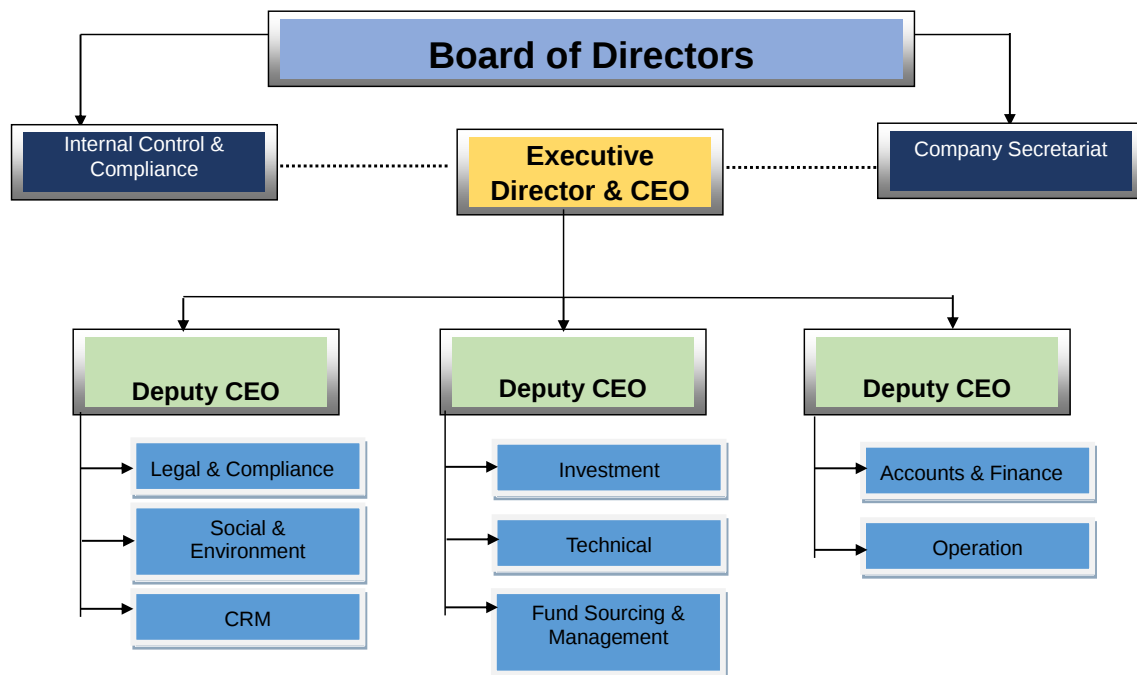
Source: SREDA

Figure 30 Organogram of SREDA



Source: IDCOL

Figure 31 Organogram of IDCOL



Source: BIFFL

Figure 32 Organogram of BIFFL

9-2 Ensuring Favourable Lending Conditions

Necessity for Low Interest Rate

To encourage the industry and businesses to choose EE&C equipment, investment cost of comparable equipment should be lower than that for conventional equipment through the concessional rate financing. Based on such understanding and to ensure the feasibility of the Phase 2 Project, an exceptional provision of subsidiary loans to IDCOL and BIFFL to extend loan at the interest rate between 1% and below 2% will be required.

Considering the crucial importance of EE&C promotion, the standard interest rate to the end users would be kept below 5%, and credit risk of the end users would be considered according to the following framework. Maximum spread added to the standard interest rate would be 2%. Spread would be determined by each IFI under this framework and, in case of adding spread, such interest rate must be at least 4 percentage points lower than the interest rate of commonly available loans from each IFI.

Table 54 Credit Risk Rating Framework

Category	Reference Factors	Spread
A: Superior - Low Risk	● Credit is fully secured by collateral, government guarantee, corporate or bank guarantee, and other equivalent elements.	0%
B: Good - Satisfactory Risk	● Credit is substantially secured by collateral, government guarantee, corporate or bank guarantee, and other equivalent elements. ● Strong financial situation (strong earnings, liquidity and other equivalent elements)	Up to 1%
C: Acceptable - Fair Risk	● Credit is partly or not secured by collateral, government guarantee, corporate or bank guarantee, and other equivalent elements. ● Adequate financial situation (adequate earnings, liquidity and other equivalent elements).	Up to 2 %

Source: Phase 1 Project Credit Risk Rating Framework

Terms and Conditions of the Project Loan

The main component loan for the Project will be extended to the Government of Bangladesh under 0.95% interest rate for 30 years tenure among which 10 years will be the grace period. There is a significant change from the loan condition for the existing Project, which was extended at 0.01% interest rate for the tenure of 40 years among which the first 10 years is the grace period. The following terms and conditions will be applied to the Phase 2 Project. The conditions reflect Japanese ODA loans standard effective from October 2018, in accordance with the income categorizations of Bangladesh.

Table 55 Terms and Conditions of the Loans

Category	Interest Rate	Repayment Period	Grace Period	Conditions for Procurement
Category 1 Provision of funds to end users	0.95%	30years	10 years	Untied
Category 2 Consulting services for Executing Agencies	0.01%	same as above		

Source: JICA T/A Task Team compilation based on Japanese ODA loans standard effective from October 2018

Disbursement period is from 2019 to 2025, and no disbursement shall be made for the Project later than the same day and month eight (8) years after the effective date of the L/A, unless otherwise agreed between JICA and the Borrower. Disbursement Period will be discussed and agreed at the time of L/A negotiation.

Sub-Loan Agreement and Sub-Grant Agreement

Under the Loan Agreement for the Phase 2 Project, Finance Division will sign Subsidiary Loan Agreements (for usage of Category 1 fund) and Subsidiary Grant Agreements (for usage of Category 2 fund) with IDCOL and BIFFL. These agreements will authorize IDCOL and BIFFL as the executing agencies of the Phase 2 Project. IDCOL and BIFFL will then extend the fund to the end users by concluding On-Lending Loan Agreements with the sub-project proponents, who are eligible to receive On-Lending Loans under the Phase 2 Project. The end users will then

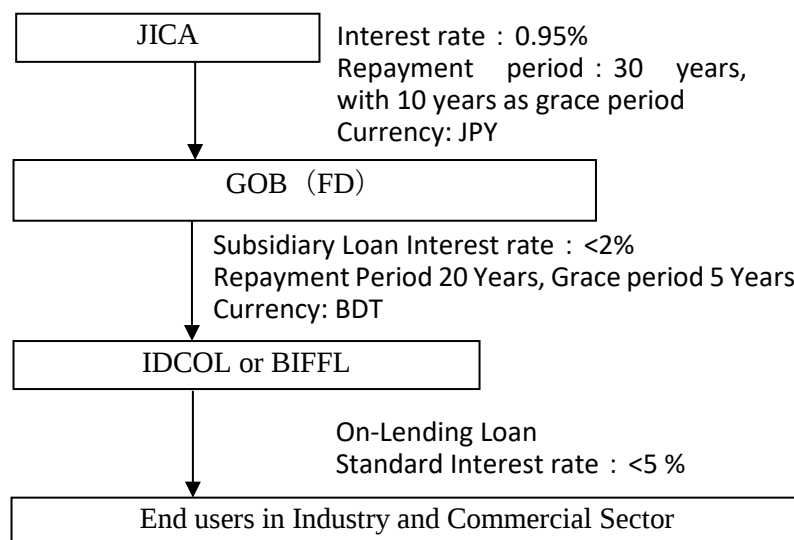
purchase EE&C equipment and repay in accordance with the conditions stipulated in the On-Lending Loan Agreements.

The Subsidiary Loan Agreements (SLA) will be prepared separately for each IFI with the threshold amounts of 50% of total fund for Category 1 of the Loan Agreement respectively. To promote disbursement from each IFI to end-users, disbursement to end-users will be monitored closely and in case disbursement from one IFI was not progressed compared to the other due to any reason, reallocation of funds between the two sub-loan agreements will be reconsidered and amended upon JICA's review and concurrence.

On Lending Agreement

Eligible end users (proponents) to the loan are owners and/or enterprises in industry / commercial sector who plan to install EE&C equipment or plans to develop Buildings in Bangladesh. Eligible Equipment to be financed under the On-Lending Loan Agreement (OLA) needs to be the equipment and/or products which are in accordance with the sub-sector and items with specification / production capacity in the eligible technologies and equipment specified in "Eligible Technologies and Equipment" list (identical to that of the existing Project). IDCOL and BIFFL, based on the financial appraisal manual, will identify appropriate end users and conduct due diligence.

On-Lending Loan to the end users will be in the currency of Bangladesh Taka (BDT), and the implementing financial institutions (IDCOL and BIFFL) will bear the credit risk of the end users. The size of the On-Lending Loans will be determined by IDCOL/ BIFFL in compliance with the rules and regulations prevailing in Bangladesh, as well as with the Business Process Manuals for the Project (common with those of the existing Project). The standard interest rate applicable to the OLA between IDCOL/ BIFFL and the end users will be the rate of below 5%, and in compliance with the Credit Risk Rating Framework.



Source: JICA T/A Task Team

Figure 33 Referential Lending Conditions

9-3 Demarcation between the Existing Project and the Phase 2 Project

The Phase 2 Project will commence before the completion of the existing Project. This is the exceptional arrangement is made with reflection to the strong financial demand for energy

efficient equipment in the market. Under such circumstances the demarcation between the existing Project and the Phase 2 Project will be as follows:

- (1) The Phase 2 Project should start after the commitment of original funds of the existing Project, excluding funds reallocated from remaining amount of the Category 2 (Consulting Services for Executing Agencies) of the existing Project;
- (2) The contracts for the ongoing consulting services under the existing Project will be amended in order to incorporate necessary scope of the consulting services for the Phase 2 Project. The cost for ongoing consulting service for the existing Project will be disbursed from the L/A of the existing Project until such amendment of the contracts and JICA's concurrence. Thereafter, the cost will be disbursed from the L/A of the Phase 2 Project.
- (3) The remaining amount of Category 2 (Consulting Services for Executing Agencies) of the existing Project will be reallocated to Category 1 (Provision of Fund to End Users) after the amendment of the contract and JICA's concurrence, in order to fully utilise the loan balance of the existing Project.
- (4) The amendment of the sub-loan agreement for the reallocated amount will be signed between the Finance Division, MOF and IDCOL / BIFFL.

9-4 Scope of Loan, Project Categories and Components

In the existing Project, there are two types of loans, namely "A type loan" where IFIs directly provide loan to the sub-project owners (industry / commercial businesses) as the end users, and "B type loan" which will be financed from the IFIs to the end user (households and small businesses) through participating distributors (PDs) as intermediary. The A type can be utilised for (i) industry / commercial sector component and (ii) building sector component, while the B type loan can be utilised for (iii) electronic appliances component. The Phase 2 Project will be comprised of only the Type A loan, to be applied to all three components, (i) to (iii). In the Phase 2 Project, individuals and households will be excluded from the eligible lenders, in order to focus on the industry and organisations, which have larger demand.

The Phase 2 Project will be comprised of the two main Categories, as are defined in the L/A for the existing Project, namely 'provision of funds to end users' as Category 1 and 'consulting services for Executing Agencies' as Category 2. Category 1 is the provision of funds to end users in the form of concessional loans, and is comprised of the following three Project components, all to be implemented through A type loan:

Table 56 Three Components Comprising the Phase 2 Project

Component	Component name and target area
1	Industry / commercial sector component
2	Building sector component
3	Electronic appliance component

Source: JICA T/A Task Team

9-5 Organisational Setup for Project Implementation

Project Steering Committee (SC)

The Project Steering Committee (hereafter referred to as SC) will be established by Power Division, MPEMR as a mechanism for smooth coordination among the Executing Agencies, Finance Division, MOF and Power Division, MPEMR for the project implementation. Due to delay of approval procedure for the Technical Assistance Project Proposal (TAPP), It was only

in October 2018 that SREDA started the process of SC formulation, and therefore SC has not yet been established. The process will therefore be as follows:

- (1) To formulate the SC by December, 2018;
- (2) To nominate the members from the following organizations:
 - Secretary, Power Division, MPEMR (Chairperson)
 - Chairman, SREDA;
 - One Representative from External Relations Division, MOF as ministerial body for IDCOL (not below the rank of Joint Secretary);
 - One Representative from Finance Division, MOF as ministerial body for BIFFL (Joint Secretary or above);
 - One representative from Implementation Monitoring and Evaluation Division (IMED);
 - Project Director of the PIU, SREDA (Secretary of the Committee);
 - CEO, IDCOL;
 - CEO, BIFFL;
 - One representative from JICA, and;
 - Any other person who may be appropriate
- (3) To hold regular meetings (Annual reporting meetings) within 3 months of the end of the fiscal year.

Project Coordination Committee (PCC)

Under the current setup in the existing Project, Project Coordination Committee (PCC) is being convened on monthly basis as a mechanism for coordination between those organizations at the administrative level, comprised of the executing agencies and JICA Bangladesh Office. The committee gather to monitor the implementation progress and to identify, share and solve. The followings are the required actions for the Phase 2 Project:

- (1) To maintain the functions of PCC as a monitoring and decision making body at the administrative level for the implementation of both existing and the Phase 2 Projects, the PCC will:
 - 1) have the meeting convened monthly,
 - 2) monitor the implementation status, and
 - 3) report to SREDA authority for any problem or challenges.

Technical Advisory Committee (TAC)

The Technical Advisory Committee (TAC) should be established by SREDA to discuss and propose eligible technologies and equipment list. During the existing Project, the equipment list did not have to be changed as sufficient demand was already identified based on the original list. However, based on the necessity of such initiative to review eligible technologies and equipment list according to market demand, technology innovation and other factors, the following actions need to be taken:

- (1) To establish the Technical Advisory Committee by January 2019, within one month after establishment of the SC.
- (2) To nominate the members from the following organizations:
 - Chairman, SREDA, will be the chairperson of the TAC.
 - A member will be nominated by each executing agency (EAs) and the consultants
 - An expert member for each component (3 in total)
 - Additional members (up to 2 persons), nominated by the chairperson, subject to the consent of all the Executing Agencies.
 - One representative from JICA (as an observer)

The nominees should have any of the following background:

- Academic experts from higher education organizations;
- Expert consultants on Energy Efficiency Improvement and Conservation (EE&C) field;
- Officials from governmental organizations.

9-6 Project Implementation Unit (PIU)

The project implementation units (PIUs) are formulated for the existing Project at all three Executing Agencies. These existing PIUs are expected to be responsible also for the implementation of the Phase 2 Project. There is, however, a need to reinforce the existing PIUs to be prepared for additional tasks to be handled due to the implementation of the Phase 2 Project. SREDA PIU should be strengthened by adding an assistant manager for data management including ICT environment development. PIUs at both IDCOL and BIFFL should assign one more member each for technical and finance positions. These additional assignments are to be done before the signing of the L/A of the Phase 2 Project.

As with the existing Project, the Project Director in SREDA's PIU for the Phase 2 Project will be the SREDA Member for Energy Efficiency & Conservation. There will be the Joint Project Director to support the Project Director's tasks, and this position will be filled by SREDA's Director for Energy Efficiency & Conservation. Two Deputy Directors in SREDA will be assigned as the Deputy Project Directors in the PIU. Three Assistant Directors in SREDA will perform as the PIU's Assistant Project Director members. Among these three Assistant Project Directors, one SREDA Assistant Director for data management including ICT environment development will have to be newly assigned additionally, with the starting of the Phase 2 Project.

Table 57 SREDA PIU Composition

Positions	Roles	From Phase II
Project Director	● Coordinate with all the concerned agencies including IFIs ● Compile quarterly reports submitted by the IFIs and prepare and submit Quarterly Progress Reports (QPRs) to JICA; ● Internal & external communications representing the Project; ● Decision making and managerial tasks for the Project.	1
Joint Project Director	● Support for Project Director's tasks	1
Deputy Project Director	● Secretariat for Technical Advisory Committee ● Monitor the progress and effect of the Project, based on data which will be reported from the IFIs and borrowers - Responsible for sub-project eligibility checking task	2
Assistant Project Director	● Communications with the applicants	1
	● Updating institutional capacity on technical assessment	
	● Awareness raising activities	
	● Data management including ICT environment development	1(*)
	● Environmental and social consideration	1
	● Day to day administration including reporting	

Note: * Additional new member to be assigned by SREDA

Source: JICA T/A Task Team recommendation

IDCOL's Executive Director and CEO is the PIUs top member, the Project Director. The Director (Investment) and Head of Advisory will be functioning as the Manager in the PIU. One staff in the Industrial & Energy Efficiency Finance Unit acts as the PIU secretariat, while the Unit Head takes the role of the Finance member of the PIU. There will be another Finance member assigned in response to the increase in work load. Further, two Technical members and an Environmental and Social Considerations expert are also belonging to the PIU.

Table 58 IDCOL PIU Composition

Positions	Roles	Nominee
Project Director	● Interface with JICA and other international and governmental organisations	1
Manager	● External communications representing the Project ● Decision making and managerial tasks for the Project	1
PIU Secretariat	● Administrations, internal communications and support for institutional decision making ● Preparation of reports	1
Finance	● Responsible for sub-project appraisal and monitoring ● Fund management	2 (*1)
Technical	● Sub-project appraisal and Monitoring from technical aspects ● Technical advisory committee representation ● Capacity development	2 (*2)
Environment & social considerations	● ESMS revision and maintenance ● Sub-project categorization, appraisal, monitoring and reporting	1 (*2)

Note: *1 One staff member will be additionally assigned for the Project

*2 The staff members will be engaged in the Project as well as other tasks of IDCOL.

Source: JICA T/A Task Team recommendation

At BIFFL, The PIU is headed by the Executive Director / CEO as the Project Director. It is the Head of the Sustainable Finance Unit who is playing the role as the Manager for the Project. One another member from the same Unit is functioning as the PIU secretariat, while a different member of the Unit takes care of the finance issue (the finance member is expected to be two in response to the increase of the work load). In addition, there are two technical staffs from the Technical Unit, and an on-house Environmental and Social Considerations officer assigned to the PIU.

Table 59 BIFFL PIU Composition

Positions	Roles	Nominee
Project Director	● Interface with JICA and other international and governmental organisations	1
Manager	● External communications representing the Project ● Decision making and managerial tasks for the Project	1
PIU Secretariat	● Administrations, internal communications and support for institutional decision making ● Preparation of reports	1
Finance	● Responsible for sub-project appraisal and Monitoring ● Fund management	2 (*1)
Technical	● Sub-project appraisal and monitoring from technical aspects ● Technical advisory committee representation ● Capacity development	2 (*2)
Environment & social considerations	● ESMS revision and maintenance ● Sub-project categorization, appraisal, monitoring and reporting	1 (*2)

Note: *1 One staff member will be additionally assigned for the Project

*2 The staff members will be engaged in the Project as well as other tasks of BIFFL.

Source: JICA T/A Task Team recommendation

9-7 Fund Flow Arrangements

Banking Arrangements

Bangladesh Bank will open and maintain a Loan Account on behalf of GoB at MUFG Bank under the Phase 2 Project's name to receive disbursement from JICA. IDCOL and BIFFL will, respectively open and maintain a Designated Bank Account at Bangladesh Bank to receive

disbursement from JICA under the Advance Payment Procedure. Then, upon request from IDCOL and / or BIFFL, the fund money would be transferred to the Phase 2 Project Operating Account maintained respectively by IDCOL and BIFFL under the Project name, at their respective agent banks. Further, upon request from end users for the on-lending loan, the requested amount would be transferred to the end users' account maintained in the end user's agent bank. All these necessary procedures will be undertaken by IDCOL and BIFFL.

Administration of the Bank Accounts under Advance Payment Procedure

For the Category 1 fund (provision of fund to end users), GoB, IDCOL and BIFFL are required to implement the following procedures:

Revolving Fund Account

To ensure that the second and successive generations of the loan from JICA will also be utilized for the Phase 2 Project's objective, IDCOL and BIFFL will each open and maintain the Revolving Fund Account, separately from those of the existing Project. The Revolving Fund Account shall be opened at a scheduled commercial bank which will administer the second and succeeding generations of loans to the end users of each component. IDCOL and BIFFL will submit an annual report on the statement of the Designated Bank Account and the revolving of the proceeds of the Loan to JICA until 50 % of the principal of the original loan amount of the Phase 2 Project is used for the second and successive generations of the loans to the end users.

9-8 Implementation Schedule

Steps to be taken for the start-up and implementation of the Phase 2 Project are listed in the following table:

Table 60 Key Initial Events and Timetable

Items	Timing
Loan Agreement (L/A)	by June 2019
Loan Effectuation	by September 2019
Contract amendments for IFIs consultants to be submitted to JICA for concurrence	by September 2019
Banking arrangements (opening of new bank accounts for the Phase 2 Project)	by October 2019
Signing of Sub Grant Agreements for the Consulting Service Contracts for the Phase 2 Project between FD and IFIs	by October 2019
Reallocation of remaining balance of Category 2 (Consulting Services for IFIs) to Category 1 (Provision of Fund to End Users) under the L/A of the Phase 1 Project	by December 2019
The Approval of New TAPP for Consulting Services of the Phase 2 Project	by January 2022
SREDA's TAPP approval for Phase 2 Project	by January 2022
Selection of Consultant for SREDA	January 2022 - December 2022
Consulting Services for IFIs* ¹	- November 2025
Consulting Services for SREDA	End of the Consulting Service for the Phase 1 Project - November 2025
Provision of Funds to End Users	October 2019 - November 2025
Project Completion Date* ²	November 2025

*1 To ensure smooth implementation of the Phase 2 Project, and also for the sake of integrity with the Phase 1 Project, the consulting services for the executing agencies should also cover the entire Phase 2 Project duration.

*2 Project Completion was defined as (i) the timing of the final disbursement JICA or (ii) the expiry of the L/A period of the Phase 2 Project, whichever comes earlier.

First the signing of the L/A for the Phase 2 Project will be taking place by June 2019. The signed L/A will be effectuated through internal procedure in GoB by September 2019. Soon after the effectuation of the L/A for the Phase 2 Project, (i) banking arrangements (and opening of new bank accounts for the Phase 2 Project) are expected to be complete by October 2019. Also, (ii) the amendments of the contracts for the IFIs' consulting services for the Phase 1 Project will be prepared by each IFI, and will be submitted to JICA for its review and concurrence. Once the subsidiary grant agreements have been signed, the IFIs will be able to amend their consulting services contract to include the Phase 2 Project tasks. By December 2019: The reallocation of remaining balance of Category 2 (Consulting Services for IFIs) to Category 1 (Provision of Fund to End Users) under the L/A of the Phase 1 Project will be proceeded after JICA's concurrence on the contract amendments of each consulting service contract, and before expiry of consulting services for the Phase 1 Project. Meanwhile, SREDA needs to have the New TAPP for the Phase 2 Project consulting service approved by January 2022.

Table 61 Project Implementation Schedule

Implementation Schedule

[illegible]

Source: JICA T/A Task Team

9-9 Implementation Practices

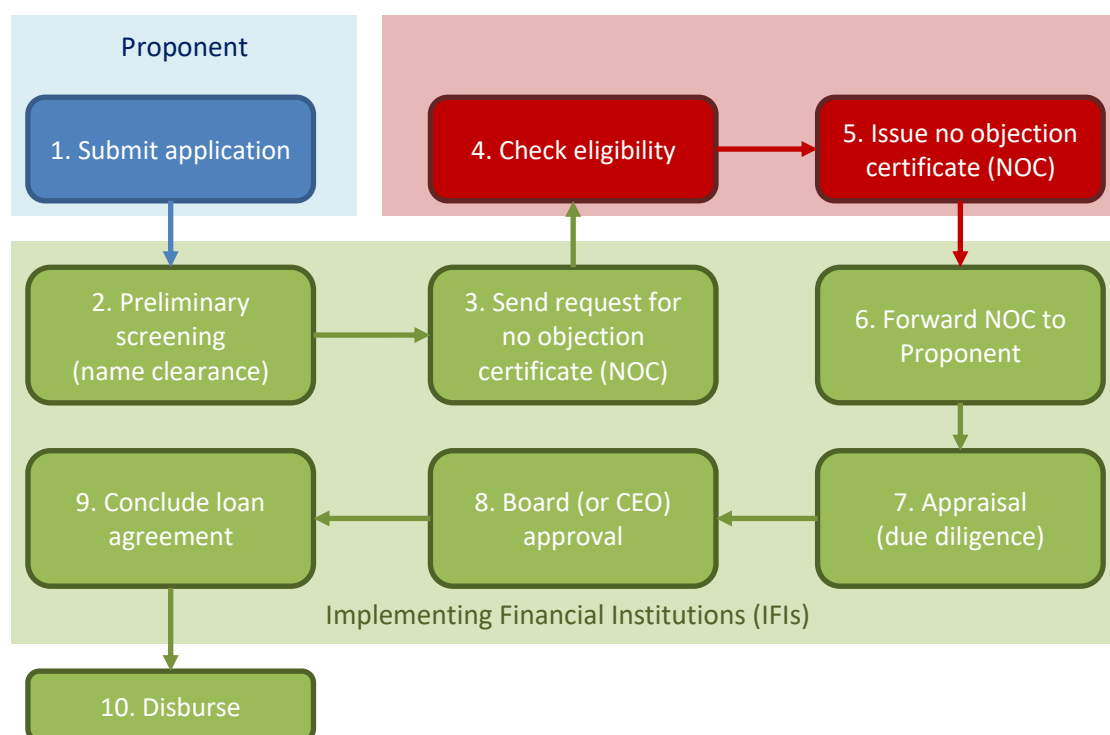
Business Process Manuals and Management Information System (MIS)

In order to administrate the concessional loan scheme in a transparent and timely manner, SREDA, IDCOL and BIFFL will perform the Phase 2 Project business processes in accordance with the Business Process Manuals and on the Management Information System (MIS), which were prepared and shared by SREDA in the existing Project. Any significant changes and consequent issuing of new editions of the Business Process Manuals require review and concurrence as well as approval of JICA.

Appraisal Procedure

The borrowing procedure for end users which will remain the generally the same as in the existing Project. The appraisal procedure is as follows:

- A Proponent submits loan application to an IFI for purchasing and installing EE&C equipment;
- The IFI conducts preliminary screening (name clearance);
- The IFI sends the application to SREDA for eligibility checking;
- SREDA checks the eligibility;
- SREDA issues a No Objection Certificate (NOC);
- The IFI forwards the NOC to the Proponent;
- The IFI to conducts appraisal (due diligence);
- The IFI institutionally approves the loan (Board (or CEO));
- IFI concludes loan agreement with the Proponent (JICA's concurrence is required for the first two sub-projects in each Component before disbursement), and;
- IFI disburses the loan.



Source: JICA T/A Task Team recommendation based on existing Project practices

Figure 34 Appraisal Procedure

The appraisal process at IFIs shall be conducted in line with the Financial Appraisal Manual <Annexes 5,6,7,8 combined>, which is also reflected in the checklist in the Project MIS.

Time Required for Loan Appraisal by Executing Agencies

To maximize the attractiveness of the loan for end users, the loan appraisal process should be completed as following timeline:

- Initial appraisal process in IFIs (From application, preliminary screening to NOC request submission): one month
- Eligibility checking at SREDA (From receiving request for NOC to Issuance of NOC): 7 working days
- Due diligence and documentation (From issuance of NOC to opening of L/C): 6 months

Revision of Eligible EE&C Technology and Equipment List

The current eligible technology and equipment list (the eligibility list) for the existing Project remains valid and will be adopted to the selections of the sub-projects in the Phase 2 Project. The eligibility list, however, may be reviewed in an appropriate and timely manner with regards to the market demand, technology innovation and other factors during the implementation of the Phase 2 Project. For this purpose, contribution from the Technical Advisory Committee (TAC) is essential, therefore, TAC should be established by January 2019 as previously mentioned. It should also be recapped that JICA's review and concurrence is required when revision is being made to the eligibility list.

9-10 Consulting Services for the Executing Agencies

The TORs and resources for the consulting service contracts should be reviewed to reflect necessary adjustment for the smooth implementation of the Phase 2 Project. All three consulting services for each executing agency should continue until the completion date of the Phase 2 Project, which is planned to be in November 2025. The following points are suggested additions to the current TORs for the Phase 2 consulting services:

Consulting Services for SREDA

Prior to the discussion on the Phase 2 Project, SREDA is requested avoid further delay in procurement of the consultants for the existing Project. SREDA's consulting services, in the Minutes of Discussions (M/D) for the existing Project, was stipulated to be selected at least 9 months prior to the completion of the JICA T/A Task Team's assignment (i.e., by January 2018). However, due to the delay in TAPP approval the current plan for selection completion was set at November 2018, which was already 10 months behind from the original plan. It was finally on 27 January that the evaluation result of the proposals was announced, marking the completion of the selection process. SREDA is therefore urged to complete the rest of the procurement process for the existing Project consulting service by January 2019.

It will be after the procurement of the consultants that the issue of contract amendment for accommodating the works for the Phase 2 Project will be discussed. The sequence will be: (i) effectuation of the L/A for the Phase 2 Project, (ii) submission and approval of the new TAPP to include the work scope to cover the whole project period of the Phase 2 Project until November 2025, then, (iii) procurement of the Phase 2 Project consultants (to be completed by December 2022).

Basic idea of TOR for the Phase 2 Project is to terminate whatever work items completed in the existing Project, but continuing the work items which require continued support, and add new items which will be beneficiary for SREDA to further enhance the Project effects. The following table shows that the overall support activities should be discontinued after the completion of the existing Project while capacity development activities should be continued. Further, it is suggested to add support for integration of the Project with the Energy Audit practices and for coordination of data management.

Table 62 SREDA Consulting Services - Comparison and Demarcation between Existing and Phase 2

	Existing	Phase 2
Period	Dec 2018 – Jun 2022 (43 months) (budget calculation 48 months)	Jul 2022 to Nov 2025 (41 months) (budget calculation 36 months)
Major work items	<Fulfilled items> • Support for the overall Project administration • Promotion of EE&C	
	<Continuing items> • Overall monitoring • Support for Technical Advisory Committee • Capacity Development	<Continued items> • Overall monitoring • Support for Technical Advisory Committee • Capacity Development
		<New items> (i) Integrate the Project business process with that of Energy Audit & Management Programme. (ii) Coordinate with other EE&C promotional activities (<i>by other development partners or funds</i>) to bring these activities onto a platform developed during the Project.
Resources	International: 110 (2.3 MM/m) Local: 182 (3.8 MM/m)	International: 48 (1.3 MM/m) Local: 30 (0.8 MM/m) Note: Approximately 50% in MM density compared with the current assignment.
Note	Budgeted under original term Dedicated to existing Project	Budgeted under Phase 2 Project Dedicated to Phase Project 2

Note: MM = person-month

MM/m = person-months / month (resource density)

Source: JICA T/A Task Team recommendation

Based on such idea, the TOR for the consulting service contract for SREDA during the Phase 2 Project will be as per the following table in order to incorporate the reviewing work for guidelines and eligibility criteria and other EE&C promotion activities for the extension period. The most significant change in the TOR is to include work items to support SREDA to sustain the Project effect by integrating the Project activities with other EE&C promotion activities by means of business process harmonisation and integrated data management. The consultant team members (list of professionals) remains unchanged, but because the required person-month resources are minimal, some of the experts' post may be substituted by other members.

Table 63 TOR for Consulting Services for SREDA

Consulting Services for SREDA (2018-2022; 4 years + extension up to November 2025)	
<u>Objectives</u>	
The Phase 2 Project consultancy service will be conducted with the aim to support the sustainability of the Project effect by using the Project infrastructure as a platform for all relevant EE&C promotion activities. Activities to be integrated onto the platform may include interventions by other development partners and also any promotional activities conducted by the industries under the Energy Audit & Management Programme.	
<u>Scope of Services</u>	
The main client will be SREDA. The consultants will nevertheless need to coordinate with IDCOL and BIFFL.	
[1] Monitoring (Continuation from Phase 1)	
The Consultant shall:	
(i) Collect implementation status information from IFIs on regular basis. The Consultants will also conduct an energy audit if necessary for potential sub-projects; (iv) Conduct site visits to every sub-project to gather information on the business operation and energy saving status; (v) Enable SREDA/IDCOL/BIFFL to monitor the Project implementation status through a Project management information system (MIS) and data analysis & statistics handling (DASH) function.	
[2] Reviewing and Improvement (Continuation from Phase 1)	
The Consultant shall extend support to SREDA and the Technical Advisory Committee in:	
(i) Revising the list of Eligible Technology and Equipment <Annex 4>; (ii) Providing technical inputs and guidance for improvement and update of the business process manuals in consultation with the IFIs.	
[3] Capacity Development (Continuation from Phase 1)	
The Consultant shall:	
(i) Facilitate the meeting for SREDA with manufacturers, distributors and users of energy efficient equipment and policy makers on EE&C promotion so that SREDA may deepen its knowledge on the latest EE&C promotion technology and policy, both locally and internationally.	
[4] Ensuring Sustainability	
The Consultant shall:	
(i) Integrate the Project business process with that of Energy Audit & Management Programme to create an all-in-one EE&C promotion activity. The work process will	

be as follows:

- Design a common process for the Project (on-site inspection) and Energy Audit & Management Program (Standard energy audit).
- Refurbish the MIS-DASH (management information system – data analysis & statistics handling) function to accommodate energy audit practice data (to introduce a centralized energy audit reporting environment).
- Establish a common methodology to analyse on-site inspection and energy audit data.

(ii) Coordinate with other EE&C promotional activities to bring these activities onto a platform developed during the Project. The work process will be as follows:

- Establish a forum of EE&C promotion activities with the presence of development partners, industrial associations and EE&C business coalition, among others.
- Consult with the forum to introduce a data reporting rule.
- Develop benchmark and best practice information dissemination interface on existing database (MIS-DASH).
- Introduce, operate and continuously update the database.

Deliverables

The Consultant shall submit the following reports to PIU to report the implementation progress, the issues analysis, and the recommendations for the project. The language of the reports is English. Reporting requirements for consulting services is as follows:

Report	Timing	# of Copies	Remarks
Inception Report	At commencement	10	Including the detailed work plan
Quarterly Progress Report	Every three month	10	Quarterly update
Final Report	End of contract	10	Reporting on Project Completion

Time Schedule

The time schedule for the project can be shown in the following table:

Milestone	Date
Commencement of Project	December 2022
Termination of Project	November 2025

List of Experts

The expectation for the experts to be engaged in the assignment can be described in the list of experts as below:

Experts	Qualification			
	Education	Professional Experience	Language	Regional Experience
<International Professionals>				
Team Leader / Project Management and ICT environment	At least two Master's Degree, one being in engineering another being in policy. Verifiable and internationally recognised project management qualification.	• More than 30 years' of professional working experiences as a consultant; • At least 2 experiences of project management in sustainable energy promotion loan projects; • At least 2 experience of business process manual development in conjunction with ICT system development; • At least 2 experience of ODA Two-step loan projects consulting;	English proficiency in verifiable form (CEFR C2 level)	At least 5 years' experience of sustainable energy development consulting in Bangladesh

Industry finance Expert	Master's degree in economics / finance fields	- More than 10 years' experiences in industry finance sector - At least 2 experiences of ODA Two-step loan project consulting;	English proficiency in verifiable form (CEFR C2 level)	At least 5 years' experience of sustainable energy development consulting in Bangladesh
Energy efficiency expert	Master's degree in energy, electric or mechanical fields	- More than 10 years' experiences in industry sector energy efficiency consulting - At least 2 experiences of ODA Two-step loan project consulting;	English proficiency in verifiable form (CEFR C2 level)	At least 5 years' experience of sustainable energy development consulting in Bangladesh
Capacity development expert	Master's degree or above in development / management fields	- More than 10 years' experiences in consulting - At least 2 experiences of ODA Two-step loan project consulting;	English proficiency in verifiable form (CEFR C2 level)	At least 5 years' experience of sustainable energy development consulting in Bangladesh
<National Professionals>				
Energy efficiency project administrator	MBA and a degree in science	- More than 5 years' experiences in sustainable energy consulting - More than 5 years' experiences in project administration	English proficiency in verifiable form (CEFR C1 level)	N/A
Expert on information and business process management	Master's degree in information management	- More than 5 years' experiences in information technology sector - At least 2 experiences of business process consulting;	English proficiency in verifiable form (CEFR C1 level)	N/A
<u>Possibility of Future Updates</u> The TOR may be updated by SREDA, as necessary, with the consent of JICA.				

Source: JICA T/A Task Team

To conduct the tasks stipulated in the revised TOR, it will be favourable to have the resources with the similar density as with the current TOR allocated. However, it is also required to take into account the maturity of the consulting service after 48 months of professional conduct, so that the density may be reduced even for the same level of service. It was therefore assumed that the Phase 2 Project will be supported with approximately a half of the human resources density in comparison with that of the existing Project. The major portion of the Phase 2 Project consulting will be focused on integration and coordination with other EE&C promotion activities. The rest of the resources will be allocated to continuation of capacity development activities. The required person-month resources are as in the following table:

Table 64 Resources Allocation per Activity and Period for SREDA

Note: top figure=international experts resources bottom figure=local experts resources	Existing	Phase 2
	48m	36m
	Dec-18 to Nov-22	Dec-22 to Nov-25
Plan	12 5	- -
• Assist SC secretariat by setting Project objectives (*)	9 5	- -
• Prepare monitoring framework	3 0	- -
Do	45 44	4 -
• Support for eligibility checking	18 10	4 -
• Assist PIU activities	27 34	- -
Check	29 94	20 12
• Obtain and analyse real project data	11 47	4 4
• Conducting walk-through energy audit	18 47	4 2
• Integrate the Project business process with that of Energy Audit & Management Programme (+)		12 6
Act	24 39	24 18
• Reviewing guidelines and eligibility criteria (#)	6 5	4 4
• OJT and international exposures (#)	15 16	8 7
• Promotion (awareness raising)	3 18	- -
• Coordinate with other EE&C promotional activities to bring these activities onto a platform developed during the Project (+)		12 7
TOTAL	110 182	48 30

Note:

Non-marked items = fulfilled activity items

(#): continued activity items

(+): New activity items

Source: JICA T/A Task Team

Consulting Services for IFIs

Current TORs for both IDCOL and BIFFL cover three major task groups, which are: (1) facilitating implementation, (2) monitoring, and (3) review & improvement. Work items in task groups (1) and (2) are mostly routine operation to support day-to-day Project implementation, while task group (3) review & improvement is a creative business model structuring. After completion of current 6 years' service provision, routine operation support works are most likely to become manageable by local consultants. It will be the (3) review and improvement which will have to be looked after by international consultants on interval basis. In overall, consulting services for IDCOL and BIFFL are expected to be localised, with some creative works continued by the international consultants.

Under the current circumstances and with regards to the competence of the consultants, marketing activities as a promotion of the Project has also become an essential task for the IFIs' consultants. With the maturing of the implementation support activities, the consultants' marketing functions

are anticipated become more and more important to sustain the Project activities. The following table shows the required addition to the TOR for the IFIs' consultants in italic fonts:

Table 65 TOR for Consulting Services for IFIs

Consulting Services for IDCOL and BIFFL (2016/7-2022/3 6 years + <i>extension up to November 2025</i>) <u>Objectives</u> The objectives of the employment of consultant are: to assist in the efficient and effective implementation of the Project through the following tasks: (a) Facilitate the implementation, including planning and management, and (b) Conduct monitoring of the Project, including appraisal of Component I and II sub-projects by engineers and technical experts. <u>Scope of Services</u> The main clients of the services will be IDCOL and BIFFL. [1] Facilitating Implementation <For both IDCOL and BIFFL> Support for IFIs' loan management and administration The Consultant shall: (i) Assist the establishment of Project Implementation Unit (PIU) and its pursuing of financial administration and management in line with JICA's operation policies and guidelines; (ii) Assist the fund planning arrangement for the future operation. (iii) Assist the technical appraisal procedure of sub-project by despatching engineers and technical experts as required; (iv) Assist the financial appraisal procedure of sub-project; (*) (v) Coordinate with the related organizations in sub-project appraisal; and (vi) Assist the establishment and encourage the capacity development of the organization for managing the environment and social considerations. Promotion and public relations of the Project to encourage the application for the loan The Consultant shall: (i) Prepare draft promotion strategy and plan for sub-projects (ii) Assist the PIUs in launching the promotion activities (iii) Communicate with the relevant organizations in public relations <For BIFFL> The Consultant shall assist BIFFL to develop the capacity on corporate finance appraisal method. [2] Monitoring < For both IDCOL and BIFFL> Implementation monitoring The Consultant shall: (i) Assist IFIs in establishing the monitoring framework for financial management including the report forms; (ii) Assist IFIs in monitoring and reporting the overall activities on the Project including the SOP; (iii) Assist IFIs in ensuring that the activities of the PDs and PFIs are compliant with the

- Project requirements;
- (iv) Confirming the technical soundness and appropriateness of the sub-projects. The Consultants will also provide the training on how to conduct walk through and investment grade energy audit;
 - (v) Support IDCOL and BIFFL respectively to conduct site visit/ physical verifications to at least 25% of the total number of the sub-projects for A Type Loan and random physical inspection for B Type, to gather information on the installation, operation and maintenance status and appropriate use of the fund;
 - (vi) Identify issues and propose countermeasures addressing to these issues;
 - (vii) Suggest the effective project management system including monitoring and reporting on the Project (e.g. status of sales/ installation of equipment, status of disbursement, status of operation).

[3] Review and Improvement

- (i) Encourage the IFIs to make use of the profit out of the Project for further promotion of EE&C measures, by means of relevant business development, Research and Development (R&D), awareness raising and any other activities.

[4] Extension Portion

- *Facilitation implementation and Monitoring work items will be continued by a team of local consultants, in reduced number of team members.*
 - *Review and improvement work item will be continued and further enhanced, with the aim to sustain EE&C promotion at the implementing financial institutions. Proposed methodologies are:*
 - *By attracting alternative funding sources (other development partners' funds, private funds, own fund, etc.);*
 - *By enhancing the scope with additionally available funds;*
 - *By introducing variations of lending conditions when using revolving account;*
 - *By integrating the Project loan with any other incentives;*
- This work item will be conducted by a limited number of international consultants and local consultants.*

Deliverables

The Consultant shall submit the following reports to IDCOL and BIFFL to report the implementation progress, the issues analysis, and the recommendations for the project. The language of the reports is English.

Reporting Requirements for Consulting Services

Report	Timing	# of Copies	Remarks
Inception Report	At commencement	10	Including the detailed work plan
Quarterly Progress Report	Every three month	10	Quarterly update
Final Report	End of contract	10	Reporting on Project Completion

The Consultant shall report those matters associated with the project implementation including but not limited to the following:

- (i) Disbursement/ Fund transaction
- (ii) Capacity development activities
- (iii) Monitoring of accounts, physical inspection, and other activities
- (iv) Assistance in energy management and audit
- (v) Assistance for Technical Advisory Committee
- (vi) Reporting matters to JICA
- (vii) Recommendations for project implementation
- (viii) Others

Time Schedule

The time schedule for the services can be shown in the following table.

Expected Time Schedule for Consulting Services

Milestone	Date
Commencement of Services	IDCOL: August 2017, BIFFL: May 2018
Termination of Services	IDCOL: July 2023, BIFFL: April 2024

Extension portion:

Milestone	Date
<i>Commencement of Services</i>	<i>IDCOL: Aug 2023, BIFFL: May 2024</i>
<i>Termination of Services</i>	<i>November 2025</i>

List of Professionals

The expectation for the experts to be engaged in the assignment can be described in the below table.

List of Professionals

Experts	Qualification			
	Education	Professional Experience	Language	Regional Experience
<International Professionals>				
Team Leader / Project Management	Master's Degree or above in related fields	More than 5 years' experiences in consulting / project management	Proficient in writing and speaking	At least 3 experiences of energy or finance related projects in the Region
Financial Management Expert	Bachelor's Degree or above in related fields	More than 3 years' experiences in financial management	Ditto	At least 1 experience of finance related project in the Region.
Industry Expert	Bachelor's Degree or above in related fields	More than 3 years' experiences in industrial production	Ditto	At least 1 experience of industry related project in the Region.
<National Professionals>				
Project Administration	Ditto	More than 1 year experience in consulting	Ditto	
Public Relations	Ditto	More than 1 year experience in consulting	Ditto	

Source: JICA T/A Task Team recommendation

Resources Allocation for IDCOL

IDCOL's consulting service for the existing Project has already started in August 2017, and the contract period will continue until August 2023. Upon the effectuation of the L/A for the Phase 2 Project, the TOR of the consulting service will be amended as per the following table, which incorporates monitoring and reporting functions as mostly routine operation to support day-to-day project implementation for the extension period.

Table 66 Resources Allocation per Activity and Period for IDCOL

Note: top figure=international bottom figure=local	Existing		Phase 2
	Existing L/A	Phase 2 L/A	Phase 2
	26m	46m	28m
	Aug-17 to Sep-19	Oct-19 to Jul-23	Aug-23 to Nov-25
Facilitating implementation	12 12	21 19	0 17
• Business planning	3 1	4 2	0 3
• PIU support (administration, appraisal, reporting)	5 6	7 9	0 5
• Environmental and social considerations	2 2	6 2	0 6
• Promotion and public relations	2 3	4 6	0 3
Monitoring	7 2	13 18	0 13
• Monitoring framework development and reporting	2 0	3 2	0 3
• Compliance checking	3 0	4 2	0 3
• On-site inspection and consultations	2 2	6 15	0 7
Review and Improvement	7 6	12 12	11 4
• Business Development (enhancement) (+)	4 2	6 4	6 2
• Awareness raising (+)	3 4	6 8	5 2
TOTAL	26 20	46 49	11 34

Note: (+) activity items to be continued by international consultants
Source: JICA T/A Task Team

Resources Allocation for BIFFL

The consulting service for BIFFL has already commenced in May 2018, and the existing contract period is until May 2024. The TOR for the consulting service contract for BIFFL will also be amended as per TOR in the previous pages, order to incorporate monitoring and reporting functions as mostly routine operation to support day-to-day project implementation for the extension period. The allocation of resources by task items and periods are as in the following table:

Table 67 Resources Allocation per Activity and Period for BIFFL

Note: top figure=international bottom figure=local	Existing		Phase 2
	Existing L/A	Phase 2 L/A	Phase 2
	17m	55m	19m
	May-18 to Sep-19	Oct-19 to Apr-24	May-24 to Nov-25
Facilitating implementation	7 9	25 22	0 12
• Business planning	2 1	5 2	0 1

• PIU support (administration, appraisal, reporting)	3 5	8 10	0 4
• Environmental and social considerations	1 1	7 3	0 5
• Promotion and public relations	1 2	5 7	0 2
Monitoring	5 2	16 19	0 9
• Monitoring framework development and reporting	2 0	4 2	0 2
• Compliance checking	2 0	5 2	0 2
• On-site inspection and consultations	1 2	7 15	0 5
Review and Improvement	5 4	14 13	8 2
• Business Development (enhancement) (+)	3 1	7 5	5 1
• Awareness raising (+)	2 3	7 8	3 1
TOTAL	17 15	55 54	8 23

Note: (+) activity items to be continued by international consultants
Source: JICA T/A Task Team

9-11 Environmental and Social Considerations

The Phase 2 Project will be categorized as “FI” under JICA Guidelines for Environmental and Social Considerations (April 2010) (hereinafter the “JICA Guidelines”), because none of the sub-projects within the Phase 2 Project will involve land acquisition, resettlement, sensitive sectors, characteristics, and areas, and will have negative environmental and social impacts. The end users shall assure that the loan activities are pursuant to Bangladesh law and the JICA Guidelines. The On-Lending Loans will not be used for any sub project categorized as Category “A” under the JICA Guidelines (Environmental categorisation is as in the <Annex 34 Notes>.

A stipulation has been added in the Phase 2 Project that the IFIs should assess the environmental and social considerations aspect of all application during due diligence process. This stipulation will ensure that all applications will be reviewed not only during the Environmental and Social Performance Report (ESPR) preparation but also before receiving approval, at the due diligence process.⁷

The Environmental and Social Safeguards Framework (ESSF) of IDCOL and the Environmental and Social Monitoring Framework (ESMF) of BIFFL were found adequate in the light of the standard JICA requires as the Environmental and Social Management Systems (ESMS). However, in case of an ESMS (IDCOL’s ESSF and BIFFL’s ESMF) does not function adequately, a modification plan shall be proposed and agreed between IDCOL / BIFFL and JICA. Further, JICA may disclose whole or a part of monitoring results on JICA Web Page and may disclose additional information, when requested by third parties.

Both IDCOL and BIFFL shall implement the ESMS checklists <Annex 39> at least once a year during the implementation of the Phase 2 Project. IDCOL and BIFFL, in accordance with the ESMS checklist, will respectively maintain a unit which is responsible for the Environmental and Social Considerations for the Phase 2 Project, as in the existing Project.

⁷ This requirement for environmental and social considerations assessment is already mentioned in the financial appraisal manual <Annexes 5, 6, 7, 8 combined>, but was not clearly stipulated in the business process manuals for the existing Project.

The selection of the sub-projects is made based on the Eligible Technologies and Equipment List (eligibility list) which may be revised during the project implementation. The current eligibility list does not contain equipment that may cause a sub-project under the Phase 2 Project to be categorised as “A”. If a sub-project in the Phase 2 Project is categorised as category “B”, stakeholders’ consultation meetings need to be held as necessary, and an environmental impact assessment or an initial environmental examination in accordance with ESMS framework of each IFI should be implemented.

SREDA will consider environmental and social aspects of the project in accordance with JICA Guidelines for environmental and social considerations whenever revising the eligibility list in consultation with Technical Advisory Committee (TAC).

IDCOL and BIFFL will submit to JICA the filled Environmental and Social Performance Report (ESPR) <Annex 34> regarding its ESMS implementation quarterly until 2 years after the completion of the Phase 2 project.

9-12 Monitoring, Evaluation and Reporting

Operation and Effect Indicators

The Operation and effect indicators for the Phase 2 Project are identical to those of the existing Project, and are as in the following table:

Table 68 Operation and Effect Indicators

Indicator		Baseline (actual figure in CY 2019)	Target (CY 2026) [Two years after the Phase 2 Project completion]
Output			
Number of sub-project approved and extended	Count	-	
Amount of sub-project approval and lending	%	-	Entire loan amount extended
Rate of receivables in arrear (amount basis)	%		To be set upon the Phase 2 Project commencement
Rate of receivables in arrear (count basis)	%		To be set upon the Phase 2 Project commencement
Energy Efficiency			
Total energy saved	toe		To be set upon completion of disbursement
Emissions reduction	t-CO2		To be set upon completion of disbursement

Source: Phase 1 Project Indicators

Reporting by Executing Agencies and End Users

SREDA will prepare and submit to JICA, a Quarterly Progress Report (QPR) on quarterly basis, among which one in a year will also be an Annual Report (AR). Both QPR and AR should include the Project Status Report (PSR). QPR and AR will be comprised of reports submitted from IDCOL and BIFFL, including the implementation status reports, including the component-wise application, appraisal, due diligence, sanction, documentation and disbursement processes to identify any bottleneck for the Project implementation. The reporting format for this purpose is as in <Annex 38>.

IDCOL and BIFFL will conduct on-site physical inspection for at least 25% of total loan cases, and submit SREDA On-site Physical Inspection Report quarterly on Management Information System (MIS), with the format as in <Annex 32>.

Furthermore, IDCOL and BIFFL will prepare Ongoing Sub-project Summary and Financial Report in accordance with <Annex 367>, to be submitted directly to JICA, or to be included in each QPR.

End users are required to submit SREDA the EE&C equipment data with <Annex 33> immediately after the installation of the energy efficient equipment. The end users are also required to submit the documents and evidences on purchasing and installing EE&C equipment to IFIs as in <Annex 31>.

SREDA, apart from periodical reporting obligations, will share the implementation status information to JICA, whenever requested. The requirements for the project monitoring is as in the “Summary List of Monitoring Reports by Stakeholder and Timing”, which is as in Table 71 in this section.

Audit Requirement

Under the Statement of Expenditure (SOE) method, records and accounts related to expenditures financed from JICA Loan will be audited annually by an independent auditor to be appointed and employed by IDCOL and BIFFL respectively at its own cost and the audit report needs to be furnished to JICA annually within 9 months after the end of each fiscal year. IDCOL and BIFFL will submit an auditor engagement letter to JICA.

Quarterly Progress Report and Annual Report

With reference to the above-mentioned reporting requirements by the Executing Agencies and End Users, the QPR will include the followings report elements:

Table 69 Quarterly Progress Report (QPR) Elements

Name	Format
Project Status Report	JICA PSR format
Time-bound Action Plan	As in this report
On site Physical Inspection Report	<Annex 32>
Appraisal Process Status Report	<Annex 38>
Anti-corruption Monitoring Sheet	<Annex 35>
On-going Sub-Project Summary Report	<Annex 367>
Environmental and Social Performance Report (ESPR)	<Annex 34>

Source: JICA T/A Task Team proposal

The Annual Reports should contain all of the QPR elements as well as the additional reporting elements as listed in the following table:

Table 70 Additional Elements Required for Annual Reports

Name	Condition	Format
Statement of the Designated Account, Sub Account and the Revolving Fund Account of the proceeds of the Loan	To be submitted to JICA annually within 6 months after the end of each fiscal year, i.e. by December of each year until 50 % of the principal of the original loan amount are used for the second and successive generations of the loans to end users.	<Annex 40>
Current repayment and Overdue Status Report		<Annex 41>
The Project Completion Report	To be compiled and submitted to JICA not later than 6 months after all project activities have been completed.	Not specified
Certified Audit Report on Statements of Expenditures and internal audit report	will be submitted to JICA annually within 9 months after the end of each fiscal year.	<Annex 42> (as a reference format)

Source: JICA T/A Task Team suggestion

As the consequence, information submission requirement summarised by stakeholders (SREDA, IDCOL, BIFFL and the end users) by implementation timing will be as in the following table.

Table 71 Summary List of Monitoring Reports by Stakeholder and Timing

Prepared by	On Event	Commencement	Monthly	Quarterly	Annually
SREDA	Request Letter for discussion in case of technical issue (to TAC) No fixed format Request Letter for extraordinary meeting on exceptional occasions (to SC) No fixed format			QPR with PSR format including IFIs' portions with the following attachments: Environmental and Social Performance Report (ESPR) <Annex 34>, Time-bound Action Plan (section 9-14 of this report), Anti-corruption monitoring sheet <Annex 35>, On-site Physical Inspection Report (for more than 25% of the on-going sub-projects) <Annex 32>.	Annual report which includes the following attachments onto QPR: ESMS Checklist <Annex 39>, Statement of the Designated Account, Sub Account and the Revolving Fund Account <Annex 40> Current repayment and Overdue status Report <Annex 41>.
IDCOL/BIFFL	Incident report on any overdue by sub-project owners (free format)			Inputs for QPR with PSR format with the following attachments shall be submitted to SREDA: Environmental and Social Performance Report (ESPR) <Annex 34> on MIS, Time-bound Action Plan (section 9-14 of this report), Anti-corruption monitoring sheet <Annex 35>. On-site Physical Inspection Report (for more than 25% of the on-going sub-projects) <Annex 32> on MIS. Ongoing Sub-projects Summary and Financial Report <Annex 367> can be submitted either in QPR or directly from the IFIs to JICA.	Inputs for Annual report to SREDA, including the following attachments onto QPR: ESMS Checklist <Annex 39>, Statement of the Designated Account, Sub Account and the Revolving Fund Account <Annex 40> Current repayment and Overdue status Report <Annex 41>, and Certified Audit Report on Statement of Expenditures and Audit Report <Annex 42>.
End Users (Sub-project owners)	Cooperation including data and information required during inspection and energy audit.	(After disbursement) Documents and evidences on purchasing and installing EE&C equipment (on MIS)		Energy efficiency related data form <Annex 33> on MIS	Financial Statement (to IFIs) No fixed format

Source: JICA T/A Task Team suggestion

It should also be noted that JICA may disclose whole or a part of the monitoring results submitted from the Executing Agencies. JICA may further disclose additional information when requested from the third parties, subject to approval of the executing agencies respectively.

Evaluation by JICA

JICA will conduct the following evaluations

- Ex-ante project evaluation:
The evaluation result will be compiled as the “Ex-Ante Project Evaluation Report” and will be published soon after the signing of the L/A, and;
- Ex-post evaluation:
The evaluation will be conducted 2 years after the completion of the Project to assess the relevance, effectiveness, efficiency, impact, and sustainability. The Executing Agencies shall submit necessary evaluation results including operation and effect indicators along with data used for calculation at the timing of ex-post evaluation.

9-13 Project Cost Information

The total project cost of the Phase 2 Project is estimated as JPY 22,074 million, out of which JPY 20,076 million will be financed by JICA, while JPY 1,998 million to be borne by the Government of Bangladesh. The final project cost and the loan amount will be decided upon the approval by the Government of Japan.

Table 72 Project Cost Breakdown

Breakdown of Cost	Foreign Currency Portion (million JPY)			Local Currency Portion (million JPY)			Amount (million JPY)		
	Total Cost	JICA Portion	Others	Total Cost	JICA Portion	Others	Total Cost	JICA Portion	Others
Provision of Fund to End Users	19,000	19,000	0	0	0	0	19,000	19,000	0
Sub Total	19,000	19,000	0	0	0	0	19,000	19,000	0
Price Escalation	0	0	0	0	0	0	0	0	0
Physical Contingency	0	0	0	0	0	0	0	0	0
Consulting Services	871	871	0	205	205	0	1,076	1,076	0
Interest during Construction	664	0	664	0	0	0	664	0	664
Front End Fee	40	0	40	0	0	0	40	0	40
Land Acquisition	0	0	0	0	0	0	0	0	0
Administration Cost	0	0	0	1,004	0	1,004	1,004	0	1,004
VAT	0	0	0	161	0	161	161	0	161
Import Tax	0	0	0	0	0	0	0	0	0
Other Taxes	0	0	0	129	0	129	129	0	129
Total	20,575	19,871	704	1,499	205	1,294	22,074	20,076	1,998

Notes:

1. Exchange Rate: US\$ 1 = BDT 83.9= ¥ 113 (BDT1 = ¥ 1.35)
2. Base Year for Cost Estimation: November 2018
3. The figures are rounded-off that causes numerical errors by less than 1 million yen in the above table.

Source: JICA T/A Task Team cost estimation

The potential market demands of energy efficient equipment, mostly under eligibility criteria of the Phase 2 Project (identical to those of the existing Project) is approximately USD 3 billion for the next 4 years. The estimation is based on market size data prepared by the T/A Task Team. The data is the reinforced version of the datasets used in the EE&C Master Plan up to 2030. It was because the fund in the existing Project is not sufficient to meet the market demand that the Executing Agencies desperately requested for further fund. The above-mentioned fund amount for the Phase 2 Project will neither suffice the market demand and therefore further funding requirement still remains.

Table 73 Project Cost by Fiscal Year

Breakdown of Cost	Total	JICA Portion	Others
2019	913	813	100
2020	3,483	3,241	242
2021	3,512	3,241	271
2022	3,570	3,263	307
2023	3,642	3,295	347
2024	3,641	3,272	369
2025	3,313	2,951	362
Total	22,074	20,076	1,998

Note: Exchange Rate: US\$ 1 = BDT 83.9= ¥ 113 (BDT1 = ¥ 1.35)

* The figures are rounded-off that causes numerical errors by less than 1 million yen in the above table

** Total cost of the entire project

*** Fiscal Year starting in April and ending in March

**** Base Year for Cost Estimation: November 2018

Source: JICA T/A Task Team cost estimation

9-14 Time-bound Action Plan

Having clarified the remaining issued to be tackled for the realisation of the Phase 2 Project, required actions to be taken as the preparation for the full-fledged implementation of the Phase 2 Project will be as listed in the following table (time-bound action plan). Two major issued requiring urgent action are: (i) formulation of two committees, (SC and TAC), as well as the procurement of SREDA's consultants for the exiting Project.

Table 74 Time-bound Action Plan

No.	Area	Agreed action	Responsible agency	Target date
1	Project Steering Committee (SC)	To formulate the SC and to nominate the members	Power Division SREDA	December 2018
2	Technical Advisory Committee (TAC)	To formulate the TAC to nominate the members	SREDA	January 2019
3	Consulting Services	The consulting services for SREDA will be procured by December 2018	SREDA	December 2018

No.	Area	Agreed action	Responsible agency	Target date
4		To amend of the contracts for the consulting services of the Phase 1 Project to incorporate any changes for Phase 2 Project	IDCOL BIFFL	October 2019 (After the effectuation of the L/A of the Phase 2 Project)
5		To request to JICA to reallocate the remaining balance of Category 2 (Consulting Services for Executing Agencies) to Category 1 (Provision of Fund to End users) of the Phase 1 Project L/A	IDCOL BIFFL through ERD	October 2019 (After the JICA's concurrence on the contract amendment of the Phase 1 Project)
6		To obtain the approval of new TAPP by the Planning Commission for the Consulting Service contract for the remaining period of the Phase 2 Project after December 2022	SREDA	January 2022
7	Sub-Loan Agreement	To conclude the amendment of the sub-loan agreement between the MOF and the IFIs for the reallocated amount of the Phase 1 Project L/A	IDCOL BIFFL	October 2019 (After JICA's concurrence on the reallocation)
8		To conclude the sub-loan agreement between the MOF and the IFIs for the Phase 2 Project L/A	IDCOL BIFFL	October 2019 (After JICA's concurrence on the reallocation)
9	PIU	To assign the additional members (data management including ICT environment development at SREDA, technical and finance positions of BIFFL and IDCOL) for the Phase 2 Project	IDCOL BIFFL	June, 2019 (by the signing of the L/A of the Phase 2)
10	Sub Grant Agreement	To conclude Sub Grant Agreements for the Consulting Service Contracts for the Phase 2 Project between FD and IFIs.	FD IDCOL BIFFL	October 2019

Source: JICA T/A Task Team

10 Annexes to Phase 2 Project

This chapter contains the annexes to the Phase 2 Project formulation document (Chapter 9). The annexes are numbered to be in line with the annexes to the existing Phase 1 Project's Business Process Manuals. As the Business Process Manuals are going to be utilised commonly for the existing and the Phase 2 Projects, the stipulations in the following annexes must be reflected in the existing Project at the time of starting of the Phase 2 Project.

10-1 Annex 4: Eligible Technologies and Equipment Lists

Methodologies to define eligible technologies and equipment

In Bangladesh, nearly 50 % of national primary energy is consumed in industry sector. Industry sector is the priority sector where EE&C measures should be addressed. Another focus is the building sector. However, the primary energy consumed in building sector is only around 5%. Nevertheless, the annual growth in energy consumption in buildings is almost twice of those in industry and residential sectors. The building sector therefore cannot be neglected as the priority target for EE&C promotion.

With respect to the need to prioritize industry residential and buildings sectors, the target fields of technologies and equipment as the sub-projects in JICA Energy Efficiency and Conservation Promotion Financing Project are defined as follows:

- 1) Industry (50% of national primary energy): addressing to Component I
- 2) Residence (30%): addressing to Component III
- 3) Building (5%, increasing rapidly): addressing to Component II

Eligible technologies and equipment in Component I

The striking characteristic of industry sector in Bangladesh is that the textile and garment sub-sector comprises a significant portion of the whole sector. From the viewpoint of energy consumption, the characteristics in that waste heat recovery is hardly practiced. Considering such existing market condition, the following technologies are selected as the eligible technologies to promote EE&C measures:

Table 75 Eligible Technologies and Equipments in Component I

No	Sub-sector and items	Specification/ Production Capacity	Energy source
I	Industry / Commercial Sector		
1	Chemical fertilizer		
1.1	Heat exchanger replacement of urea fertilizer plant	Heat exchanger (waste heat recovery system), whose capacity is equal to 10,000 kJ/h or more	Gas
2	Paper & pulp		
2.1	Black liquor boiler	Boiler which burns black liquor and recovers agents such as soda	Gas
2.2	De-inking plant	50 TPD or more	Gas

No	Sub-sector and items	Specification/ Production Capacity	Energy source
3 Textile and garment			
3.1	Spinning machine	(1) Roving frames with pneuma-less waste collection system (2) Ring spinning frames with permanent magnet motor (3) Automatic winder with balloon controller Air jet spinning	Electricity
3.2	Loom (weaving machine) and warper & sizer	(1) Air-jet loom with technology for reducing both air consumption and air pressure. (2) Warper & sizer with inverter control (motor should meet the standard which is stipulated in item 9.7.1).	Electricity
3.3	Sewing machine	Sewing machine driven by directly connected motor. Main driving motor type is to be a servomotor (motor should meet the standard which is stipulated in item 9.7.1)	Electricity
3.4	Stenter	Stenter controlled by inverter, whose air volume and width of nozzle are adjustable.	Gas & Electricity
3.5	Heat exchanger	Heat exchanger (waste heat recovery system), whose capacity is equal to 10,000 kJ/h or more.	Gas
4 Glass			
4.1	Combustion control of glass melting furnace	Combustion control unit controlled by air ratio in exhaust gas.	Gas
5 Cement & Clinker grinding			
5.1	Vertical roller grinding mill for cement clinker and slag	A mill is to be equipped with main rollers for grinding materials and sub-rollers for stabilizing materials. Having delivery record of mill with power consumption of less than 29 kWh/ton (mill + separator + fan) at 3,300 cm ² /g OPC basis.	Electricity
5.2	Vertical roller grinding mill for pre-grinding	Having delivery record of mill facility with power consumption of less than 33kWh/ton (pre-grinding mill + ball mill + separator + fan) at 3,300 cm ² /g OPC basis.	Electricity
6 Iron & steel (rerolling mills)			
6.1	Induction furnace	Induction furnace	Gas
6.2	Combustion control unit of reheating furnace	Combustion control unit controlled by air ratio in exhaust gas	Gas

No	Sub-sector and items	Specification/ Production Capacity	Energy source
7	Foods and beverages (cold storage)		
7.1	Screw compressor refrigeration unit	Screw compressor with motor whose capacity is equal to 10 kW or more, including chiller, condensing unit, and cold storage capital machineries (Insulation panel, cooling tower, control panel, pumps, and pressure vessels) COP $\geq$ 4.0 @ +3°C (e.g. potato cold storage) COP $\geq$ 1.9 @ -25°C (e.g. cold storage in general) COP $\geq$ 1.4 @ -35°C (e.g. cold storage in general) COP $\geq$ 1.1 @ -40°C (e.g. ice cream factory)	Electricity
8	Telecommunication		
8.1	Lithium ion battery	When replacing lead/acid battery + captive power generation combination to lithium ion battery	Electricity
9	Common technology		
9.1	Power receiving and distribution		
9.1.1	Transformer	Transformer with amorphous metal core	Electricity
9.2	Water pump		
9.2.1	Pump with inverter	Pump with inverter control, whose motor output is 10 kW or more (motor should meet the standard which is stipulated in item 9.7.1).	Electricity
9.3	Fan and blower		
9.3.1	Fan and blower with Inverter	Fan and blower with inverter control, whose motor output is 10 kW or more (motor should meet the standard which is stipulated in item 9.7.1)	Electricity
9.4	Air compressor		
9.4.1	Air compressor	(1) Screw compressor with inverter control, or (2) centrifugal compressor, whose motor output is 10 kW or more.	Electricity
9.4.2	Multi air compressor control unit	As above, and numbers of air compressor is 2 sets or more, equipped with an optimum control system.	Electricity
9.5	Inverter		

No	Sub-sector and items	Specification/ Production Capacity	Energy source
9.5.1	Inverter	Inverter whose connected motor output is 10 kW or more.	Electricity
9.6	Boiler and steam system		
9.6.1	Once-through steam boiler	Steam generation capacity is between 1 ton/h to 4 ton/h. Boiler efficiency is to be 90% or more at rated load.	Gas
9.6.2	Multiple installation system of once-through steam boilers	Steam generating capacity of a single boiler is from 1 ton/h to 4 ton/h. Efficiency of a single boiler is to be 90% or more at rated load and the efficiency of total system is to be 80 % or more at 50% load. Total steam generating capacity is 2 ton /h or more by multiple numbers of boilers.	Gas
9.6.3	Economizer for boiler	Exhaust gas economizer	Gas
9.7	Motor		
9.7.1	Motor	Efficiency is IE2 or IE3 specified in IEC 60034	Electricity
9.8	Air conditioner		
9.8.1	Air conditioner	1) Centrifugal chiller; 2) Absorption chiller; 3) Variable Refrigerant Flow (VRF) air conditioner whose COP is 4.2 or more; 4) Air cooled chiller, whose COP is 3.0 or more, without using R22 or R123; 5) Water cooled chiller, whose COP is 4.0 or more, without using R22 or R123.	Electricity
9.9	Heat pump		
9.9.1	CO2 Heat pump	Motor Capacity is 10 kW or more COP $\geq$ 3.5 (Hot water supply : heat source=air) COP $\geq$ 5.0 (Cooling + Heating supply)	Electricity
9.10	Lighting		
9.10.1	LED lamp	LED lamp with 100 lm/W or more, life time: 40,000 hours or more, number of lamps is 500 or more, and with LED patent license certificate.	Electricity
9.11	Co-generation, tri-generation		

No	Sub-sector and items	Specification/ Production Capacity	Energy source
9.11.1	Gas engine	Conversion from existing gas engine power generation to gas engine co-generation / tri-generation by utilizing waste heat, whose total rated thermal efficiency is more than 60%. Maximum capacity per sub-project is 10 MW.	Gas
9.11.2	Gas turbine	Gas turbine co-generation / tri-generation, whose total rated thermal efficiency is more than 80%. Maximum capacity per sub-project is 10 MW.	Gas
9.12	Waste heat recovery		
9.12.1	Once-through steam boiler	Once-through boiler with automatic gas bypass device	Gas
9.12.2	Waste heat recovery system	Exhausted heat recovery system, whose capacity is equal to 10,000 kJ/h or more.	Gas

Note:

COP: Coefficient of Performance

IEC: International Electrotechnical Commission

LED: Light Emitting Diode

OPC: Ordinary Portland Cement

Note: Fuel oils may apply as the energy source in lieu of gas in some of the cases.

Source: Phase 1 Project Business Process Manuals

Eligible technologies and equipment in Component II

SREDA plans to establish its original and indigenous Green Building Rating Programme by 2017. With the aim to encourage the development of high rated green buildings in this programme, those rated as energy efficient in this programme should be set as eligible target as sub-projects.

Eligible buildings, prior to the introduction of SREDA's new Green Building Rating Programme will not be stipulated. It will be when SREDA's new Green Building Rating Programme is officially launched (either by regulation or guidelines approved by SREDA) that the programme criteria will be deemed as the eligibility criteria in the Project. Target rating will be set by SREDA with respect to the recommendation from the Technical Advisory Committee, and should be authorised by JICA. Eligible technologies and equipment for Green Building are as follows:

Table 76 Eligible technologies and equipment in Component II

No	Items	Specification	Energy source
II	Building sector (Priority will be given to green buildings)		
1	Heat reflective glass	Low-e pair glass and solar reflective glass (solar heat reflective ratio is 50% or more)	Electricity
2	Elevator	Elevator with PM motor and LED lighting	Electricity
3	BEMS	BEMS, which visualizes a real time energy consumption of the building and controls energy consumption for air conditioning and lighting	Electricity

No	Items	Specification	Energy source
4	Others	Equipment listed in Component I and III are also eligible	-

Note:

PM: Permanent Magnet

LED: Light Emitting Diode

BEMS: Building Energy Management System

Source: Phase 1 Project Business Process Manuals

Eligible technologies and equipment in Component III

In Energy Efficiency & Conservation Master Plan Project, it was observed that lightings, ceiling fans, TVs, refrigerators and air conditioners are major appliances consume a significant amount of electricity in residential sector. In response to this notion, SREDA has a plan to establish an Energy Star Labelling Programme mainly for home appliances. Ultimately, the eligible technologies and equipment will be defined in line with this programme.

As the first stage of the Project, eligible appliances will be air conditioners (split type) and refrigerators, for the following reasons: (i) there are clear technical characteristics that segregates energy saving models as opposed to the conventional types; (ii) energy efficient models are readily available in the market, but not being penetrated; (iii) these are the likely equipment to be purchased on installment payment. The target appliances may be increased eventually as necessary. Those rated as 3, 4 or 5 star in the programme will be the eligible equipment.

Prior to the introduction of the Energy Star Labelling Programme, the eligibility will be based on technology. Those equipment with inverter control will be deemed as the targets of eligible technologies and equipment. With the introduction of SREDA's Energy Efficiency Labelling Programme, the criteria will be more performance oriented, to be based on star accreditation.

Table 77 Eligible technologies and equipment (home appliances) in Component III

No	Home Appliance	Specification	Energy source
III	Residential sector		
1	Refrigerator	Inverter controlled (energy efficiency label: 3 stars or more, when the programme is established)	Electricity
2	Air conditioner	Inverter controlled (energy efficiency label: 3 stars or more, when the programme is established)	Electricity
3	Others	Further additions are expected in accordance with the establishment of energy efficiency labelling programme	-

Source: Phase 1 Project Business Process Manuals

*Whatever the equipment, sub-project proposal which may have negative effect from the viewpoint of environmental and social considerations (i.e., those categorized at "A" under JICA guidelines) shall NOT be financed under this Project.

10-2 Annex 5, 6, 7, 8, 9 Combined: Financial Appraisal Manual

1. Loan Procedure

The preliminary selection is conducted using CIB (Credit Information Report), Credit Rating Report (if available), Financial Statements and the application form including the project proposal. If all check points are cleared, the proposal then goes to the technical and financial appraisal stage.

	Check Point
CIB Report	(a)No Classification (b)No Any other problems
Credit Rating Report	Equivalent to BB or BB+ or higher as the rating could vary from one credit rating company to another
Financial statement	(a)The business results should show a profit for the latest 2 years at least. (b)Even if the above condition (a) is not fulfilled, there is a promising prospect of business profitability for the coming years.

Loan approval (including preliminary approval) should be decided by the following body.

(a) IDCOL

Loan amount	Approving body
Up to 100 million BDT	Management (CEO)
In excess of 100 million BDT	Board of Directors

If the total amount approved by the Management (CEO) for consecutive 3 months exceeds 500Million BDT, any additional loans need authorization by the Board.

(b) BIFFL

Loan amount	Approving body
Up to 500 million BDT	Executive Board
In excess of 500 million BDT	Board of Directors

2. Due Diligence

2.1. Types of Due Diligence

There are two types of due diligence: simple type and general type. The type of due diligence is determined based on the following criteria. However, IDCOL/BIFFL may change type of due diligence by their decision.

	Simple	General
Loan Amount	Up to 100 million BDT	In excess of 100 million BDT

2.2 Documents Required for Due Diligence

The following documents are required for due diligence and additional documents may be required if it is deemed to be necessary.

- (1) History of business, certified copy of the articles of association, certificate of incorporation, license for business and other qualifications such as ISO if any.
- (2) List and profile (including experience) of each director and an organogram.
- (3) List of main products; processing chart; marketing channels.
- (4) Sales amount of each product for the past 3 years (for existing businesses), or projected data; Sales amount to each client for the past 3 years (for existing businesses), or projected data.
- (5) Financial Statements, cash flow statement and cost accounting statement for 3years for existing company.
- (6) Debt exposure of the company with any banks or financial institution (or declaration of having no borrowing).
- (7) Plan for investment [investing amount; fund raising plan (debt; equity); subjects for investment (plant and/or machinery); purpose; quotations for the planned plant and/or

-
-
- machinery];
Procurement and installation plan.
- (8) Business plan: projected turnover, profit, effect of investment (including energy saving effects), and cash flow.
- (9) Security related documents (collateral and / or guarantee).
- (10) Any additional document.

2.3 Credit Report Elements

General Due Diligence

A credit report for general due diligence contains the following items:

- (1) History of business and change of the senior executives (and ownerships)
- (2) Senior executives (or owners/sponsors) and their strength and weaknesses
- (3) Main products and the situation of the relevant industry:
 - Position in the industry and the changing nature of the industry, if any
 - Special characteristics of the proponent's products
- (4) Production and marketing;
 - Compliance situation to the statutory regulations and environmental & social considerations concerning the existing plants and equipment and also planned plants and equipment
 - The subject technology for introduction and its technical stability
 - Special characteristics and advantages of the product value chain from production to marketing
 - Production efficiency and pending issues (human productivity, yield of raw materials and machine productivity)
 - Production cost reduction measures
 - Strength and weaknesses of the products in the market and with individual customers
 - Competition situation
- (5) Profitability;
 - Profitability analysis of last 3 years' profit and loss statement
 - Changes of turnover and profit and the factors of change
 - Changes of the gross profit margin and net profit before depreciation and tax and their reasons
 - Comparison with the industry's average
- (6) Soundness and sustainability of finance;
 - Analysis of last 3 years' balance sheets
 - Financial indicator analysis: debt to equity ratio and debt service coverage ratio
 - Analysis of last 3 years' cash flow statements
 - Quality fund raising capability
- (7) Repayment capacity;
 - Evaluation of the income and profit plan
 - Profits from the existing businesses
 - Income generation effect from the planned investment including cost reduction through energy saving
 - Evaluation of the planned cash flow
 - Repayment capacity during the repayment period
 - Risk matrix analysis and measures to cope with risks
 - Prospect of the debt service coverage ratio enhancement and FIRR
 - Value of collateral and the coverage ratio against the loan amount

Simple Due Diligence

A credit report for simple due diligence contains the following items:

- (1) Senior executives (or owners / sponsors) and their strength and weaknesses
 - (2) Main products and the situation of the relevant industry;
 - Special characteristics of the proponent's products
 - (3) Production and marketing analysis;
-
-

- Compliance situation to the statutory regulations concerning the existing plants and equipment and also planned plants and equipment
- The subject technology for introduction and its technical stability
- Strength and weaknesses of the products in the market and with individual customers
- (4) Profitability;
 - Analysis of last 3 years' profit and loss statements
 - Changes of turnover and profit and the factors of changes
 - Changes of the gross profit margin and net profit before depreciation and tax and their reasons
- (5) Soundness and sustainability analysis;
 - Analysis of last 3 years' balance sheets
 - Change in shareholder's equity and debt and their reasons
 - Financial indicator analysis: debt to equity ratio and debt service coverage ratio
 - Analysis of last 3 years' cash flow statements
 - Quality fund raising capability
- (6) Repayment capacity analysis;
 - Evaluation of the income and profit plan
 - Profits from the existing businesses
 - Income generation effect from the planned investment (including cost reduction through energy saving)
 - Prospect of the debt service coverage ratio enhancement and FIRR
 - Value of collateral and the coverage ratio against the loan amount

3. Loan Approval Criteria

The elements to be considered to approve a loan and the approval criteria are listed below.

No	Elements	Criteria
1	History and change of business	-No records of past default -No classification into the possible bad debt category by banks -Positive changes of the overall business performance and products
2	Senior executives (or owners sponsors) and their strength and weaknesses	-Satisfactory business management ability -Stable relation among senior executives (or owners sponsors)
3	Main products and the industry	-Possesses some superior products in the industry -Positive prospect of the industry
4	Production and marketing	-Satisfactory production and marketing strategies -Rational production process -Sufficient production capacity for each product -High productivity level regarding; - Output per worker - Yield of raw materials - Output per principal machine -Satisfactory worker attendance rate -Satisfactory understanding of the need for energy saving and willingness to improve energy efficiency -High energy saving efficiency of the planned project
5	Compliance to statutory regulations and nature of the subject technology for introduction	-Compliance of the existing and planned facilities and equipment to the relevant national laws and regulations -Use of an established technology by the planned equipment for introduction

6	Profitability	-Stable profitability for the past 3 years -Higher levels of profitability than the industry average - Awareness of the pending profit-related issue and implementation of suitable measures to solve them
7	Soundness and durability	-The debt to equity ratio for the past 3 years should be equal to or more than 2.33. -The debt service ratio for the past 3 years should be equal to or more than 1.25. -Cash flow from operating activities for the past 3 years is positive. -Fund raising for the past 3 years is appropriate and steady.
8	Capability to repay	-The expected debt service ratio during the repayment period should be equal to or more than 1.25. -FIRR during the repayment period should be more than a weighted average of capital cost. -The capacity to offer collateral and personal guarantee is adequate.

If the applicant fails to meet the financial indicators listed above, some of the following conditions, excluding conditions required in security documentation, may be imposed.

(a) Additional interest risk premium (the final interest rate should be equal to or less than the maximum interest rate set forth in the sub-loan agreement)

10-3 Annex 13: On-Lend Loan Agreement Template

Sample
ON LENDING LOAN AGREEMENT

between

[Borrower / Sub-Project Owner name]

and

[IFI NAME]

ON LENDING LOAN AGREEMENT

AGREEMENT, dated the DD of MM YYYY, between [] (hereafter the “**Borrower**”) having its registered Office at [], Bangladesh, represented by [], Executive Director and [IFI NAME in full and in “abbreviation”] having its registered Office at [address of IFI in full].

WHEREAS:

- (A) by the Loan Agreement (“**Loan Agreement**”) dated MM DD, YYYY between the Government of Bangladesh (“**GOB**”) and Japan International Corporation Agency (“**JICA**”), the former has received a Credit for the purpose of implementing the Energy Efficiency and Conservation Promotion Financing Project Phase 2 (the “**Project**”) proposed by JICA;
- (B) by the Subsidiary Loan Agreement dated MM DD, YYYY between GOB and [IFI NAME], the latter has been selected as an Executing Agency of the GOB to administer the Credit with the objective to promote the project;
- (C) under the Subsidiary Loan Agreement (“**SLA**”), dated MM DD, YYYY between GOB and [IFI NAME], GOB has agreed to relend Credit to [IFI NAME] (the “**Sub-loan**”) to implement of the Project on the terms and conditions set-forth in the SLA;
- (D) The Borrower has proposed to purchase [] at [], as described in Schedule I hereto;
- (E) following subsequent Project appraisal conducted by [IFI NAME], it has agreed to provide concessionary term loan to the Subproject on the basis of foregoing and in accordance with the terms and conditions set forth in this Agreement.

NOW THEREFORE, the parties hereto hereby agree as follows:

ARTICLE I Definitions and Interpretations

Section 1.01. Definitions. Unless the context otherwise requires, in this Agreement-

- (a) “Accounting Principles” means the accounting principles, which are generally accepted in the People’s Republic of Bangladesh and applied on a consistent basis;
- (b) “Authorized Representative” means any person designated by the Borrower or [IFI NAME] as its representative;
- (c) “Availability Period” means the period that will be available from the date of this Agreement to the date falling XX months thereafter for [IFI NAME]’s Loan under Section 2.01;
- (d) “Business Days” means days during which Banks are open in Dhaka;
- (e) “Cure Period” means the period as referred to in Section 6.03
- (f) “Disbursement” means any amount of the Loan, which is disbursed from time to time by IDOCL to the Borrower under this Agreement;
- (g) “Events of Default” means the events specified or referred to under Article 6.01 of this Agreement;
- (h) “Event of Default Notice” means notice specified under Section 6.03;
- (i) “Finance Documents” include the Financing Agreement, security documents and any other documents defined by [IFI NAME] and the Borrower as a Finance Document;
- (j) “First Disbursement Date” means the date on which [IFI NAME] makes first disbursement of its Loan to the Borrower under this Agreement;

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- (k) “First Interest Payment Date” means the date falling after three months of first disbursement;
 - (l) “First Repayment Date” means the Interest Payment Date immediately falling after the Grace Period. However, if it does not fall on an Interest Payment Date, First Repayment Date will be the immediately succeeding Interest Payment Date;
 - (m) “Fiscal Year” means the accounting year of the Borrower commencing each year on January 1 and ending on the following December 31, or such other accounting period of the Borrower as it may, with [IFI NAME]’s consent, from time to time designate as the Fiscal Year of the Borrower;
 - (n) “Grace Period” means XX from the First Disbursement Date during which Loan principal will not be repaid as per Section 2.06 while the interest as per Section 2.04 will be payable;
 - (o) “Interest” means interest as stated under Section 2.04 of this Agreement;
 - (p) “Interest Payment Date” means XX, XX, XX, XX in each year during the term of the Loan, provided that if such date falls on a day, which is not a business day, the Interest Payment Date shall be the immediately succeeding Business Day;
 - (q) “Proceeds Account” means an interest-bearing Bangladesh Taka account to be opened by the Borrower in its name with a reputed bank acceptable to [IFI NAME], to which all [IFI NAME] Loan under this Agreement; and any other receivables under this Agreement or any Transaction Documents shall be deposited from time to time;
 - (r) “Release Date” means the date on which all monies payable to [IFI NAME] under this Agreement shall have been fully paid in accordance with the provisions hereof;
 - (s) “Repayment Date” means each of the First Repayment Date and each Interest Payment Date falling thereafter until outstanding reduces to zero;
 - (t) “SREDA” means Sustainable and Renewable Energy Development Authority established under Sustainable and Renewable Energy Development Authority Act, 2012;
 - (u) “Subproject” includes procurement, installation, construction, operation and maintenance of the Subproject;
 - (v) “Taka” means lawful currency of Bangladesh;
 - (w) “Term Loan” or “Loan” means the loan advanced by [IFI NAME] to the Borrower under this Agreement.

Section 1.02. Interpretation. In this Agreement, unless the context otherwise requires -

- (a) headings are for convenience only and do not affect the interpretation of this Agreement;
- (b) words importing the singular include the plural and vice versa;
- (c) a reference to a natural person includes any company, trust, joint venture, association, corporation or other body corporate and any authority;
- (d) a reference to a Section, Article, party or Schedule is a reference to that Section, Article, party or Schedule to this Agreement;
- (e) a reference to a document includes an amendment or supplement to, or replacement or novation of, that document but disregarding any amendment, supplement, replacement or novation made in breach of this Agreement; and
- (f) a reference to a party to a document includes that party’s successors and permitted assigns.

ARTICLE II

[IFI NAME] Loan

Section 2.01. [IFI NAME] Loan.

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- (a) [IFI NAME] agrees to provide Term Loan up to maximum of Tk. XX (Taka XX) only to the Borrower and the Borrower agrees to receive the Loan in accordance with the terms and conditions of this Agreement.
 - (b) [IFI NAME] Loan shall be used exclusively to meet part of the Subproject Cost as agreed in the Financing Plan attached herewith as Schedule-II.
 - (c) Unless otherwise agreed by [IFI NAME] in writing, [IFI NAME]'s Loan commitment may be cancelled by [IFI NAME] by serving notice in writing to the Borrower, if the Borrower fails to draw its first disbursement upon satisfying the relevant Conditions Precedent within 90 days from the date of this Agreement.

Section 2.02. Disbursements.

- (a) The Borrower may request disbursements of the Loan, under Section 2.01 by delivering to [IFI NAME], at least five (5) Business Days prior to the proposed date of disbursement, a Disbursement request in form attached hereto as Schedule III, and a receipt substantially in form attached hereto as Schedule IV.
- (b) Upon submission of the Disbursement request by the Borrower, [IFI NAME] will disburse the Loan in favour of the Borrower in the Proceeds Account on fulfilment of Conditions Precedent set forth in Section 3.01 and 3.02.

Section 2.03. Interest. The Borrower shall pay interest at the rate of XX percent (XX%) per annum on the Loan amount under Section 2.01 calculated on outstanding balance with effect from the First Interest Payment Date.

Section 2.04. Accounts. Prior to first disbursement date, the Borrower shall open and maintain following bank account (**Subproject Accounts**) with a bank acceptable to [IFI NAME] (**Account Bank**):

Section 2.05. Proceeds Account.

- (a) A proceeds account to which all [IFI NAME] Loan, and all other receivables under this Agreement.
- (b) Subject to the terms and conditions of this Agreement, all proceeds deposited in the Proceeds Account will be used, to –
 - (A) meet cost of the Subproject;
 - (B) make payments to the Contractor;
 - (C) make repayments as per Section 2.06.

Section 2.06. Repayments.

- (a) The Borrower will repay the principal Loan amount referred to in Section 2.01 on each Interest Payment Date and including the First Repayment Date on quarterly rests in XX equal instalments.
- (b) All repayments of principal Loan amounts under this agreement shall be made by the transfer of immediately available funds in Taka to a designated account, as prescribed by [IFI NAME].

Section 2.07. Prepayments.

- (a) The Borrower giving not less than thirty (30) days' prior notice to [IFI NAME] may prepay the [IFI NAME] Loan amount under Section 2.01 on an Interest Payment Date in whole or in part (but, if in part, in a minimum aggregate of Tk.30,00,000 (Taka thirty lac) only and integral multiple of Tk.10,00,000 (Taka ten lac) only.
- (b) The Borrower shall pay to [IFI NAME] an unwinding cost @ 1% for such partly or fully prepaid amount.

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- (c) The amount prepaid shall be applied against the Repayment instalments under Section 2.06 in inverse order of maturity.

Section 2.08. Late Payment. Without prejudice to remedies available to [IFI NAME] under Section 6.02 or otherwise, if the Borrower fails to make any payment of principal Loan amount or interest, on or before the due date as specified in this Agreement, or if not so specified, as notified by [IFI NAME] to the Borrower, the Borrower shall pay a late payment charge on any overdue amount at the rate of 2% per annum over and above the interest rate specified in Section 2.03 and in each case from the date any such payment became due until the date of actual payment.

Section 2.09. Suspension or cancellation of Loan by [IFI NAME]. [IFI NAME] may at any time suspend the undrawn amounts of Loan under this Agreement, if –

- (a) disbursements under the Loan Agreement, as referred to in the preamble to this Agreement, between GOB and JICA, is suspended or cancelled for whatever reasons;
- (b) the Sub-Loan Agreement, as referred to in the preamble to this Agreement, between [IFI NAME] and GOB is suspended or terminated for whatever reasons;
- (c) it becomes unlawful for [IFI NAME] to give effect to any of its obligations under this Agreement;
- (d) a right of suspension or cancellation arises under Section 2.01(c) or Section 6.02(a); and
- (e) the GOB suspends or terminates the right of the Borrower to use the proceeds of the Loan, upon the failure by the Borrower to perform any of its obligations under this Agreement.

Section 2.10. Notice of Suspension or Cancellation. [IFI NAME] will provide to the Borrower a notice (“**Suspension or Cancellation Notice**”) in writing within 15 days of occurrence of any events described in Section 2.09.

Section 2.11. Effect of Suspension or Cancellation by [IFI NAME].

- (a) Notwithstanding any suspension or cancellation by [IFI NAME] under Section 2.09, all the provisions of this Agreement shall continue in force and effect except the right of the Borrower to receive Disbursement in respect of the amount so suspended or cancelled.
- (b) All outstanding amounts under this Agreement will become immediately payable by the Borrower to [IFI NAME] if [IFI NAME] suspends or cancels the Loan under this Agreement.

Section 2.12. Termination of Agreement.

- (a) Termination by the Borrower. - The Borrower may, by not less than thirty (30) days’ prior notice in writing to [IFI NAME], terminate this Agreement.
- (b) Termination by [IFI NAME]. - Without prejudice to any provisions in this Agreement, [IFI NAME] may, by not less than fifteen (15) days’ prior notice (“**Termination Notice**”) in writing to the Borrower, terminate this Agreement.
- (c) All outstanding amounts under this Agreement will become immediately payable by the Borrower to [IFI NAME] if the Borrower terminates the Agreement as per paragraph (a) above, or on the delivery of Termination Notice by [IFI NAME] under paragraph (b) above.

Section 2.13. Taxes. All payments by the Borrower under this Agreement shall be made without any deduction and free and clear of any taxes except to the extent that the Borrower is

required by law to make payments subjected to taxes. If any amount in respect of taxes must be deducted from any amount payable by the Borrower to [IFI NAME], the Borrower shall pay such incremental amount as may be necessary to ensure that [IFI NAME] receives a net amount, which it would have received had payments subject to taxes not been made.

Section 2.14. Computation of Interest. Interests on the Loan amounts and other charges, if any, shall be computed on the basis of actual number of days elapsed and three hundred and sixty (360) days a year.

Article III

Conditions Precedent to Disbursement

Section 3.01. Conditions Precedent to First Disbursement. Unless otherwise waived by [IFI NAME] in writing, the obligation of [IFI NAME] to make first disbursement to the Borrower is subject to, the fulfilment of following preconditions, namely,

- (a) copy of Memorandum of Association of the Borrower with a Board of Directors resolution enabling the Borrower to: carry out the Subproject Activities; enter into this Agreement; and receive Loan from [IFI NAME] hereunder shall have been furnished;
- (b) all governmental, regulatory and local government approvals, licenses or consents required for the carrying out of the Subproject Activities by the Borrower shall have been duly obtained and are in force; or arrangements, to the satisfaction of [IFI NAME], shall have been made for their procurement;
- (c) evidence that all Project Documents have been executed or obtained and copies thereof have been furnished to [IFI NAME];
- (d) all Finance Documents are duly executed;
- (e) copy of the Technical Adviser's Report is furnished;
- (f) Subproject Account have been opened;
- (g) legal opinion in form attached hereto as Schedule V is obtained;
- (h) Request for Disbursement under Section 2.02 has been made; and
- (i) All Subproject Securities, as described in Schedule VI have been created in favour of [IFI NAME] and are in full force and effect.

Section 3.02. Conditions Precedent to all Disbursements. Unless otherwise waived by [IFI NAME] in writing, the obligation of [IFI NAME] to make any disbursement under this Agreement is subject to the fulfilment of following preconditions, namely that,

- (a) no Event of Default has occurred, is continuing or likely to occur;
- (b) Representations and Warranties made under Article IV of this Agreement are true on and as of the date of the relevant Disbursement;
- (c) appropriate Drawing Notice pursuant to the Term Loan Facility Agreement governing the Facility has been served;
- (d) no change in the condition of the Borrower has occurred which is likely to materially or adversely affect the operation of the Subproject;
- (e) no litigation or other proceedings has been current, or is likely to be instituted, which if adversely determined would materially affect the operation of the Subproject.

ARTICLE IV

Representations and Warranties

Section 4.01. - The Borrower represents and warrants as follows:

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- (a) Status. it is a limited liability company incorporated under the Companies Act, 1994 and validly existing under the laws of the People's Republic of Bangladesh;
 - (b) Corporate Power. it has the corporate power to own its assets, carry on its business as it is being conducted and to enter into and perform its obligations under this Agreement;
 - (c) Corporate Authority. it has the corporate authority to enter into and perform, and has taken all necessary action to authorize the entering into, performance and delivery of, this Agreement;
 - (d) Dedicated Staff. it has adequate and trained dedicated staff to operate the Subproject successfully;
 - (e) Validity. this Agreement constitutes, or when executed in accordance with its terms, will constitute, its legal, valid and binding obligation enforceable against the Borrower in accordance with its terms and, so far, the Borrower is aware, is in full force and effect;
 - (f) No Conflict. the execution, delivery and performance by it of this Agreement will not violate or conflict with –
 - (i) any law, rule or regulation or governmental approval or judicial order to which it is subject in any material respect;
 - (ii) the constituent documents of the Borrower;
 - (g) Authorizations and Approvals. all material authorizations required in connection with entering into, performance and validity and enforceability of this Agreement have been obtained and are in full force and effect so far as the Borrower is aware and no steps have been taken to revoke or cancel any such authorizations obtained or effected;
 - (h) Immunity. the Borrower, its properties and assets do not enjoy any right of immunity from set-off, suit or execution in respect of its obligations under this Agreement;
 - (i) Proceedings. no litigation, arbitration or administrative or other proceedings are current, or to its knowledge, pending or threatened which, if adversely determined, would have a Material Adverse Effect on the Subproject;
 - (j) Accounting Principles. it maintains accounting principles as described under Section 1.01(a);
 - (k) Environmental Compliance. it has been in, and will be in, compliance with all Bangladesh environmental laws and regulations relevant for the operation of the Subproject and Environmental Management Plan (EMP) and Environmental Assessment (EA), as required by the World Bank; and
 - (l) Funding by others: it has not received any funding from any other donors or funding agencies to carry out the Subproject Activities.

ARTICLE V

Undertakings

Section 5.01 Record Keeping. - The Borrower undertakes that it,

- (a) will maintain proper record of accounts using the Accounting Principles as described in Section 1.01(a);
- (b) shall ensure that [IFI NAME] be allowed access to inspect the accounting books, records and other data related to the Subproject which are in the possession or control of the Borrower;
- (c) shall ensure that GOB be allowed access to inspect by itself, or jointly with SREDA, [IFI NAME] and JICA, the Subproject sites, Subproject activities and any relevant records and documents;

Section 5.02 Furnishing of Information. – The Borrower undertakes that,

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- (a) it will furnish to [IFI NAME]:
 - (i) as soon as the same are available, and in any event within forty five (45) days of the end of each financial year, its audited accounts for that financial year;
 - (ii) its half yearly financial statements along with a letter signed by the managing director, certifying that the covenants made under this Agreement have been met;
 - (iii) all of its half yearly financial statements using the format approved by [IFI NAME] showing performance against budget;
 - (iv) all materials/evidences on purchasing and installation of machine/equipment
 - (iv) notice of any Events of Default that has occurred or is likely to occur.
 - (b) it will furnish to SREDA:
 - (i) monthly data on operation and energy uses on Project MIS (Annex 33) within stipulated timing.
 - (c) if so requested by the GOB and SREDA it shall furnish to the GOB and SREDA any information regarding the administration, operation and financial condition of the Borrower.

Section 5.03 Financial Undertakings. The Borrower will maintain a ratio of revenues to operating expenses (including debt service) of at least 1.25. This ratio is to be calculated, on an aggregate basis, in each period.

Section 5.04 Operation and Maintenance. – the Borrower further undertakes that it,

- (a) shall diligently maintain and operate the Subproject in a safe, efficient and business like manner;
- (b) shall not change its business during the tenure of the Loan;
- (c) will always comply with law, rule or regulation or governmental approval or judicial order to which it is subject in any material respect;
- (d) will comply with all law and regulations in respect of payment of taxes or other payment required by the government or any lawful authority;
- (e) will not incur any indebtedness except the permitted financing by [IFI NAME];
- (f) will open and always maintain the Project Account as per provisions under this Agreement;
- (g) will not enter into any contract with third party which might have material and adverse effect on the security of [IFI NAME];
- (h) will always comply with the relevant environmental laws and regulations of Bangladesh and EMP and EA, required by the World Bank;
- (i) will not declare or pay any dividends unless the Borrower's operating revenues to operating expenses is greater than 1.25;
- (j) unless [IFI NAME] otherwise agrees, shall insure and keep insured, with insurers acceptable to [IFI NAME], all its assets and business against all insurable losses or those resulting from fire, riot, strike, earthquake, flood, cyclone and other natural perils. On every insurance policy on the Borrower's assets and for business interruption or delay in start, [IFI NAME] shall be named as loss payee for any claim, or series of claims, arising with respect to the same event;
- (k) will not abandon the Subproject.

Section 5.05. Negative Pledge. No further encumbrances over the Subproject will be allowed unless approved by [IFI NAME] in writing.

Section 5.06. Funding by others: Without prior approval in writing from [IFI NAME], the Borrower shall not claim or receive any funding, including Carbon Credit, from any other donors or funding agencies to carry out the Subproject Activities.

ARTICLE VI

Events of Default

Section 6.01. – It shall be an event of default on the part of the Borrower, if,

- (a) Non-payment, it fails to make repayment in accordance with Section 2.06;
- (b) Breach of Representations and Warranties, it commits breach of any Representations and Warranties under Article IV that [IFI NAME] determines to have material and adverse effect on the Subproject;
- (c) Breach of Undertakings, it commits breach of any undertakings under Article V that [IFI NAME] determines to have material and adverse effect on the Subproject;
- (d) Government Action, government takes any action to nationalize, expropriate or confiscate the Borrower and/or its assets;
- (e) Declaration of Insolvency by Court, it is declared insolvent by any court;
- (f) Insolvency proceedings by the Borrower, any insolvency, bankruptcy or reorganization proceedings is undertaken by the Borrower that has not been discharged within thirty (30) days of its institution; and
- (g) Insolvency proceedings by the Creditor, any insolvency proceeding is undertaken against the Borrower by any creditor of the Borrower that has not been discharged within thirty (30) days of its institution.
- (h) Force majeure event, any force majeure events such as fire, riot, strike, earthquake, flood, cyclone and other natural perils occurs rendering the Subproject fully or partially inoperative for more than 90 days without restoration or repair.

Section 6.02 Remedies upon an Event of Default. If [IFI NAME] becomes aware, or is notified by the Borrower, of occurrence or likelihood of any Events of Default, it may,

- (a) suspend or cancel its commitment to provide any undisbursed Loan under this Agreement;
- (b) declare all amounts outstanding due and immediately payable; and
- (c) enforce Subproject securities.

Section 6.03. Cure Period.

- (a) If [IFI NAME] becomes aware, or is notified by the Borrower, of occurrence or likelihood of any Events of Default that [IFI NAME] determines to be curable, it will send to the Borrower a notice in writing (“**Notice of Events of Default**”) requiring the latter to cure the relevant default within 30 days of its occurrence.
- (b) If the Borrower fails to cure the default referred to in paragraph (a) above within the Cure Period, [IFI NAME] may exercise remedies under Section 6.02 or any other available remedies.

Section 6.04. Savings of Rights. No course of dealing and no delay in exercising, or omission to exercise any right, power or remedy accruing to [IFI NAME] upon any Events of Default of the Borrower, shall impair any such right, power or remedy or be construed to be a waiver thereof, or any acquiescence therein, nor shall the action of [IFI NAME] in respect of any Event of Default, or any acquiescence therein, affect or impair any of its right, power or remedy in respect of other Events of Default.

ARTICLE VII

Miscellaneous Provisions

Section 7.01. Governing Law and Jurisdiction. This agreement is governed by and shall be construed with the laws of the People's Republic of Bangladesh.

Section 7.02. Dispute Resolution.

- (a) Negotiation. Any dispute that may arise between the Borrower and [IFI NAME] in connection with or under this Agreement shall be tried to be amicably resolved through mutual negotiation of both parties.
- (b) Mediation. If any dispute referred to in paragraph (a) above arises and cannot be resolved through negotiation, it will be referred to a third party mediator selected by both parties for a mediated resolution; and the cost of such mediation will be shared jointly by both parties.
- (c) Arbitration. In case a dispute is not resolved through methods as per paragraphs (a) and (b) above, it shall be referred to arbitration under the Arbitration Act 2001 (the "Act") of Bangladesh as the last resort; the arbitral award thereon shall be final and binding; and the cost of such arbitration shall be shared jointly by the parties or as may otherwise be determined under the Act.

Section 7.03. Successors and Assigns. This Agreement shall bind, and inure to the benefit of, the respective successors and permitted assignees of the parties. [IFI NAME] shall give the Borrower at least fifteen (15) days' written notice before making any such assignment.

Section 7.04. Amendment and waiver.

- (a) Any provision of this Agreement may be amended by mutual agreement of the parties in writing.
- (b) Any waiver of any right under this agreement must be in writing and signed by the parties.

Section 7.05. Confidentiality. [IFI NAME] undertakes to keep all proprietary information of the Borrower confidential and not to disclose to any third party unless such disclosure is:

- (a) incidental to or in connection with this Agreement;
- (b) required by an order of a court of competent jurisdiction whether in pursuance of any procedure for discovering documents or otherwise;
- (c) made to its officers and employees, or other professional advisors;
- (d) required to be made before any banking, taxation, or other governmental or regulatory authority who is lawfully entitled to that disclosure.

Section 7.06. Set-off. [IFI NAME] may set-off any matured or other obligation owed by the Borrower under this Agreement against any obligation (whether or not matured) owed by [IFI NAME] to the Borrower, regardless of the place of payment.

Section 7.07. Indemnity. The Borrower shall, on demand, forthwith indemnify [IFI NAME] against any loss or liability, which [IFI NAME] incurs as a consequence of any late payment by the Borrower under Section 2.08 or following an Event of Default of the Borrower.

Section 7.08. Authorized Signatories.

- (a) The Borrower shall furnish to [IFI NAME], in form and substance satisfactory to [IFI NAME], evidence of the authority of the person or persons who will, on behalf of the Borrower, sign the Disbursement Request and Certificates under this Agreement, or take any action or execute any document required or permitted to be taken or executed by the Borrower under this Agreement.

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- (b) The Borrower shall furnish to [IFI NAME] the authenticated specimen signature of each such person under paragraph (a) above.

Section 7.09. Survival of Agreement. This Agreement shall continue in force in accordance with the terms and conditions hereof until the Release Date.

IN WITNESS WHEREOF, the parties have caused this Agreement to be signed in their respective names on the date first above written.

The common seal of
XXXX LTD.
was affixed in the presence of:

)
)

Name:
Title:

The common seal of
[IFI NAME]
Was affixed in the presence of:

)
)

Name:
Title:

Schedule I
The Project

1. The Project title: []
2. Nature: [] production plant.
3. Location: []
4. Project Component: []
5. Cost of the Project: The project cost has been estimated at Tk.[]
6. Major cost of the project: The major project cost are the following:
Machineries & equipment: Tk. []
7. Origin of Machinery: []
8. Organization & Management: Borrower themselves shall administer and manage the project
9. Proposed technology: []
10. Proposed construction period: [] months
11. Proposed [IFI NAME] financing: Tk. []

Schedule II

Particulars	Amount (in million BDT)
Plant, Machinery and Equipment -Foreign	
Plant, Machinery and Equipment -Local	
Duty, Charges & Insurance	
Internal Freight	
Installation & Erection	
Office Equipment, Furniture & Fixture	
Pre-operating Expenses	
TOTAL PROJECT COST	

	Amount (in BDT)
Debt	
Own fund	
Total PROJECT COST	

Schedule III
Form of Disbursement Request
(Refer to Section 2.03)

[BORROWER LETTERHEAD/LOGO]
[Address]
[Date]

Executive Director and CEO
[IFI NAME in full] (IFI NAME in abbreviation)
[address of IFI in full]

Dear Sir:

Request for Disbursement No. []

Please refer to the Financing Agreement dated [], 2010 between XXXX and [IFI NAME].

All terms defined in the Financing Agreement shall bear the same meanings herein.

The Borrower hereby requests the Disbursements, on or before [], YYYY, of the following amount, in accordance with the provisions of Sections []:

Item	Amount (Taka)
[IFI NAME] Loan	

The Borrower requests that such amount be paid to the Proceeds Account (referred to in Section ...) of the Borrower No. ... at the [Name and Address of local commercial bank].

For the purposes of Section [] of the Financing Agreement, the Borrower hereby certifies as follows:

1. Section ... of the On Lending Loan Agreement is complied with;
2. No Event of Default as described under Article VI of the On Lending Loan Agreement has occurred, is continuing or likely to occur;
3. Representations and Warranties made under Article IV of the On Lending Loan Agreement true on and as of the date of the relevant Disbursement;
4. No change in the condition of the Borrower has occurred which is likely to materially or adversely effect the carrying out of the Subproject;
5. No litigation or other proceedings has been current, or is likely to be instituted, which if adversely determined, would materially affect the operation of the Subproject; and
6. We have not received, or will not claim, any grant, subsidy, or financing from any funding agency, donor or other third party, except [IFI NAME], for the Subproject Activities.

The certifications above are effective as of the date of this request and will continue to be effective as of the date of disbursement. If any of these certifications is no longer valid as of or prior to the date of the disbursement hereby requested, the Borrower will immediately notify [IFI NAME] and will repay the amount disbursed upon demand by [IFI NAME] if disbursement is made prior to the receipt of such notice.

Yours faithfully,

By

Authorized Representative

Schedule IV
Form of Disbursement Receipt
(Refer to Section 2.03)

[BORROWER LETTERHEAD/LOGO]
[Address]
[Date]

Executive Director and CEO
[IFI NAME in full] (in abbreviation)
[address of IFI in full]

Dear Sir:

Request for Disbursement No. []

We, XXXX, hereby acknowledge receipt of the sum of Taka [] disbursed to us by [IFI NAME in full] (in abbreviation) under the On Lending Loan Agreement dated [], YYYY signed between ourselves and [IFI NAME].

Yours faithfully,

By

Authorized Representative

Schedule V
Form of Legal Opinion

[To be typed on the Letterhead of counsel acceptable to [IFI NAME]]

[Address]

[Date]

Executive Director and CEO

[IFI NAME in full] (in abbreviation)

[address of IFI in full]

Dear Sir:

[IFI NAME] Financing Agreement No. [] with [Name of the Borrower]

At your request, we have acted as Counsel for [name of the Borrower] in connection to the On Lending Loan Agreement dated [, YYYY] between [Name of the Borrower] and [IFI NAME].

Expressions defined in the On Lending Loan Agreement bear the same meanings herein.

In connection with the foregoing and in our capacity as Counsel for [Name of the Borrower], we have examined the following documents:

- (a) The On Lending Loan Agreement;
- (b) The [Charter and Other Constitutional Documents] of [Name of the Borrower];
- (c) The resolutions of the [name of the Borrower]'s Shareholders Meetings or Board of Directors authorizing:
 - (i.) [Name of the Borrower] to enter into the On Lending Loan Agreement;
 - (ii.) A person or persons to sign the On Lending Loan Agreement;
 - (iii.) A person or persons to sign the requests for disbursements and all other notices required to be given by the [name of the Borrower] under the On Lending Loan Agreement; and
 - (iv.) [Other relevant resolutions]
- (d) [All relevant governmental consents and authorizations]
- (e) Such other records and documents as we have deemed necessary or appropriate for the purposes of this opinion.

Based on the foregoing, we are of the opinion that:

- (a) [name of the Borrower] is duly incorporated, validly existing and is in good standing under the laws of Bangladesh.
- (b) the Charter is in compliance with the laws of Bangladesh and does not contain any provision which contradicts or impairs the On Lending Loan Agreement;
- (c) [Name of the Borrower] has good title to all of its long term assets;
- (d) [Name of the Borrower] has obtained all governmental, corporate, creditors', shareholders' and other necessary licenses, approvals, or consents for:
 - (i.) the Release of Loan by [IFI NAME] under the On Lending Loan Agreement;
 - (ii.) the carrying out of Subproject Activities; and
 - (iii.) the remittance to [IFI NAME] of all monies payable in respect of the On Lending Loan Agreement.

-
-
- (e) The On Lending Loan Agreement has been duly authorized, executed and delivered by [Name of the Borrower]; and
 - (f) [Name of the Borrower] is current on its tax obligations; or [the Borrower is a tax-exempt entity].

This opinion is limited to laws of Bangladesh and is given in the premise that the Financing Agreement will be governed by and construed in accordance with Bangladeshi laws.

Yours faithfully,

By

Signature of the Counsel

Schedule VI
Subproject Securities

Sl.	Security	Instrument
1.	Legal mortgage over land measuring 10 acres along with an irrevocable general power of attorney to sell the said land.	1. Deed of Mortgage executed/to be executed by the Borrower/Mortgagor in favour of the Lenders registered with the Sub-Registrar of Lands, _____ and the Registrar of Joint Stock Companies and Firms. 2. An Irrevocable General Power of Attorney executed/to be executed by the Borrower/Mortgagor empowering the Lenders to sell the mortgaged land registered with the Sub-Registrar of _____.
1.	A first priority fixed charge over all fixed assets of the Subproject, both present and future, in favour of [IFI NAME].	1. A Letter of Hypothecation by way of Fixed Charge executed/to be executed by the Borrower in favour of [IFI NAME] and registered with the office of the Registrar, Joint Stock Companies and Firms, securing the Facility along with interest and charges. 2. An Irrevocable General Power of Attorney executed/to be executed by the Borrower empowering [IFI NAME] to sell the hypothecated assets duly notarised/to be notarised.
2.	A floating charge over all tangible and intangible assets of the Subproject, both present and future, including but not limited to stocks, book debts, receivables, inventories, all insurance, and all accounts of the Borrower in favour of [IFI NAME].	A Letter of Hypothecation by way of Floating Charge executed/to be executed by the Borrower in favour of [IFI NAME] and registered with the office of the Registrar, Joint Stock of Companies and Firms, securing the Facility along with interest and charges.
3.	An assignment of the benefits under all Insurance policies insuring all assets of the Borrower, including the facility, in favour of [IFI NAME].	[IFI NAME] will be made co-payees to the Insurance policies taken by the Borrower with respect to its fixed and floating assets (except stocks and book debts) and immovable assets.

Sl.	Security	Instrument
4.	A guarantee by the Directors of the Borrower undertaking repayment of the debt and reimbursement of capital subsidy, as applicable, under the Financing Agreement.	Personal guarantees to be executed by the following directors in favour of the Lenders:
5.	Lien of all Sponsors shares of the Borrower.	A letter of lien on shares duly executed by the following shareholders in favour of [IFI NAME] along with a notarised Irrevocable General Power of Attorney:
6.	Opening of a Proceeds Account and creating lien on this account in favour of [IFI NAME].	A letter of lien and set-off will be executed by the Borrower and acknowledged by the Account Bank.
7.	Providing post-dated Cheques	The Borrower will provide 25 number of post-dated cheques in favour of [IFI NAME] to ensure repayments under the loan on time.
10.	Such other security documents to be executed by the Borrower in favour of [IFI NAME].	Promissory Note along with Letter of Continuity etc.

10-4 Annex 31: EE&C Equipment Purchasing and Installation Status Form

Sub-project ID		SD17051803
Name of Equipment		
Specification		
Model Number		
Supplier		
Manufacturer		
Unit price		
Number introduced		
Investment amount		
Attachment	Quotation	
	Invoice	
	Receipt	
	Catalogue	
	Photos of installation	
Installation completion date		

MIS input screen:

SP Number: SF17083101 Approved Amount: 253,944,738 LOB: Preparation and spinning of textile fibres Sub-project Owner: N/A

Financial Purchase & Inst. Inspection Energy Data Communication

Purchase & Installation

Equipment Code	Name	Specification	Model	Supplier	Manufacturer	Qty	Loan Amount	Installation Date	Number of Installed	Unit Price

No Records Found Page 1 30 rows per page

Manager Decision

Purchase & Inst. - Unsubmitted

Status : Date :

Remarks:

10-5 Annex 32: On-site Physical Inspection Report Form

Generated from MIS (To be submitted quarterly)

Sub-project ID	Sub-project owner	Documents check date	Fund disbursement date	Inspection required	Inspection date
SD19031402	ABC Co.,	DD/MM/YYYY	DD/MM/YYYY	Y	DD/MM/YYYY
SF18120601	XYZ Co.,	DD/MM/YYYY	DD/MM/YYYY	N	N/A

- Note: 1. IFI shall check documents on purchase and money transfer for all sub-projects.
 2. IFI shall conduct random physical inspection on machine or facility installation for at least 25 % of sub-projects.
 3. This Report shall be submitted within 6 months after the completion of loan disbursement.

MIS input screen:

Quarter: Q1 - 2019

Sub-project No.	Previous Inspections	Document Check Date	Fund Disbursement Date	Inspection Requirement	Actual Inspection Date
Search	Search	Search	Search	Search	Search
SD17041201			09/10/2018	☐	
SF17083101				☐	
SD18062501				☐	
SF17103001				☐	
SF17041901				☐	

View 1 - 5 Page 1 30 rows per page

10-6 Annex 33: Energy Efficiency Related Data Form

<to be reported online on MIS>

Sub-project Number	SF16121401			
Site name				
Month of reporting	Jan.	Feb	Mar.	Total
Site operation hours (hours)				
Site production volume (*1)				
Site electricity consumption (kWh)				
Measuring point and method:				
Site gas consumption (m ³)				
Measuring point and method:				
Operation hours of introduced equipment line (hours) (*2)				
Production volume in introduced equipment line (*2)				
Equipment electricity consumption (kWh) (*2)				
Measuring point and method:				
Equipment gas consumption (m ³) (*2)				
Measuring point and method:				

Note: (*1): Sub-project owner may insert additional line(s) if there are more than one product.

Note: (*2): Upon availability of data for equipment / line/ circuit.

Above information may be submitted online to SREDA website once the environment is developed

Other events if any (incidents, overhaul, etc.)

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mis-eecpf.sreda.gov.bd
Yoshihiko Kato
(JICA Observer)

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[Users](#)
[Loan Applications](#)
[Sub-projects](#)
[Document Library](#)
[Settings](#)
[Reports](#)

Equipment/Site

Site/Line/Eq/Circuit

No Records Found

Sub-project No.: SF17083101 Sub-project amount: 253,944,738.00 Line of Business: Preparation and spinning of textile fibres

Monthly Energy Data

Energy Source Nothing Selected

Month	Operation Hours	Production Volume/Qty	Production UOM	Electricity Consumption (kWh)	Gas Consumption (m ³)	Energy Source Volume Qty
Total : 0.00 0.00 0.00 0.00 0.00 0.00 No Records Found Page 1 30 rows per page						

10-7 Annex 34: Environmental and Social Performance Report (ESPR) Form

1. Basic Information

Name of IFI:

Completed by (Name):

Position in Organization:

Reporting for Sub-projects sanctioned between DD/MM/YYYY and DD/MM/YYYY

Prepared date: (DD/MM/YYYY)

2. Subprojects using JICA Funds during the Reporting Period

Application ID	Line of business	Equipment code	Loan amount (BDT)	Sanctioned date	Environmental Category*	Reason of Categorization	Documents made (e.g. IEE EIA, RAP)	Any outstanding environmental and social issues

* Please refer Environmental and Social Categorization: Definition or II. 2.2. of JICA Guidelines for Environmental and Social Considerations (April 2010)

e.g. Subproject is likely to generate condonable solid waste of scraped facilities and equipment. : Category B

Subproject is likely to have minimal or little adverse impact on the environment and society. : Category C

3. Subprojects using JICA Funds to be Approved in the Next Quarter and Onwards

Application ID	Line of business	Equipment code	Loan amount (BDT)	Sanctioned date	Environmental Category*	Reason of Categorization	Documents made (e.g. IEE EIA, RAP)	Any outstanding environmental and social issues

4. Environmental and Social Management System (ESMS)

Please describe if ESMS of your organization has changed in any way (e.g. establishment of a new division for environmental and social management) since JICA's appraisal.

10-8 Annex 34 Notes: Environmental and Social Categorisation - Definition

(Excerpt from JICA Guidelines for Environmental and Social Considerations (April 2010))

JICA classifies sub-projects into four categories according to the extent of environmental and social impacts, taking into account an outline of sub-project, scale, site condition, etc.

1. Category A:

Proposed sub-projects are classified as Category A if they are likely to have significant adverse impacts on the environment and society. Sub-projects with complicated or unprecedented impacts that are difficult to assess, or sub-projects with a wide range of impacts or irreversible impacts, are also classified as Category A. These impacts may affect an area broader than the sites or facilities subject to physical construction.

Category A, in principle, includes sub-projects in sensitive sectors, sub-projects that have characteristics that are liable to cause adverse environmental impacts, and sub-projects located in or near sensitive areas. An illustrative list of sensitive sectors, characteristics, and areas is provided in Appendix 3 below.

2. Category B:

Proposed sub-projects are classified as Category B if their potential adverse impacts on the environment and society are less adverse than those of Category A sub-projects. Generally, they are site-specific; few if any are irreversible; and in most cases, normal mitigation measures can be designed more readily.

3. Category C:

Proposed sub-projects are classified as Category C if they are likely to have minimal or little adverse impact on the environment and society and also if they satisfy all of the following criteria:

- (1) Not to be applied to the sensitive sectors, characteristics, and areas shown in Appendix 3.
 - (2) No land acquisitions
 - (3) Little environmental and social influence during civil works even in restoration of existing buildings (e.g. restoration of schools, public health care center, vocational training center; rehabilitation of existing distribution network and substations, procurement of well digging equipment for water supply etc.)
-

Appendix 3. Illustrative List of Sensitive Sectors, Characteristics, and Areas

The sub-project of sensitive sectors, characteristics, and areas shown in this illustrative list are those that will likely have a significant adverse impact on the environment and society. Each individual sub-project is categorized in accordance with the standards for “Category A” indicated in the categorization section of the guidelines, depending on the impacts of the individual sub-projects. Consequently, sub-projects that are likely to have a significant adverse impact on the environment and society are categorized as “Category A” even if they are not included in the sectors, characteristic, or areas on the list.

1. Sensitive Sectors

Large-scale sub-projects in the following sectors:

- (1) Mining, including oil and natural gas development
- (2) Oil and gas pipelines
- (3) Industrial development
- (4) Thermal power, including geothermal power
- (5) Hydropower, dams, and reservoirs
- (6) Power transmission and distribution lines involving large-scale involuntary resettlement, large-scale logging, or submarine electrical cables

-
-
- (7) River/erosion control
 - (8) Roads, railways, and bridges
 - (9) Airports
 - (10) Ports and harbors
 - (11) Water supply, sewage, and wastewater treatment that have sensitive characteristics or that are located in sensitive areas or in their vicinity
 - (12) Waste management and disposal
 - (13) Agriculture involving large-scale land clearing or irrigation

2. Sensitive Characteristics

- (1) Large-scale involuntary resettlement
- (2) Large-scale groundwater pumping
- (3) Large-scale land reclamation, land development, and land clearing
- (4) Large-scale logging

3. Sensitive Areas

Sub-projects in the following areas or their vicinity:

- (1) National parks, nationally-designated protected areas (coastal areas, wetlands, areas for ethnic minorities or indigenous peoples and cultural heritage, etc. designated by national governments)
- (2) Areas that are thought to require careful consideration by the country or locality

Natural Environment

- a) Primary forests or natural forests in tropical areas
- b) Habitats with important ecological value (coral reefs, mangrove wetlands, tidal flats, etc.)
- c) Habitats of rare species that require protection under domestic legislation, international treaties, etc.
- d) Areas in danger of large-scale salt accumulation or soil erosion
- e) Areas with a remarkable tendency towards desertification

Social Environment

- a) Areas with unique archeological, historical, or cultural value
- b) Areas inhabited by ethnic minorities, indigenous peoples, or nomadic peoples with traditional ways of life, and other areas with special social value

10-9 Annex 35: Anti-corruption Monitoring Sheet

Note: This sheet shall be used for procurement of Consultants.

Subject	Agreed Actions	Responsible Agency	Target Date	Measures to achieve
Participation in the Proposal Evaluation Committee (PEC)	To invite one representative from JICA as an observer in evaluation process of EOI, RFP and Tender.	SREDA/IDCOL/BIFFL/JICA		JICA is invited to PEC as an observer
Fraud and Corruption Hotline	To include the contact information on the fraud and corruption hotline in the bidding documents	SREDA/IDCOL/BIFFL		
Internal Audit	To appoint a chartered accountant firm for internal audit and to submit the annual internal audit report to JICA within 6 months after the end of each fiscal year.	SREDA/IDCOL/BIFFL		
Special Training Program	To organize three-day special training course on procurement procedure and financial management for each staff involved in procurement for the Project in cooperation with the training unit of each agency.	SREDA/IDCOL/BIFFL with training units		SREDA/IDCOL/BIFFL will arrange trainings and seminars
(e) Bid Opening Committee (BOC)	To set up the BOC under the Project with the participation of representatives from SREDA/IDCOL/BIFFL. To invite one representative from JICA as an observer.	SREDA/IDCOL/BIFFL /JICA		Through procurement process
(f) Disclosure of Procurement	To publish the procurement plan in its respective website and update twice a year. In addition, to post the information about contract within two weeks of contract awarding.	SREDA/IDCOL/BIFFL		Through publishing in website
(g) Complaint mechanism	To set up a complaint box	SREDA/IDCOL/BIFFL		
(h) Monitoring and inspection of irregularities	To detect and take a disciplinary action against those concerned in a possible corrupt or unethical practice, in accordance with the service rules of the GOB and to publish a summary of the disciplinary action taken by the authority in the annual report.	SREDA/IDCOL/BIFFL	If necessity arises	Through official letter, website

10-10 Annex 367: Ongoing Sub-project Summary and Financial Report Form

Name of IFI: _____

A-type: Sub-project ID B-type: PD name/ID	Condition				Environmental & social		Balance				Overdue			
	Account (designated / revolving)	Equipment category (for A-type loan)	Interest rate	Tenure	Category (A/B/C/FI)	Negative impact, if any	Outstanding (at beginning of quarter)	Loan disbursed during quarter	Loan repayment during quarter	Outstanding (at end of quarter)	Overdue Outstanding (at beginning of quarter)	Overdue Accrued	Overdue Recovered	Overdue Outstanding (at the end of the quarter)
							a	b	c	d=a+b-c	e	f	g	h=e+f+g

10-11 Annex 38 Appraisal Process Status Report

Generated automatically for A-type Loan Sub-project Inspection Report (Quarterly)

IFIs are requested to generate the appraisal status report and submit to SREDA as quarterly reporting.

Application No	Equipment code	Loan application received	Name clearance (Institutional approval)	NOC requested	NOC issued / rejected	DD type authorized	DD completed	Board approval	Loan sanction	Loan agreement	L/C opening	Loan amount (BDT million)
AD17042402	3.3 9.4.2 9.6.2 9.8.1 9.10.1	01/05/2016	20/08/2016	11/05/2017	24/05/2017	N/A	27/04/2017	30/04/2017	05/05/2017	25/05/2017	-	844.65
AD17041201	5.1	01/12/2016	6/12/2016	11/05/2017	24/05/2017	N/A	27/02/2017	28/02/2017	10/05/2017	15/05/2017	21/06/2017	1,270.00
AF17011801	3.2 9.4.2	18/01/2017	09/02/2017	21/05/2017	24/05/2017	N/A	-	-	-	-	-	577.60
AF16120601	3.2 (1)	06/12/2017	10/01/2017	09/05/2017	24/05/2017	N/A	-	-	-	-	-	1,100.00

10-12 Annex 39: Environmental and Social Management System (ESMS) Checklist

Generated from MIS (To be reviewed at least once a year)

No.	Questions (English)	Answer	Improvement Plan
1. Policy			
(1)	Does the executing agency have any formal environmental policy or procedures? If yes, please describe them and provide appropriate documentation. If no, does the financial intermediary/executing agency have any plan to set such policy or procedures?	IDCOL (Implementing Financial Institution): IDCOL has “Environmental and Social Safeguards Framework (ESSF)” for large scale infrastructure projects and “Environmental and Social Management Framework (ESMF)” for small or medium scale energy projects as environmental frameworks. BIFFL: (Implementing Financial Institution): Yes. BIFFL has its own Environmental and Social Monitoring Framework (ESMF)	IDCOL: ESSF and ESMF are found as sufficient to address the environmental and social safeguards in line of the JICA-EE&C Promotion Financing Projects. Hence no improvement is required. BIFFL: Requires reporting from BIFFL on compliance of their ESMF with the JICA Projects requirements.
(2)	Are there any types of projects in which the financial intermediary/executing agency will not take part due to the environmental risks? (e.g., projects involving handling of hazardous wastes or endangered plants or animals).	Most of the activities will be limited in factories or buildings, considerable negative impacts are unlikely to occur. BIFFL: After assessment, if any project is deemed risky for environment/society, BIFFL will not consider taking part in it.	IDCOL: In the ESSF, a list of Exclusion Projects has been provided, in which type of projects IDCOL does not participate. In the same manner, ESMF also consider the excluded projects. These excluded projects mainly deal with hazardous waste, endangered species and unsustainable practice like gambling, weapon manufacturing and so on. BIFFL: Requires stipulations to be reported on this checksheet.
2. Procedures			
(3)	Does the executing agency have any environmental	IDCOL:	IDCOL: At the initial phase of a project IDCOL

	procedures such as screening, categorization and environmental review? If yes, please describe.	ESSF and ESMF regulate environmental procedures for various development projects. ESSF and ESMF mention the categorization according to Bangladesh Environment Conservation Rules. ESMF provides environmental screening forms. BIFFL: EE and EIA are assessed as per ESMF to reach conclusive decisions.	systematically follow the project categorization process based on the findings from initial screening. This process has been discussed in detail in the ESSF (reference. Page 55). BIFFL: Requires elaborated explanations on how, and against what kind of criteria the process is conducted.
(4)	Please describe how you ensure that your subproject companies and their subprojects are operated in compliance with the national laws and regulations and applicable JICA's requirements.	IDCOL: Subprojects are operated in compliance with the national laws and regulations according to ESSF and ESMF. However JICA-EEF Project is not included in existing ESSF and ESMF. BIFFL: BIFFL maintains strong monitoring of the proponents in order to maintain set requirements. The ESMF is referenced in making decisions.	IDCOL: IDCOL's Environmental Specialist periodically monitor the sub-project to ensure proper implementation of EMP. In addition, the project sponsor of sub-projects are required to submit periodic monitoring report of air, water and noise quality and disposal of waste. While monitoring, due attention has been given about the availability and validity of Environmental Clearance Certificate as has been issued by the Department of Environment. During monitoring, IDCOL also considers the grievance redress mechanism and its effectiveness. BIFFL: JICA-EEF Project outline has been added to ESMF by BIFFL.
3. Organization and Staff			
(7)	Please provide us with the organization chart of the financial intermediary/executing	IDCOL: IDCOL has Environmental and Social	IDCOL: No further improvement has been required.

	agency's Environmental and Social Management System (ESMS).	Safeguard Unit. (see Fig. 3) BIFFL: BIFFL has two environmental consultants under employ and has hired an environment specialists and two social consultants for its Environmental and Social Management system.	BIFFL:
(8)	Who is responsible for environmental and social management within the financial intermediary/executing agency? (name/role and title)	IDCOL: IDCOL employs two fulltime Environmental Specialists. Mr. Raihan Uddin Ahmed takes charge of infrastructure projects and Dr. Ahmedul Hye Chowdhury takes charge of other renewable energy projects. BIFFL: BIFFL has two environmental consultants under EECPP project. A junior full time consultant (Md. Ashraful Islam Chowdhury) responsible for the environmental issues. BIFFL has also recruited one environmental expert of its own who is expected to join in November 2018	IDCOL: No further improvement has been required. The existing set-up is sufficient to deal with the environmental and social safeguard for JICA-EEF project. BIFFL: Because the environmental and social management for JICA-EEF Project has no difficulties, the present human resources will be able to implement the management.
(9)	Are there any staff with training for environmental and social considerations in the financial intermediary/executing agency? If so, describe.	IDCOL: IDCOL has two fulltime environmental specialists with training for environmental and social considerations. BIFFL: BIFFL has trained environmental and social consultants.	IDCOL: As capacity building is a continuous process, IDCOL might explore opportunities to enhance competence of its ESMU through relevant trainings. BIFFL:
(10)	Are there any technical staff with an engineering/industry background responsible for	IDCOL: IDCOL has technical staffs with an engineering/industry background.	IDCOL: No further improvement is required. BIFFL:

	technical analysis of credit proposals?	BIFFL: BIFFL has a technical unit with three technical staff with an engineering/industry background.	
(11)	What experience, if any, does the financial intermediary/executing agency have of hiring or dealing with environmental consultants?	IDCOL: IDCOL has abundant experience of hiring or dealing with environmental consultants in various development projects. BIFFL: BIFFL has experience of hiring and dealing with environmental consultants.	IDCOL: In IDCOL, the environmental and social management for JICA-EEF Project will be included in the routine works, and the present human resources seem to be sufficient to ensure proper implementation of safeguards. BIFFL: Because the environmental and social management for JICA-EEF Project will be included in the routine works, the present human resources will be able to implement the management.
(12)	What was the budget allocated to the ESMS and its implementation during a year? Please provide budget details including staff costs and training as well as any actual costs.	IDCOL: IDCOL has the budget for two fulltime environmental specialists. BIFFL: BIFFL has allocated budget as per plans, including but not limited to consultant costs, employee considerations as well as provisions for hiring extra environmental consultants as necessary.	IDCOL: Because the environmental and social management for JICA-EEF Project will be included in the routine works of IDCOL, the additional budget only for the ESMS in JICA-EEF Project will not be required.
4. Monitoring and Reporting			
(13)	Do you receive environmental and social monitoring reports from subproject companies that you finance?	IDCOL: IDCOL has abundant experience to receive environmental and social monitoring reports in various development	IDCOL: Based on the categorization and potential scale of environmental and social impacts, IDCOL requires sub-project monitoring

		projects including Solar Home System sub-project. BIFFL: We receive reports as needed. We are constantly updating our procedures according to our ESMF.	reports with different intervals with emphasis of waste management.
(14)	Please describe how you monitor the subproject company and their subprojects' social and environmental performance.	IDCOL: Two environmental specialists or hired environmental consultants conduct environmental monitoring. BIFFL: We do it through our employee and consultants, who will be in touch with their sub-project counterparts to monitor the projects. They will visit the sites when necessary and report on their findings.	IDCOL: In addition of collecting periodic monitoring report, ESMU officials of IDCOL periodically visit the sub-projects to assess the status of implementation of EMP. BIFFL:.
(15)	Is there an internal process to report on social and environmental issues to senior management?	IDCOL: IDCOL has set up the internal process to report on social and environmental issues. BIFFL: Yes, the issues are reported as part of the monitoring reports of the specialists.	IDCOL: No further improvement is suggested.
(16)	Do you prepare any social and environmental reports: - For other multilateral agencies or other stakeholders - E&S reporting in the Annual Report	IDCOL: IDCOL has prepared many kinds of social and environmental reports for other multilateral agencies. BIFFL: We have our own reports, which we can share on a need basis with other stakeholders.	IDCOL: In case of large infrastructure projects, IDCOL is required to prepare and duly submit the annual Environmental and Social Compliance Audit Reports to Asian Development Bank.

5. Experience			
(17)	Has the executing agency signed any national or international agreements or declarations concerning environmental issues?	IDCOL and BIFFL have not signed any national or international agreements or declarations concerning environmental issues. Bangladesh has signed “Basel Convention on the Control of Trans boundary Movements Wastes and Their Disposal” BIFFL: We comply with the directives of Bangladesh Bank, our regulatory body.	IDCOL: The sub projects under JICA EE&CPF are not expected to trigger “Basel Convention” in regard of unsustainable Trans boundary waste disposal. BIFFL: BIFFL should confirm the waste disposal from a viewpoint of “Basel Convention”.
(18)	Has the executing agency ever received any criticism of its environmental record? If so, what was the criticism?	IDCOL and BIFFL have not received any criticism of its environmental record.	-
(19)	Does the executing agency carry out environmental audits of its properties to analyze health and safety issues, waste disposal, etc.?	IDCOL: IDCOL carries out environmental audits. BIFFL: Yes, we do it through our own capacity, and if necessary, through other parties.	IDCOL and BIFFL: The specified environmental audits only for JICA-EEF will not be required.
(20)	Please state any difficulties and/or constraints related to the implementation of the ESMS.	IDCOL: IDCOL has not yet faced any noteworthy difficulty in implementing ESMS. BIFFL: Because potential impacts of JICA-EEF Project on environment and society are likely to be minimal or little adverse, there are no difficulties to the implementation of the ESMS.	IDCOL and BIFFL: Because the environmental and social management for JICA-EEF Project will be included in the routine works, the present human resources will be able to implement the ESMS. -
6. Need of Capacity Development and Improvement Plan			
Potential impacts of JICA-EEF Project on environment and society are likely to be minimal or little adverse.			

IDCOL: Based on the scale and complexity of technology, the potential impacts of JICA-EEF may vary from minimal to moderately adverse range, which can be properly accommodated within the current institutional set-up, document and monitoring mechanism. Consequently, the necessity of any further improvement is not widely recommended.

BIFFL: We have achieved our targets thus far.

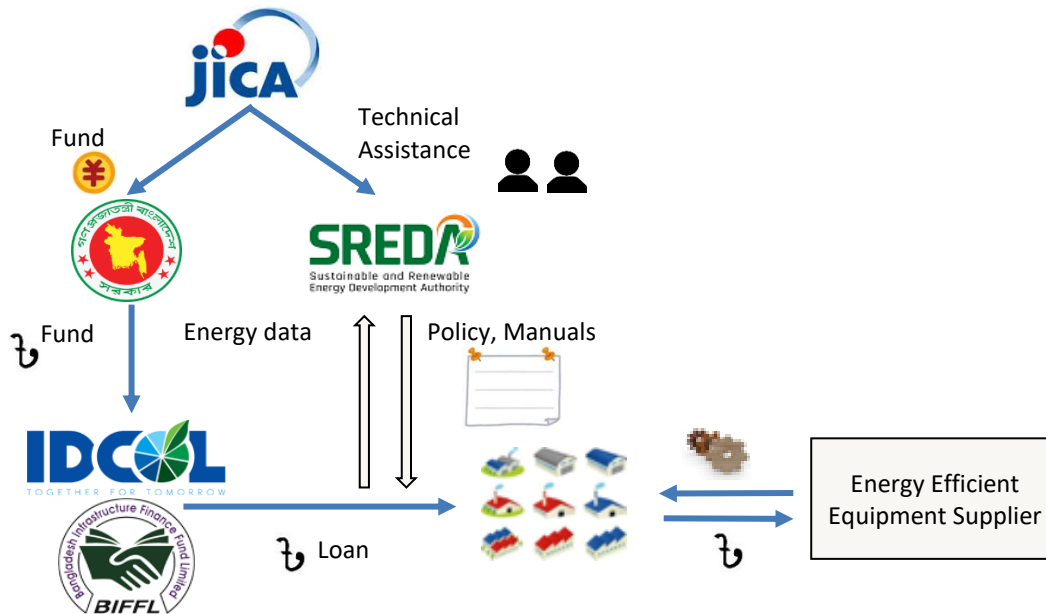


Fig 1: Project Scheme and Stakeholders

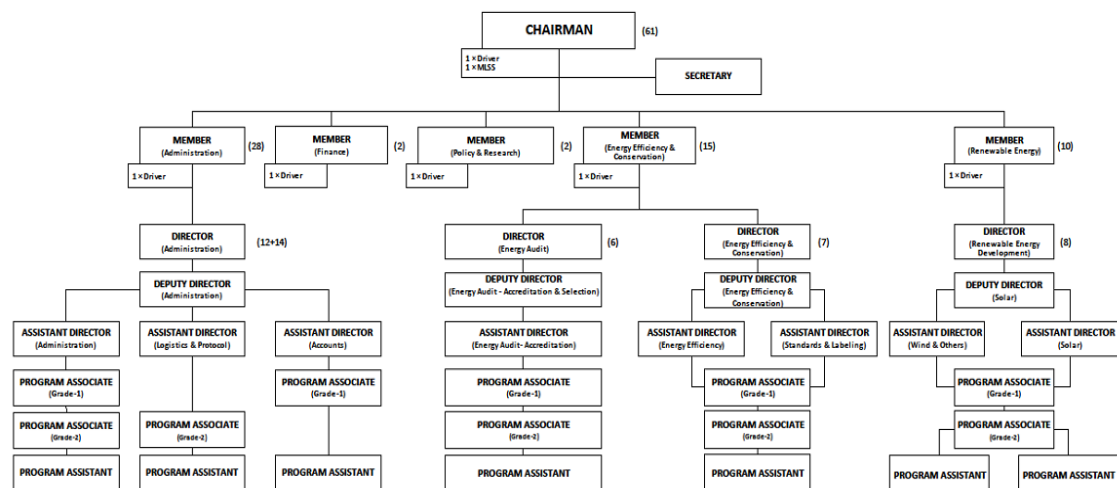


Fig 2: Organization of SREDA

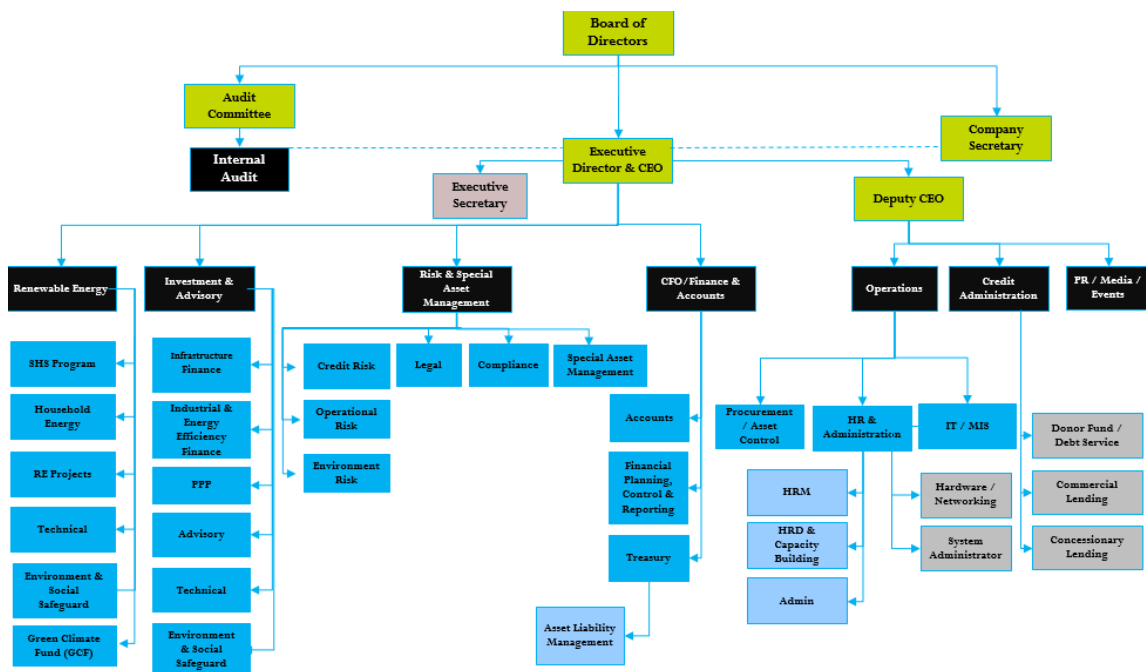


Fig 3: Organization of IDCOL

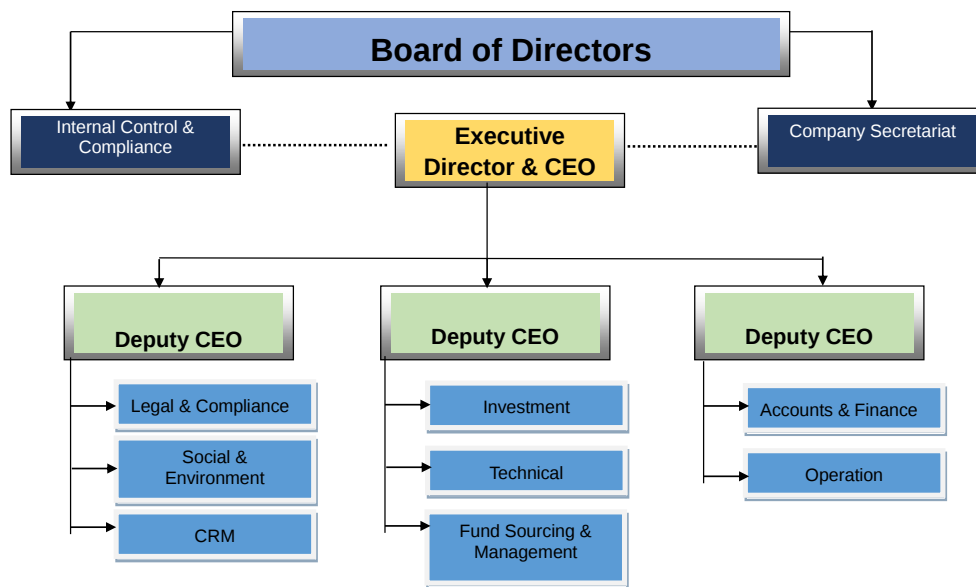


Fig 4: Organization of BIFFL

10-13 Annex 40: Statement of the Designated Account, Sub Account and the Revolving Fund Account of the proceeds of the Loan Form

Statements of Designated Account, Sub Account and Revolving Fund Account for BD-P90
(Covering Period: From DD/MM/YYYY To DD/MM/YYYY)
(BDT million, unless otherwise specified)

No.	Category	Amount
Designated Account		
1	Opening Balance	
2	Disbursement from JICA (million JPY)	
3	Disbursement from JICA (million Taka)	
4	Total Revenue (2+3)	
5	Transfer to the Sub Account	
6	Total Expenditure	
7	Closing Balance	
Sub Account		
8	Opening Balance	
9	Transfer from the Designated Account	
10	Total Revenue	
11	1st-generation On-lending Loan Disbursement to sub-project owners	
12	Total Expenditure	
13	Closing Balance	
Revolving Fund Account		
14	Opening Balance	
15	Principal Repayment from sub-project owners on the 1st-generation On-lending Loans	
16	Principal Repayment from the sub-project owners on the On-lending Loans from the Revolving Fund (2nd- and succeeding generation)	
17	Total Revenue (15+16)	
18	Disbursement to the sub-project owners for the 2nd and succeeding generation of On-lending Loans to the sub-project owners from the Revolving Fund	
19	Total Expenditure	
20	Closing Balance	

Interest Repayment Account		
21	Opening Balance	
22	Interest repayment from the sub-project owners on the On-lending Loans	
23	Total Revenue	
24	Total Expenditure	
25	Interest repayment to the MOF-FD after deduction of Administration Fee from Bangladesh Bank	

10-14 Annex 41: Current Repayment and Overdue Status Reporting Form
(As of DD/MM/YYYY)

1. On-lending Loans from the Sub Account (1st generation)

(million Taka)

Duration of arrears	Number of the On-lending Loans with arrears	Total amount of arrears	Total loan amount of the On-lending Loans with arrears	Total repaid amount from the On-lending Loans identified in each category
3 to 6 months				
6 months to 1 year				
1 to 2 years				
Over 2 years				

2. On-lending Loans from the Revolving Fund Account (2nd- and succeeding-generation)

(million Taka)

Duration of arrears	Number of the On-lending Loans with arrears	Total amount of arrears	Total loan amount of the On-lending Loans with arrears	Total repaid amount from the On-lending Loans identified in each category
3 to 6 months				
6 months to 1 year				
1 to 2 years				
Over 2 years				

3. Sub-Loans from the Sub Account (1st generation)

(million Taka)

Duration of arrears	Number of the On-lending Loans with arrears	Total amount of arrears	Total loan amount of the On-lending Loans with arrears	Total repaid amount from the On-lending Loans identified in each category
3 to 6 months				
6 months to 1 year				
1 to 2 years				
Over 2 years				

4. Sub-Loans from the Revolving Fund Account (2nd- and succeeding-generation)

(million Taka)

Duration of arrears	Number of the On-lending Loans with arrears	Total amount of arrears	Total loan amount of the On-lending Loans with arrears	Total repaid amount from the On-lending Loans identified in each category
3 to 6 months				
6 months to 1 year				
1 to 2 years				
Over 2 years				

Note: This report only covers the On-lending Loans whose principals are in arrears.

10-15 Annex 42: Audit Report on the Statements of the Designated Account, Sub Account and the Revolving Fund Account (standard form)

To: Bangladesh Bank

Date: []

We have audited the accompanying Statements of the Designated Account, Sub Account and the Revolving Fund Account relating to the Small and Marginal Sized Farmers Agricultural Productivity Improvement Project financed under Loan Agreement No. BD-[] for the year(s) []. The said Statements are the responsibility of Bangladesh Bank's management. Our responsibility is to express an opinion on the said Statements based on our audit.

We conducted our audit in accordance with Generally Accepted Auditing Standards [or relevant national standards or practices], and accordingly, included such tests of the accounting records, and other auditing procedures necessary to confirm that:

- (a) the proceed of the Loan are used for the purpose of the Project;
- (b) the claims to the Designated Account, Sub Account and the Revolving Fund Account are made only for expenditures on eligible items under the Loan; and
- (c) the Statements of the Designated Account, Sub Account and the Revolving Fund Account are correct.

During the course of the audit referred to above, the said Statements and the concerned documents, together with the procedures and internal controls involved in their preparation, were examined, and they can be relied upon to support the related disbursement under the aforesaid Loan Agreement.

On the basis of the information and explanations that have been obtained as required and according to the best of our information as a result of the test audit, it is certified that the Statements of the Designated Account, Sub Account and the Revolving Fund Account read with the observations set out below represent a true and fair view of the implementation of the Project for the year.

[Name of the Auditor]
[Title of the Auditor]
[Name and Address of Audit Firm]
[Completion Date of Audit]

11 Attachments to Project 2 Formulation Documents

Attachments in this chapter are information referred to in the Project formulation documents but are not included in the existing Project Business Process Manuals. The Executing Agencies may consider adding these documents into the Business Process Manuals upon the timings of revision. Note that the attachment numbers are in harmony with the attachment numbers referred to in the Minutes of Discussions between the two governments.

11-1 Attachment 4 Subsidiary Loan Agreement Template (example for BIFFL)

SUBSIDIARY LOAN AGREEMENT

This Subsidiary Loan Agreement (SLA) is made on this the [] day of [] 2019

BETWEEN

The Government of the People's Republic of Bangladesh, represented by the Finance Division of the Ministry of Finance (hereinafter referred to as the Lender)

AND

Bangladesh Infrastructure Finance Fund Limited, a public limited company duly registered under the laws of Bangladesh and having license from Bangladesh Bank as NBFI, with its registered office at Borak Unique Heights, Level-3, 117 Kazi Nazrul Islam Avenue, Eskaton Garden, Dhaka-1217, Bangladesh, (hereinafter referred to as BIFFL, which expression shall include its successors in interest and legal representatives) represented by its Executive Director and CEO.

WHEREAS

- a) By an ODA Loan Agreement No. BD-XX dated DD MM YYYY (hereinafter referred to as the "Loan Agreement") between the JAPAN INTERNATIONAL COOPERATION AGENCY (here called "JICA") and the Lender, JICA has agreed to make available to the Lender from its loan an amount of XXXX Japanese Yen (JPY XXXX), (hereinafter called the "Loan"), for the purposes of implementation of Energy Efficiency and Conservation Promotion Financing Project (hereinafter called the Project) on the terms and conditions set-forth therein;
- b) Under the terms of the Loan Agreement, the Lender has agreed to make available to BIFFL part of the proceeds of the Loan under terms and conditions acceptable to the JICA;
- c) By a Project Memorandum entered into between the JICA and Lender on DD MM YYYY (hereinafter called the "Project Agreement"), BIFFL has undertaken certain obligations to the JICA in connection with its use of the proceeds of the said loan and the implementation of the Project; and
- d) In view of the foregoing, parties hereto have agreed to enter into this Agreement which is the SLA referred to in Section 4(4), Article III of the Loan Agreement.

NOW THEREFORE the Parties hereto have entered into this SLA on the terms and conditions set forth below:

Article 1

Definitions

1.01 Wherever used in this SLA, unless the context shall otherwise require, the terms defined in the Loan Agreement shall have the respective meanings set forth therein.

Article 2

Subsidiary Loan

- 2.01 a) Unless otherwise agreed to by and between JICA and the Lender, the Lender hereby agrees to extend to BIFFL the subsidiary loan in an amount not exceeding Taka XXXX (Equivalent to JPY XXXX as per exchange rate of JPY = XXXX BDT as on DD MM YYYY) subject to and upon the terms and conditions set-forth in the Loan Agreement and this Agreement for the purpose of carrying out the Project. Unless and until expressly revoked by the Lender at its sole discretion, the Lender hereby appoints BIFFL as its agent for the purpose of taking actions or entering into agreements required or permitted under section 4.01 and section 5.04 of loan agreements.
- b) The Lender shall open a Designated Account on its books in the name of BIFFL. Each part of the Subsidiary Loan shall be deemed to be withdrawn by BIFFL from such Designated Account from the date given in the official payment advice of the JICA in the amount and in the equivalent in Taka of amount of the corresponding withdrawals from the Loan Account.
- 2.02 a) BIFFL shall pay to the Lender interest on the principal of the Subsidiary Loan outstanding from time to time, at the rate of 1% per annum. Interest on the Subsidiary Loan shall accrue from the respective value dates as given in the official payment advice of the JICA and shall be computed on the basis of a 360-day Year of twelve 30-day months. The principal loan amount shall be repaid by BIFFL to the Lender in fifteen (15) years in annual installments after five (5) years of the grace period in accordance with the amortization schedule in local currency equivalent determined at official exchange rate mentioned in Section 2.01 a). Repayment date shall be DD MM in each year. The interest accrued during grace period shall be payable at a time along with the first installment of principal.
- b) Foreign exchange risk relating to the Loan and any other obligation shall bear by Lender.
- c) Grace period will commence on the date of the first withdrawal of proceeds from Subsidiary Loan.
- 2.03 BIFFL may repay to the Lender in advance of maturity any part or the entire principal amount of the Subsidiary Loan with the interest accrued thereon to the date of such repayment, without premium of penalty, any such repayment shall be applied pro-rata to the remaining outstanding installments.
- 2.04 BIFFL shall (a) maintain or cause to be maintained records and accounts adequate to reflect, in accordance with consistently maintained sound accounting principles, the expenditures financed out of the Subsidiary Loan, and (b) have such records and accounts audited for each fiscal year, in accordance with appropriate auditing principles.

Article 3

Conditions for Withdrawal and Procurement Procedures

3.01 The conditions for withdrawal of funds and procurement procedures applicable under the Loan Agreement apply to the proceeds of the Subsidiary Loan and procurements utilizing such funds.

Article 4

Execution of the Project

4.01 BIFFL shall perform all of its obligations under the Project Agreement and, to the extent applicable to it, under the Loan Agreement and carry out the Project with due diligence, efficiency and in conformity with sound administration, financial, engineering and public utility practices.

4.02 BIFFL shall not utilize any part of the proceeds of the Subsidiary Loan or any goods and services financed out of the proceeds of the Subsidiary Loan for any purpose what so ever other than exclusively for the carrying out of the Project.

4.03 The Lender shall facilitate the availability of the facilities, services, land and other resources required by BIFFL, in addition to the Subsidiary Loan proceeds for carrying out of the Project in accordance with the Project Agreement.

4.04 The Lender shall take all action which shall be necessary on its part to enable BIFFL to perform its obligations under the Project Memorandum and Loan Agreement, and shall not take any action which would impair the performance of such obligations.

4.05 BIFFL shall take all action as shall be necessary on its part to enable the Lender to comply with its obligations under the Loan Agreement in respect of the Project.

4.06 BIFFL shall not assign any rights or obligations under this Agreement without the prior written concurrence of the Lender and JICA.

Article 5 Remedies of the Government

5.01 If any of the following events shall occur and shall continue for the period specified below, than at any subsequent time during the continuance thereof, the Lender, at its option, may by notice to BIFFL declare the principal of the Subsidiary Loan then outstanding to be due and payable immediately together with the interest and other charges thereon and upon any such declaration the principal, together with the interest and other charges thereon, shall become due and payable immediately.

- a) a default shall occur in the payment of principal or interest or any other payment required under this Agreement and such default shall continue for a period of thirty (30) days;
- b) a default shall occur in the performance of any other obligation on the part of BIFFL under this Agreement, and such default shall continue for a period of sixty (60) days after notice thereof shall have been given by the Lender to BIFFL.

Article 6 Effectiveness and Termination

6.01 This SLA shall come into force and effect on the date of signature between BIFFL and Lender.

6.02 This SLA and all obligations of the parties hereunder shall terminate on the earlier of the following two dates: (i) when the entire principal amount of the subsidiary loan and all interest/service charge thereon and any other payments required by BIFFL under this SLA shall have been paid to and received by the Lender in accordance with the provisions of this SLA and (ii) when all obligations of BIFFL under this SLA shall have been fulfilled.

Article 7 General Provisions and Miscellaneous

7.01 Any notice or request required or permitted to be given or made under this SLA and any agreement between the parties contemplated by this SLA shall be in writing. Such notice or request shall be deemed to have been duly given or made when it shall be delivered by hand or

by mail, telegram, cable, telex, e-mail or radiogram to the party to which it is required or permitted to be given or made at its address hereinafter specified, or at such other address as such party shall have designated by notice to the party giving such notice or making such request. The addresses so specified are;

- a. In the case of the Lender to-
- The Senior Secretary
Finance Division
Ministry of Finance
Bangladesh Secretariat
Ramna, Dhaka-1000
Bangladesh
Email: XXXXXXXXXXXX
Facsimile:+880-2-XXXXX
Telephone:+880-2-XXXXX

- b. In the case of BIFFL to-
- Executive Director & CEO
Bangladesh Infrastructure Finance Fund Limited
Borak Unique Heights, Level-3,117 Kazi Nazrul Islam Avenue,
Eskaton Garden, Dhaka-1217, Bangladesh
Email: XXXXXXXXXXXX
Facsimile:+880-2-XXXXX
Telephone:+880-2-XXXXX

7.02 No delay in exercising, or omission to exercise, any right, power or remedy accruing to either party under this Agreement upon any default shall impair any such right, power or remedy or be construed to be a waiver thereof or an acquiescence in such default; nor shall be action or such party in respect of any default, or any acquiescence in any default, affect or impair any right, power of remedy of such party in respect of any other or subsequent default.

7.03 Any amendments made to the Loan Agreement shall have immediate effect on this SLA, as appropriate, and the SLA shall be considered to have been so amended.

7.04 Notwithstanding Article 11.04, the parties shall formally amend this SLA as soon as possible following any amendments to the Loan Agreement.

7.05 Any matter not expressly covered in the SLA shall be governed by the provisions of the Loan Agreement if applicable. In the event of any conflict between the provisions of this SLA and the Loan Agreement, the provisions of the Loan Agreement shall prevail.

7.06 This SLA shall be governed by the laws of Bangladesh.

IN WITNESS whereof these presents have been executed the day and year hereinbefore written:

For and on behalf of <u>Government of the People's Republic of Bangladesh</u>	Witness:
By..... Authorized Representative Date:	Witness:

For and on behalf of <u>Bangladesh Infrastructure Finance Fund Limited</u>	Witness:
By..... Authorized Representative Date:	Witness:

11-2 Attachment 28: Reference Note on Energy Efficiency and Conservation Promotion Financing Project (Phase 2)

1. Necessity of the Preferential Term

(1) Why is energy efficiency required?

SREDA published the Energy Efficiency and Conservation Master Plan up to 2030 (EE&C MP) which sets out a target to reduce the primary energy consumption per GDP (= energy intensity) by 15% for FY 2020-21 (in comparison with the base year of FY 2013-14), and by 20% for FY 2029-30. Under certain assumption, this implies that 7,482 GWh of electricity, which is equivalent to the power generated annually by 2,000 MW power station, will be saved as the result of energy efficiency measures. The Power Sector Master Plan (PSMP) is currently being revised anticipating that this energy saving will be realised.

If Bangladesh fails to follow the energy saving path remaining on the BAU case, the energy saving of 7,482 GWh will not be realized and GOB would have to additionally invest on the construction of power station(s), possibly with the capacity of 2,000 MW. The Energy Efficiency and Conservation Promotion Financing (EECPF) Project is the only available option for Bangladesh to trigger its practical energy saving program and minimize the investment on power sector.

(1) BAU Energy consumption	64,402,000 MWh
(2) EE Scenario energy consumption	56,919,000 MWh
(3) Energy saved = (1)-(2)	7,483,000 MWh
(4) Required generation capacity = saved energy / annual operation hours / facility operation ratio	1,993 MW = approx. 2,000 MW

Note:

Energy consumption and energy saving data referred from EE&C MP

Facility operation ratio (43%) is the grid average rate in Bangladesh (FY 2013)

Generation capacity: Matarbari Power Plant = 1,200 MW, Halipur Power Plant = 412 MW

The phase 1 of this Energy Efficiency and Conservation Promotion Financing (EECPF) Project started in 2016, with SLA being concluded in 2017. With a strong demand from the industries for promotion of energy efficiency and conservation, the Project has successfully completed the use of 70% of its fund within 2 years of commencement. There is a desperate need to sustain this intervention to promote energy efficiency and conservation in wider scope of the industries. Against this background, the second phase of the project is currently being considered.

(2) Necessity of Low Interest Rate for End-Users

The Energy Efficiency and Conservation Promotion Financing (EECPF) Project promotes the penetration of energy-efficient equipment, contributing to saving energy without affecting the production. To encourage the industry and businesses to choose energy-efficient equipment which, in many of the cases, is more expensive compared with the conventional ones, there is a need for compensating the cost difference.

Although energy-efficient equipment may become economical on lifecycle cost basis, equipment buyers are most likely to make a decision solely based on investment cost, resulting in choosing cheaper, conventional non-energy-efficient equipment. Against this background, the Project aims to provide a low interest loan to the buyers so that total payment amount for energy efficient equipment (equipment cost and financial cost) will become break even with when acquiring conventional equipment.

Payment simulations conducted for various types of equipment resulted in the need for 5 percentage point lower interest rate than commonly available commercial loans (assumed to be 9.5%). For example, purchase of an energy efficient spinning machine 25% more expensive compared with a conventional type will require a 4.1% interest rate loan for the total payment to become par with that of a conventional one. Similarly, 27% more expensive once-through boiler requires 3.9% interest rate to be even with the conventional type in terms of the total payment amount. Without such low interest rate facility, the energy efficient equipment will NOT be chosen from commercial rationality.

Spinning machine with permanent magnet motor
(in comparison with induction motor-driven spinning machine)

		Commercial finance	ODA Loan finance
		Conventional equipment	Energy efficient equipment
Price	USD	119,000	149,000
Interest rate	%	9.5%	4.1%
Tenure period	yrs	8	8
Grace period	yr	1	1
Total payment	USD	178,895	178,693

Note: calculation by JICA T/A Task Team

Small sized once-through boiler (in comparison with fire-tube boiler)

		Commercial finance	ODA Loan finance
		Conventional equipment	Energy efficient equipment
Price	USD	48,000	60,750
Interest rate	%	9.5%	3.9%
Tenure period	yrs	8	8
Grace period	yr	1	1
Total payment	USD	72,159	72,228

Note: calculation by JICA T/A Task Team

GoB is therefore suggested to consider offering sub-loans to IDCOL and BIFFL at exceptional rate, while IDCOL and BIFFL are requested to minimise the margin on this financial instrument

to **realise 4% interest rate** for those who are choosing energy efficient equipment instead of conventional ones. If the interest rate were to increase, the Project may even lose its function as an important policy financing instrument for the country.

(3) Reference to Other Cases

There are cases in the past where GoB offered preferential interest rate as exceptional cases. These are based on the notion that the projects are essential but were financially unviable under normal lending conditions. As these preceding examples show, exceptionally preferential arrangements are made for essential loan projects to become financially viable and to have them practically implemented.

Project Name	Amount (SLA)	Signing Date (SLA)	Interest rate (SLA)	Repayment Period (SLA)
Karnaphuli Water Supply Project	JPY 12,224 mil	28/Nov/2013	1%	40 Yrs (10 yrs grace)
Karnaphuli Water Supply Project -Phase II	JPY 34,847 mil	28/Nov/2013	1%	40 Yrs(10 yrs grace)
Matarbari Ultra Super Critical Coal Fired Power Project	JPY 41,498 mil	28/Jul/2015	2%	40 Yrs (10 yrs grace)
Energy Efficiency and Conservation Promotion Financing Project (Existing Phase 1 Project) *	JPY 11,988 mil	10/Apr/2017	1%	40 Yrs(10 yrs grace)

Source: Signed relevant SLAs between Gob and Executing Agency

Note (*) SLA signing date is for IDCOL, while the amount includes entire amount of the loan.

The GoB is therefore requested to consider such preferential arrangement for this Project under the notion that the implementation of the Project is essential for the country and that low interest rate is requisite.

2. Sub-Loan Agreement

The Project differs from the other loan project in that there are two implementing financial institutions (IDCOL and BIFFL) offering identical services under equal environment. These financial institutions compete against each other when implementing the Project.

To encourage their competition, the GoB is suggested to leave the whole fund amount available to either of the institutions. The sub-loan agreement therefore may be prepared jointly for the two financial institutions, with the lending threshold amount equivalent to the total fund amount (not shared between the two institutions). The GoB is requested to consider the possibility of preparing the Sub-loan agreement in accordance with the suggested arrangement.

12 Outcome from the Extension Period of the T/A Task

The T/A task extension works were conducted to achieve an expected level of contribution to the Phase 2 Project formulation as well as for support for implementation for the existing Project. Further, the Task also attained further advancement of implementation capacities through reviewing activities especially at IFIs. The next sections summarise the work achievements:

12-1 Summary of Achievements

Major expected direct outcome from the T/A, at the initial starting of the task was listed up as in the following table. It should be noted here that the cause for non-achievement of the expected outcome are mostly due to the responsibilities of the executing agencies. The T/A Task Team, nevertheless, will continue its support for the executing agencies until the task completion.

Table: T/A Task – Result evaluation Revised

(Original T/A Task Group)

Outcome	Responsible organisation	Contribution from the T/A Task Team	Result evaluation
Project Business Process Manual	SREDA, IDCOL, BIFFL	Drafting and consultation	Fully achieved: Developed and revised to become version 4.0
Annual Project Implementation Plans	SREDA, IDCOL, BIFFL	Advise on formats and compilation	Partly achieved: Project plans are integrated into business plans at IFIs, while SREDA still has not set a target concerning the Project Implementation.
Annual Project Implementation Reports	SREDA, IDCOL, BIFFL	Advise on formats and compilation	Partly achieved: Annual reporting is made once in four of the QPRs. Instead, a monthly reporting format has been introduced (Annex 104).
Quarterly Progress Report	SREDA	Compilation support	Fully achieved: QPRs are prepared and submitted for every quarter of the Project period.
Steering Committee (SC)	SREDA, MPEMR	Support for formulation, liaising with JICA <i>Addition during the extension work: timeline for formulation set.</i>	Not achieved: Pending due to delay in TAPP approval (external factor for the T/A Task Team).
Technical Advisory Committee (TAC)	SREDA	Support for formulation, liaising with JICA <i>Addition during the</i>	Not achieved: Same as above (external factor for the T/A Task Team).

		<i>extension work: timeline for formulation set.</i>	
Project Implementation Unit (PIU)	SREDA, IDCOL, BIFFL	Support for formulation <i>Addition during the extension work: reinforcement plan for Phase 2 Project considered.</i>	Fully achieved: Formulated and changes monitored and reported on QPRs.
Management Information System	T/A task team, SREDA	Development and installation <i>Revision (improvement) reflected on 17 January 2019.</i>	Fully achieved: Developed, launched and under operation.
Task Completion Report (as a set of documents including necessary information for SREDA Project consultants)	T/A task team	The T/A team will compile all of its outputs and activities during the task period. The document will contain necessary data to be handed over to the Project Consultants. <i>Addition during the extension work: This supplementary portion is being added.</i>	Fully achieved: This document and accompanying attachments.
Updated eligible EE&C equipment and technology list	SREDA, T/A task team	The T/A task team will take care of the updating procedure as well as giving technical advice on updating.	Not achieved: Pending due to delay in the formulation of the TAC as the consequence of delay in TAPP approval (external factor for the T/A Task Team).
List of ongoing and upcoming sub-projects	Sub-project owners, SREDA, IDCOL/BIFFL	Under assumption that the loan will actually be extended to the sub-project proponents, there will be a list of the sub-projects in the MIS database. <i>Addition during the extension work: four new NOCs issued making the total sub-project 11.</i>	Fully achieved: Retrieved from MIS and reported monthly in periodical Project progress meetings.
List of PDs	IDCOL, BIFFL	Subject to the commencement of B-type loan, there will be a list of the approved PDs under IDCOL and BIFFL, each.	Not achieved: B-type loan not yet started due to strong demand with A-type loan (external factor for the T/A Task Team).
Data on energy conserved	SREDA	There will be a set of data on energy saved through	Fully achieved: Retrievable from MIS-

		implementation of the sub-projects. <i>Addition during the extension work: On-site observation visits conducted, with the findings recorded in Chapter 8 of this report.</i>	DASH, and is being reported monthly in periodical Project progress meetings.
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Source: T/A Task Team

(Additional Task Group for extension period)

Outcome	Responsible organisation	Contribution from the T/A Task Team	Result evaluation
Formulation of the Phase 2 Project	T/A Task Team	Drafting documents and supports for consultations	Fully achieved: Support for Fact Finding Mission and Appraisal Mission completed.

Source: T/A Task Team

12-2 Issues to be followed up

The Phase 2 Project preparation left issues to be solved by the Executing Agencies, notably by SREDA. Major issues that need to be followed up are the following two points:

Steering Committee and Technical Advisory Committee Formulation

With the TAPP finally approved in end of September 2018 (by the Planning Commission) and early October 2018 (through issuing of MPEMR Government Order), SREDA can now start the formulation of the Project Steering Committee (SC). SREDA, under discussions between JICA, should have completed the SC formulation by end of December 2018. Further, the Technical Advisory Committee (TAC) will have to be formulated after SC, by end of January 2019. The functions of the SC and the TAC, is expected to drastically improve the implementation administration capacity of the stakeholders. The discussions and considerations at the SC can add objectivity in viewpoints, especially when considering synergetic effects among various policy implementation.

The existence of the TAC, is also essential when considering the scope enhancement for the Project. For these reasons, SREDA is recommended to have the TAPP approved at its soonest convenience, and to start the formulation of SC and TAC.

SREDA Consultants Mobilisation

Although the reason for this incompleteness of the Project management entity is external to the T/A Task, the T/A Task Team's concern over the current status of the Project implementation institutional setup is there, even after its work completion. This includes the severe delay in SREDA's consulting service procurement. With the TAPP finally approved in the beginning of October 2018, JICA Bangladesh Office is expected to continue encouraging SREDA to have the consultants selected, procured and mobilised. In line with the agreement between JICA appraisal mission and SREDA, the consultant evaluation result should have been submitted to JICA by mid-December, to finalise all the procurement process by end of January 2019. It will be an essential factor for resuming the full-fledged implementation of the Project even after the completion of the JICA T/A Task Team's activities.

End of Document

Appendices

A1 Agenda and Minutes of the 7th Project Coordination Committee Meeting

Agenda

Energy Efficiency & Conservation Promotion Financing Project 7th Project Coordination Committee Meeting

Tuesday 09 October 2018, 10:00am-12:00pm @ Mohananda Room, 10F SREDA Office

<Proposed Agenda>

Welcome remarks from the SREDA Chairman

1. Project progress summary

1.1 Review of the last meeting decisions

- Attachment 1
- 1.2 Progress monitoring (T/A Task Team)
 - Report using a monitoring framework (Attachment 2 & 3)
- 1.3 Considerations for the 2nd Tranche (T/A Task Team)
 - Conditions and achievement status (Attachment 4)

2. IFIs' progress reporting

2.1 IDCOL

- L/C opening and fund disbursement status
- Preparations for NOC requests
- Others

2.2 BIFFL

- Training
- Green and PPP Expo & Convention
- L/C opening and fund disbursement status
- Preparations for NOC requests

3. SREDA's progress reporting

3.1 Technical Assistance Project Proposal (Proforma) Approval

3.2 Procurement of Consulting Service

4. Suggestions for Improvement in Project Implementation

4.2 Clarification on NOC validity

- L/C opening to be required.

4.1 Proposed interpretations of Eligibility

- Gas engine cogeneration, waste heat recovery

Minutes

Government of the People's Republic of Bangladesh
Sustainable and Renewable Energy Development Authority (SREDA)
Power Division
IEB Bhaban (10th floor), Ramna, Dhaka-1000
www.sreda.gov.bd

Subject : Meeting Minutes of Periodical Meeting on Energy Efficiency and Conservation Promotion Financing Project (EECPFP)

Venue : Mohananda conference room, SREDA, IEB Building (10th Floor), Ramna, Dhaka-1000.

Time : 10:00 PM-11:45 PM

Date : 09 October, 2018

Chairman : Mr. Md. Helal Uddin, Chairman, SREDA

Attendance:

Following person attended the meeting (Not according to seniority):

SI	Name	Status
1	Mr. Md. Helal Uddin	Chairman, SREDA
2	Mr. Siddique Zobair	Member (Energy Efficiency & Conservation) SREDA
3	Mr. Md. Manzur Morshed	Director (Energy Audit) SREDA
4	Mr. Engr. Md. Rezaul Hoq	Director (Energy Efficiency & Conservation), SREDA
5	Mr. Engr. Muhammad Ali Baker	Deputy Director (Energy Efficiency), SREDA
6	Mr. Engr. Md. Parvejul Islam	Assistant Director (Energy Efficiency), SREDA
7	Mr. Engr. Toufiq Rahman	Assistant Director (Standard, Testing & Labelling), SREDA
8	Mr. Md. Abdullah Al Mamun	Assistant Director, SREDA
9	Mr. Mr. Abdullah Bin Hossain	JICA Bangladesh Office
10	Mr. Mohammed Zahidul Haque	VP & Unit Head, IEEF, IDCOL
11	Mr. Chayan Kumar Barua	Assistant Manager, Investment, IDCOL
12	Mr. Rahul Agnihotri	EY (IDCOL Consultant team)
13	Mr. Soumajit Maity	EY (IDCOL Consultant team)
14	Mr. Md. Abdul Aziz	MTO- Investment, BIFFL
15	Mr. Asif Ahmed Khan	MTO- Technical, BIFFL
16	Mr. Chandan Kumar Pal	MTO-Sustainable Finance-BIFFL
17	Mr. Tsumio Hatsukade	JDI (BIFFL Consultant team)
18	Mr SM Firoj Hasan	YC (BIFFL Consultant team)
19	Mr. Yoshihiko KATO	Team leader, JICA T/A task team
20	Dr. Kimio Yoshida	JICA T/A task team
21	Mr. Ulysses Coulmas	JICA T/A task team
22	Dr. Mahady Hasan	JICA T/A task team
23	Mr. Md. Jahangir Hasan Talukder	JICA T/A Task team

Handouts and presentations:

1. Proposed Agenda,
2. Previous meeting's record,
3. Attachment 1: Review of the last meeting decisions,
4. Attachment 2: Project process Monitoring Framework,
5. Attachment 3: IFI's Sub-Project Implementation Plan and Monthly Reporting Format (Annex 104 for A-type loan),
6. Attachment 4: Conditions and Achievement Status for 2nd Tranche of the Loan,
7. (On screen) IDCOL's Progress and Present status presentation,
8. (On screen) BIFFL's Progress and Present status presentation.

Welcome remarks from the Chairman

Mr. Md. Helal Uddin, Chairman of SREDA welcomed and greeted the participants to the meeting and observing few new participants he requested all to introduce them at the meeting before starting. He then requested Mr. Yoshihiko KATO, Team leader JICA T/A task team to review the last meeting minutes and then to proceed with the agenda-wise discussion. Mr. Kato proceeded and comments raised from the participants during the discussions were as follows:

1. Project progress summary (1.1, 1.2 and 1.3 from T/A Task Team)**1.1 Review of the last meeting decisions**

- Among 8 decisions, the IFIs' disbursement timeline monitoring was found difficult to follow up as suggested. The T/A task team, for the time being, is asking the IFIs to concentrate on accelerating the existing NOC approved applications. Other 7 points are well followed up.

1.2 Progress monitoring

- Significant progress since the last meeting in August was the issuing of NOCs for Shun Shing Cement Industries Limited and Etafil Accessories Limited. There were also significant changes in the number of sub-projects approved and amount of L/C opened.

1.3 Considerations for the 2nd Tranche

- Among 5 requirements for the 2nd Tranche of the Loan, the most crucial is to have L/C opened amount reaching 70% of the amount of loan (excluding the amount for the consulting services). Roshawa L/C opening is the key in achieving this criterion. Another important requirement is to maintain similar condition (notably interest rate), for which SREDA will have to negotiate with the Finance Division for continued special treatment of the interest rate. Among other requirements, the inclusion of Japanese equipment will have to be encouraged by the IFIs.

2. IFIs' progress reporting**2.1 IDCOL**

- Mr. Zahidul Haque, IDCOL, provided updates including the fact that IDCOL has already received NOC from SREDA for an amount of BDT 2,220 million; received disbursement from JICA account for an amount of BDT 1,170 million out of total available on lending amount of BDT 3,220 million.

Meghna Cement: All L/Cs have been opened amounting BDT 1,270 million, with 80% of the equipment already arrived at the site.

Tosrifa Industries Limited (RMG): Out of BDT 109 million, L/Cs amounting to BDT 53.9

million have been opened. The rest 02 L/Cs will be opened in November 2018 and December 2018 respectively. Loan agreement will be concluded by October 2018.

Shun Shing Cement: L/C for the entire amount of BDT 734 million has already been opened. Disbursement will be required by January 2019. IDCOL Board approval is due by November 2018.

Etafil Accessories: L/C has been opened for BDT 72.3 million (out of NOC amount of BDT 85.5 million). L/C for the rest of the amount is planned to be opened by end of October 2018.

- IDCOL has submitted a NOC request for a proponent (Fakir Apparels) for which L/C worth of BDT 52 million has recently been opened against the total requested loan amount of BDT 179.1 million. If the NOC is issued, this L/C amount will also be counted, contributing to achievement. There is another NOC request to be submitted, hopefully within 3-4 days for which BDT 52.7 million (L/C for full loan amount is already opened). Assuming that these two NOCs are issued IDCOL's L/C opened amount will reach 71%.
- Apart from the above, IDCOL currently has around 12 proponents in pipeline for which eligibility has been checked. The required loan amount is approximately BDT 2,260 million.

(Discontinuation of Pretty Eco Apparels Village Ltd application)

IDCOL will discontinue processing of loan for Pretty Eco Apparels Village Ltd due to some credibility issues and severe delay. The lessons learned through this case was that syndication arrangement is time consuming. IDCOL understands that factors such as syndication, proponent's implementation is also a factor to watch out for in pursuing the Project as planned.

- Mr. Kato, T/A Task Team suggested the participants to approve the discontinuation of the case through decision in this meeting (as there is no business process to have loan agreement concluded application to be dropped). Further, he noted that the L/C opened ratio calculation so far mentioned has already considered in the discontinuation of the Pretty case. He also requested the participants to further discuss the solution in item 4.1 of the agenda.

2.2 BIFFL

- Mr. Md. Abdul Aziz informed that BIFFL has recently submitted a NOC request for Bandhab Tex Limited, whose L/C (BDT 116.50 million) was opened on 4th October, in anticipation of the JICA Loan. With the NOC issuing for Bandhab Tex, the L/C opened amount will reach BDT 1,570 million. Updates for specific sub-projects and applications were as follows:

Odyssey Craft Pvt. Ltd (RMG): L/C for full amount (BDT 753 million) has already been opened.

Aman Spinning Mills Ltd (spinning): L/C for BDT 220 million has already been opened. The remaining amount is for the absorption chiller, which will take 2-3 months.

Pahartali Textile & Hosiery Ltd (Spinning): L/C opened for BDT 470 million out of BDT 510 million. As with Aman, the remaining is also for the chiller.

Fair Electronics: has already opened their L/C of BDT 10 million.

Bandhab Tex Limited: Waiting for NOC issuing, after which the L/C amount of BDT 116.50 million will be added.

- BIFFL has 13 more applications in the pipeline among which NOC request for Asia Composite Mills Ltd will be submitted to SREDA during this month (for loan amount of BDT 380 million, for equipment models that received NOC in preceding applications).
- BIFFL also reported on their Bangladesh Green and PPP Convention and Expo, as well as on their training in Europe.

(Roshawa L/C opening)

- Roshawa Cotton Mills Ltd. (Spinning): Identifying Roshawa case as a crucial key for the Project continuation, BIFFL has already shared with Roshawa, a letter from SREDA, and is trying to have the L/C opened by 18th October. The reason for taking time is to pursue the following procedures:
 - Roshawa has already received sanction for the required debt amount from BIFFL and South East Bank Limited (SEBL), So the good news is that the financing requirement for the entire project is confirmed.
 - Roshawa received approval for opening L/C for EE&C machineries from SEBL (in addition to a term loan) and BIFFL is ready to issue Letter of Comfort to SEBL to open a L/C in favour of Roshawa.
 - The L/C opening bank is conducting the process of mortgage (for term loan and L/C) that is taking standard time. The bank confirmed the opening of the L/C after completing mortgage documentation. The mortgage security is ready, only the documentation (vetting report from third party lawyer) is taking time.
 - BIFFL is exploring all the possible alternatives to expedite the L/C opening procedure. Nevertheless, Roshawa case is progressing as planned, and it is only for JICA's L/C requirement that it is becoming an issue. If the requirement were to be imposed one month later, then Roshawa case would not have been a problem.
- Mr. Siddique Zobair remarked the issue as a matter of concern for the country, and urged BIFFL to have the L/C opened by deadline.
- Chairman SREDA suggested BIFFL to seek for a way to proceed without waiting for a bank's board decision.

3. SREDA's Progress Reporting

3.1 Technical Assistance Project Proposal (Proforma) Approval

- Mr. Md. Rezaul Hoq, Director (Energy Efficiency & Conservation), SREDA announced that the Planning Commission has finally approved the TAPP, now to be cleared at the Power Division. Mr Rezaul visited the Power Division yesterday to obtain a GO (government order), now due today.

3.2 Procurement of Consulting Service

- Mr. Rezaul that the procurement is ongoing, with the Proposal deadline being 14th October 2018. The process is on time and will be completed as planned.

4. Suggestions for improvement in Project Implementation

4.1 Clarification on NOC validity

- Mr. Kato informed that SREDA proposes, based on lesson learned from "Pretty group" case to make it mandatory to have the L/C opened within 6 months of the NOC approval.

Current Business process manual only requires loan agreement conclusion, as such delay in L/C opening was unexpected.

- Mr. Zahid, IDCOL, suggested the T/A Task Team to monitor the L/C opening timing against the original L/C opening plan which is informed to SREDA on the NOC request technical appraisal form. He also commented that mandatory L/C opening within 6 months for all NOC requests may sometimes be difficult. Even if timeline is to be set, it should be from loan agreement date (and there should be special cases to consider in case of legal ground). If it were to be from NOC issuing date, it can be one year up (before) and one year down (after). Mr. Aziz, BIFFL opined the same.
- SREDA concluded by suggesting the introduction of a timeline for opening L/C within 6 months up (prior) and 6 months down (later) from NOC issuing, without provision for extension as it will be loosening the rule. Mr. Siddique Zobair added that there should be threshold, for example, within 10% of the total NOC issued amount, or say only one case from one IFI, even if such provision were to be introduced.

4.2 Proposed interpretations of Eligibility

- Mr. Kato introduced SREDA's idea of interpretation of code 9.11.1 in the eligible technology and equipment list to exclude gas engine cost portion from cogeneration set cost, as the gas engine, itself, is a conventional equipment which will not contribute to EE&C, but comprising a major portion in the cogeneration set cost. The eligible portion therefore should only be the waste heat recovery part.
- Mr. Zahid raised a concern on the amount of loan which will become small, and also suggested considering the applicants who wants to replace their engines with co-gen or tri-gen engines with built-in waste heat recovery and absorption chillers as set. Mr. Asif supported the proposal of Mr. Zahid as suitable for their side as well.
- Mr. Siddique Zobair reminded the participants to look into the objectives of the Project, to consider achieving the objectives through promotion of energy-efficient equipment.
- Mr. Kato supplemented that Dr. Yoshida, T/A task team member has identified a technology to make the gas engine more energy efficient, and will explain the findings to SREDA for future cases.
- Mr. Siddique Zobair suggested setting certain criteria on the eligibility of gas engines.

Concluding remarks

- Mr Siddique Zobair stressed that this EE&P Promotion Financing Project is not an ordinary lending, and to remember that it has an objective, to promote EE&C as soon as possible. He therefore expects the IFIs to make extra effort. Now is the critical time for us to exhibit our seriousness to JICA, to ensure the second tranche.
- Mr. Chairman, SREDA thanked all for the contribution through valuable comments. He requested for further awareness raising on possible EE&C promotion measures, including the existence of this concessionary loan financing project. IFIs informed that through their awareness creation activities, new proponents are being attracted with consideration for diversification of sectors. Chairman suggested having an intensive meeting in this regard with the IFIs and their consultant teams, after the JICA fact finding mission.

Decisions taken

- There should be a reasonable timeline for opening L/C. SREDA proposed 6 months prior and 6 months later from NOC issuing, without provision for extension in principle. The IFIs, however, are requesting longer term or considerations for some exceptions.
 - Gas engine cost will be excluded in 9.11.1 equipment cost. The T/A task team will provide information on energy-efficient gas engine for SREDA's consideration.
 - IDCOL will address a simple letter requesting SREDA to acknowledge the discontinuation of Pretty case. The letter should include a reason for dropping the case, acceptable for SREDA.
 - BIFFL and Roshawa will have the L/C opened by 18 October, as delay will affect the whole country's EE&C promotion.
 - SREDA officials shall process Bandhab Tex Limited NOC request promptly.
 - Next meeting date to be considered (proposed date = Tuesday 13 November 2018)
- The Chairman concluded the meeting with vote of thanks to all.

(Md. Helal Uddin)
Chairman, SREDA
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Government of the People's Republic of Bangladesh
Sustainable and Renewable Energy Development Authority (SREDA)
Power Division
IEB Bhaban (10th floor), Ramna, Dhaka-1000
www.sreda.gov.bd

No.27.02.0000.020.14.037.17-

Date: 24 October, 2018

Copy: (not according to seniority)

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3. Executive Director and CEO, Infrastructure Development Company Limited Kawran Bazar, Dhaka 1215
4. Executive Director and CEO, Bangladesh Infrastructure Finance Fund Limited, Kakrail, Dhaka-1000.

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5. Director (Energy Efficiency & Conservation / Energy Audit), SREDA, Ramna, Dhaka-1000
 6. Deputy Director (Energy Efficiency & Conservation / Energy Audit), SREDA, Ramna, Dhaka-1000
 7. Assistant Director (EE&C / ST&L / EAA) , SREDA, Ramna, Dhaka-1000
 8. Team leader, JICA T/A task team, EECPPF, SREDA, Ramna, Dhaka-1000
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A2 Agenda and Minutes of the 8th Project Coordination Committee Meeting

Agenda

Energy Efficiency & Conservation Promotion Financing Project 8th Project Coordination Committee Meeting

Wednesday 14 November 2018, 10:00 am @Mohananda Room, 10F SREDA Office

<Proposed Agenda>

Welcome remarks from the SREDA Chairman

1. Project progress summary

1.1 Review of the last meeting decisions

- Attachment 1

1.2 Progress monitoring (T/A Task Team)

- Report using the monitoring framework (Attachment 2 & 3)

2. IFIs' progress reporting

2.1 IDCOL

- Purchasing, installation, operation status and site information
- EE&C promotion activities apart from the Project

2.2 BIFFL

- Purchasing, installation, operation status and site information
- EE&C promotion activities apart from the Project

3. SREDA's progress reporting

3.1 Steering Committee Formulation

3.2 Technical Advisory Committee Formulation

3.3 Procurement of Consulting Service

4. Suggestions for Improvement in Project Implementation

4.1 Discussion: Component III through A-type loan

4.2 Reminder: Environmental and Social Considerations on MIS

4.3 Reminder: submission of Annex 367

Closing remarks from the SREDA Chairman

Minutes

Government of the People's Republic of Bangladesh
Sustainable and Renewable Energy Development Authority (SREDA)
Power Division
IEB Bhaban (10th floor), Ramna, Dhaka-1000
www.sreda.gov.bd

Subject : Meeting Minutes of Periodical Meeting on Energy Efficiency and Conservation Promotion Financing Project (EECPFP)
Venue : Mohananda conference room, SREDA, IEB Building (10th Floor), Ramna, Dhaka-1000.
Time : 10:00 AM
Date : 14 November, 2018
Chairman : Mr. Md. Helal Uddin, Chairman, SREDA

Attendance:

Following person attended the meeting (Not according to seniority):

SI	Name	Status
1	Mr. Md. Helal Uddin	Chairman, SREDA
2	Mr. Siddique Zobair	Member (Energy Efficiency & Conservation) SREDA
3	Mr. A. K. M. Mizanur Rahman	Member (Policy & Research) SREDA
4	Mr. Md. Manzur Morshed	Director (Energy Audit) SREDA
5	Mr. Engr. Md. Rezaul Hoq	Director (Energy Efficiency & Conservation), SREDA
6	Mr. Engr. Md. Parvejul Islam	Assistant Director (Energy Efficiency), SREDA
7	Mr. Mohammed Zahidul Haque	VP & Unit Head, IEEF, IDCOL
8	Mr. Chayan Kumar Barua	Assistant Manager, Investment, IDCOL
9	Mr. Manish Yadov	IDCOL Consultant team
10	Mr. Soumajit Maity	IDCOL Consultant team
11	Mr. Asif Ahmed Khan	BIFFL MTO Technical
12	Mr. Nazmul Karim	BIFFL Assistant Technical Officer
13	Ms. Tandra Haque	BIFFL Consultant team
14	Mr. Ashraful Islam Chowdhury	BIFFL Consultant team
15	Mr SM Firoj Hasan	BIFFL Consultant team
16	Mr. Yoshihiko KATO	Team leader, JICA T/A task team
17	Mr. Takamichi Ide	JICA T/A task team
18	Dr. Mahady Hasan	JICA T/A task team
19	Mr. Md. Jahangir Hasan Talukder	JICA T/A Task team

Handouts and presentations:

1. Proposed Agenda,
2. Previous meeting's record,
3. Attachment 1 : Review of the last meeting decisions,
4. Attachment 2 : Project process Monitoring Framework,
5. Attachment 3: IFI's Sub-Project Implementation Plan and Monthly Reporting Format (Annex 104 for A-type loan),
6. Attachment 4: Accommodating component III,
7. (On screen) IDCOL's Progress and Present status presentation,
8. (On screen) BIFFL's Progress and Present status presentation.

Welcome remarks from the Chairman:

Mr. Md. Helal Uddin, Chairman of SREDA welcomed and greeted the participants to the meeting and then requested Mr. Yoshihiko KATO, Team leader JICA T/A task team to review last meeting's minutes and to proceed with the agenda-wise discussion. Mr. Kato first of all thanked all the participants for extending supports to numerous requests in relation to the inter-ministerial meeting in Tokyo. He reported that the inter-ministerial meeting concluded without problem, to have JICA Appraisal Mission despatched for the 2nd tranche of the Loan as planned. Then he proceeded and comments raised from the participants during the discussions were as follows:

1. Project Progress Summary (1.1, 1.2 from T/A Task Team)

1.1 Review of the last meetings decisions

- Decisions in October meeting: (i) IDCOL's letter to SREDA regarding the discontinuation of Pretty case has not been received (IDCOL management has given Pretty a chance to revive the case). (ii) BIFFL ensured that Roshawa L/C will be opened shortly. As such delay will affect the project activities BIFFL was requested in the meeting to complete it, latest by 20 November, well before JICA Appraisal Mission starts. Chairman SREDA suggested BIFFL to push Roshawa and keep informing through email correspondence, so that everyone will see the progress. Other points were well followed up.
- Pending decisions from August meeting: (i) L/C opening timing will be monitored against the "L/C opening planned date" to be registered by IFIs on MIS. (ii) The first case of alteration of approved equipment for Roshawa application is being dealt with reasonable considerations by SREDA.

1.2 Progress monitoring

- Continued steady progress was observed (Total amount of NOC-approved equipment cost has increased from 73% to 75%, L/C opened value from 56% to now 58%, to reach 74% upon Roshawa L/C opening).
- Updates: Three sub-projects have their equipment shipped (Meghna, Etafil and Pahartali), 1 sub-project has their equipment being installed (Aman), 2 Sub projects are with some portion of equipment in operation (Tosrifa and Fair Electronics).
- Now, there are three sub-projects in MIS Meghna, Aman and Tosrifa in monitoring phase. Sub project owners need to report their purchase and installation and "energy data" also need to be collected now. For this purpose IFI's required user ID and passwords for their subproject owners. In this connection Mr Parvej, SREDA informed they are ready to monitor and able to analyze the data. Mr Zahid, IDCOL added they had 3-4 hours long time discussion on MIS issues with JICA T/A task team, so are also confident about providing support in this regard.
- In connection to points to be noted on Monitoring IDCOL's Tosrifa case Mr. Zahid, IDCOL informed that it has been transformed into a sub-project on MIS, entering the monitoring phase.
- Dr. Mahady, JICA T/A task team gave updates on the planned improvements on the MIS; 1) L/C opening and installation dates are accommodated (actual / planned), 2) "document

library” function is added where project related document will be uploaded and can be downloaded, and 3) case re-submission has been made easier for IFIs, not bothering SREDA anymore.

2. IFIs’ progress reporting

2.1 IDCOL

- Mr. Zahidul Haque, IDCOL, provided updates including the fact that IDCOL has already received NOC from SREDA for an amount of BDT 2.22 billion (Excluding Pretty Eco Apparels Limited, if it is included it will cover 94% of the total fund), out of total lending JICA fund of BDT 3.22 billion; received disbursement from JICA account has reached an amount of BDT 1.17 billion.

Meghna Cement: Fully disbursed. All L/Cs have been opened amounting BDT 1,270million, and almost all the equipment and machineries have arrived at the plant site (USD 14 million) and only BDT 0.6 million worth machineries are yet to reach. Construction work is going on at full swing. They are expecting trial operation by September 2019 and welcoming all for a site visit, if required, in December.

Tosrifa Industries Limited (RMG): Out of BDT 109 million, L/Cs amounting to BDT 53.9 million has been opened. The rest L/Cs will be opened in end of December 2018. They are working full swing for the disbursement, by next Sunday BDT 50 million will be disbursed for the opened L/Cs.

Shun Shing Cement Industries Limited: L/C for the entire amount of BDT 734 million has already been opened. Disbursement will be required by January 2019. IDCOL Board approval is due within November 2018. After approval loan document will be signed and preparation for loan disbursement will start (IDCOL has already sent their long-term disbursement plan to JICA-BD for the requirement of BDT 0.8 billion for this year).

Etafil Accessories: Received NOC, under due diligence stage, will be placed to next board meeting in December. L/C has been opened for BDT 72.3 million (out of NOC amount of BDT 85.5 million).

- Apart from the above, IDCOL currently has around 12 proponents in pipeline for which eligibility has been checked. The required loan amount is approximately BDT 2,260 million. IDCOL has submitted two NOC request to SREDA; they have received queries on “Fakir Apparels” after SREDA’s review. IDCOL has resolved all the queries and hopefully by the next day they will resubmit.
- Mr. Chairman asked for an easy monitoring system for real time update receiving from the site, like putting CCTV camera etc. As the sites are increasing and far from Dhaka. Mr. Zahid informed that they can observe real time CC camera image /video at some of their clients’ head offices.
- Mr. Zobair asked for providing short “Monthly video clipping” on construction sites, those can be later used for awareness raising activities or be useful for promotional activities. In this connection Mr. Zahid informed that IDCOL has engaged a creative engineering firm to prepare a documentary of 2.5 to 3 minutes that will cover sub projects activities of IDCOL with some others activities. The meeting participants appreciated IDCOL’s such initiative by giving a unanimous applause. Mr. Asif, BIFFL, added in this connection, that

during their last recent Expo they have already released some clippings for such promotional activities from BIFFL.

2.2 BIFFL

- Mr. Asif Ahmed Khan BIFFL informed that this month they have newly disbursed BDT 224 million to Aman Spinning Mills Ltd. They are also planning to disburse for Pahartali and Bandhab (L/Cs will be retired in March 2019).
- BIFFL has 13 more applications in the pipeline, and among those, two applications will be submitted soon: (i) Asia Composite Mills Ltd, and (ii) Keen Apparels Limited.
- BIFFL organised meetings along with their consultants for promotional activities. They met manufactures associations like BGMEA, BKMEA, BTMA, BARSMA, MCCI and BAPA, some steel manufacturer, food processors etc for promoting the EE&C Financing Scheme with the second phase in mind.
- They prepared “Project flyers” and distributed those flyers among the participants of seminar on “Energy Efficiency and Green Building: Two New Frontiers towards Sustainability in Bangladesh” organized during the BIFFL Green & PPP Convention & Expo 2018. Their environmental and social consideration consultant is dealing with their “environmental and social management framework” which they are revising and updating as required.
- They have planned having promotional “workshop on the EE&C financing opportunities” with business leaders under respective Sector Association/ Chamber of Commerce and getting some good feedback from them like adding some more EE machines, which BIFFL will share with the technical team later.
- The meeting appreciated their initiatives.
- Chairman SREDA suggested BIFFL to arrange site visits for the concerned members.

3. SREDA's progress reporting

3.1 Steering Committee Formulation

- Mr. Md. Rezaul Hoq, Director (Energy Efficiency & Conservation), SREDA informed that, SREDA will formulate the Steering Committee as early as possible.

3.2 Technical Advisory Committee Formulation:

- Mr. Rezaul Hoq, also opined SREDA will be able to formulate the TAC by January 2019.
- Mr. Siddique Zobair added, TAC will be formulated after the formulation of the SC.

3.3 Procurement of Consulting Service

- Mr. Rezaul Hoq, informed that the procurement is ongoing, technical evaluation is at final stage, now they will move to the next procedures.
- Mr. Siddique Zobair added that the delay in finalising the consultant selection will be minimal.

- Mr. Kato informed, that if work handover is necessary, JICA T/A task team has to have it done in the first half of December, which is their last chance to come over for such work.

4. Suggestions for improvement in Project Implementation

4.1 Discussion: Component III through A-type loan

- Mr. Kato suggested resuming the discussions on the mobilisation of Component III through A-type loan. (Prior to start of JICA Appraisal Mission (mentioned in Attachment 4).
- Mr. Zahid, IDCOL proposed as a pilot process if they can work with a client “Hayes and Haier “.
- Mr. Asif opined that BIFFL has communicated with Walton, but he thinks not only one or two companies should only be dealt, rather we should give chance to all.
- Mr. Siddique Zobair commented that the aim of the activities should be to maximise the EE&C through penetration of eligible EE appliances and that the first action should be to identify the appliances (not organizations). Having identified the appliances, the project may provide finance to suppliers and manufacturers (not consumers). The case of Fair Electronics can be a good example to start with. Support for a company who is supplying, manufacturing eligible appliances may be deemed as the Component III activity.
- Mr. Chairman suggested waiting for the allocation of the second tranche of money and then deciding how it can be accommodated for Component III. For success, as with the Phase I, the mechanism should be simple, to support the penetration of eligible equipment.

4.2 Reminder: Environmental and Social Considerations on MIS:

- Mr. Kato requested the IFIs to make sure that their environmental and social considerations reports (Annexes 34 and 38) are prepared without fail. This is because during the assessment for the phase II loan, JICA has become more concerned with the appropriateness of reporting.

4.3 Reminder: submission of Annex 367:

- Mr. Kato informed the IFIs that Annex 367 (about the loan conditions) report should be submitted on quarterly basis to JICA Bangladesh Office.
- Mr. Chairman asked SREDA officials to take care of incorporating 4.2 and 4.3 issues during QPR preparation and submissions.

5. Other issues

- Mr. Parvej raised an issue out of agenda, regarding the updates on “Business coalition” by ANYV. Mr. Kato informed their contract period is over and payment was also done, but “official inauguration” and official hand over did not take place, he opined it should be followed up.
- Mr. Chairman asked SREDA, through JICA T/A task team (as the payment was made by them) will call ANYV and ask for completion of their pending works according to the contract and they should hand it over to SREDA with proper documentation.

Concluding remarks

- Mr. Chairman, SREDA thanked all for the contribution through valuable comments and he found the coordination meeting very much on track and every participant is actively participating and are handling their responsibilities. He also observed that SREDA is very much capable and hoped that upcoming meetings will be conducted by their officials.
- He proposed to all inviting Secretary, Power Division, Ministry of Power, Energy and Mineral Resources to the next meeting and all agreed happily to this proposal. He requested all concerned providing their activities with proper documentation and presentation so that he can have a clear picture of the progress.

Decisions taken

- BIFFL will have Roshawa L/C opened as soon as possible, and inform the participants through email correspondence on any progress and issues.
 - IFIs will provide hard copies of their presentations from the next meetings to all participants.
 - An easy visual site monitoring system may be considered (JICA T/A task team's suggestion is requested).
 - IFIs will consider preparing short video clipping on construction sites, those can be later used for awareness raising activities or be useful for promotional activities.
 - Procurement of SREDA consultant will be completed by December, for JICA T/A task team to conduct handing over process as required.
 - A simple mechanism based on Phase I activities will be considered as the Component III.
 - SREDA will monitor, in each QPR preparation, to have environmental and social considerations reports (Annexes 34 and 38) and loan condition report (Annex 367) status.
 - "Business Coalition": SREDA through JICA T/A task team will communicate with ANYV to have their pending activities completed and to hand it over to SREDA with proper documentation.
 - IFIs will arrange site visits for the concerned members at January.
 - Next meeting date: Thursday 6 December 2018.
- The Chairman concluded the meeting with vote of thanks to all.

(Md. Helal Uddin)
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Government of the People's Republic of Bangladesh
Sustainable and Renewable Energy Development Authority (SREDA)

Power Division
IEB Bhaban (10th floor), Ramna, Dhaka-1000
www.sreda.gov.bd

No.27.02.0000.020.14.037.17-

Date: 05 November, 2018

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6. Deputy Director (Energy Efficiency & Conservation / Energy Audit), SREDA, Ramna, Dhaka-1000
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A3 Agenda and Minutes of the 9th Project Coordination Committee Meeting

Agenda

Energy Efficiency & Conservation Promotion Financing Project 9th Project Coordination Committee Meeting

Thursday 06 December 2018, 12:00 pm @Mohananda Room, 10F SREDA Office

<Proposed Agenda>

Welcome remarks from the SREDA Chairman

1. Project progress summary

1.1 Review of the last meeting decisions

- Attachment 1

1.2 Progress monitoring (T/A Task Team)

- Report using the monitoring framework (Attachment 2 & 3)

2. IFIs' progress reporting

2.1 IDCOL

- Updates (Meghna, Tosrifa, Etafil, Shun Shing) and upcoming applications (Attachment 4)

2.2 BIFFL

- Updates (Odyssey, Aman, Pahartali, Roshawa, Fair Elect., Bandhab) and upcoming applications (Attachment 5)

3. SREDA's progress reporting

3.1 Steering Committee Formulation (target: Dec 2018)

3.2 Technical Advisory Committee Formulation (target: Jan 2019)

3.3 Procurement of Consulting Service (target: Jan 2019)

4. To-Do

4.1 Timetable for Second Phase Project (Attachment 6)

4.2 Annual Report (=QPR10) Preparation (Attachment 7)

4.3 Site visits in January (Pahartali, Fair Electronics, Tosrifa, Meghna)

5. Suggestions for Improvement in Project Implementation

Closing remarks from the SREDA Chairman

Minutes

Government of the People's Republic of Bangladesh
Sustainable and Renewable Energy Development Authority (SREDA)
Power Division
IEB Bhaban (10th floor), Ramna, Dhaka-1000
www.sreda.gov.bd

Subject : Meeting Minutes of Periodical Meeting on Energy Efficiency and Conservation Promotion Financing Project (EECPFP)
Venue : Mohananda conference room, SREDA, IEB Building (10th Floor), Ramna, Dhaka-1000.
Time : 12:00 PM
Date : 06 December, 2018
Chairman : Mr. Siddique Zobair, Member (Energy Efficiency & Conservation), SREDA

Attendance:

Following person attended the meeting (Not according to seniority):

SI	Name	Status
1	Mr. Siddique Zobair	Member (Energy Efficiency & Conservation) SREDA
2	Mr. Engr. Md. Rezaul Hoq	Director (Energy Efficiency & Conservation), SREDA
3	Mr. Engr. Md. Parvejul Islam	Assistant Director (Energy Efficiency), SREDA
4	Mr. Md. Abdullah Al Mamun	Assistant Director, SREDA
5	Mr. Chayan Kumar Barua	Manager, Investment - IEEF, IDCOL
6	Mr. Soumajit Maity	IDCOL Consultant team (EY)
7	Mr. Asif Ahmed Khan	BIFFL MTO Technical
8	Mr. Nazmul Karim	BIFFL Assistant Technical Officer (YC)
9	Mr SM Firoj Hasan	BIFFL Consultant team (YC)
10	Mr. Daiki Hidaka	BIFFL Consultant team (JDI)
11	Mr. Yoshihiko KATO	Team leader, JICA T/A task team
12	Mr. Takamichi Ide	JICA T/A task team
13	Ms. Mari Iwata	JICA T/A task team
14	Mr. Ulysses Coulmas	JICA T/A task team
15	Dr. Mahady Hasan	JICA T/A task team
16	Mr. Md. Jahangir Hasan Talukder	JICA T/A Task team

Handouts and presentations:

1. Proposed Agenda,
2. Previous meeting's record (draft final copy, yet to be signed by Chairman),
3. Attachment 1 : Review of the last meeting decisions,
4. Attachment 2 :Project process Monitoring Framework,
5. Attachment 3: IFI's Sub-Project Implementation Plan and Monthly Reporting Format (Annex 104 for A-type loan),
6. Attachment 4: PPT handout from IDCOL - Updates and Upcoming applications
7. Attachment 5: PPT handout from BIFFL - Updates and Upcoming applications
8. Attachment 6: Timetable for Second Phase project
9. Attachment 7: Annual report (QPR 10) preparation

Welcome remarks from the Chairman:

Mr. Siddique Zobair, Member (Energy Efficiency & Conservation) SREDA welcomed and greeted the participants to the meeting and started with the good news that the documents for the Phase 2 Project has just been signed at ERD, to start the loan agreement preparation soon. Then he requested Mr. Yoshihiko KATO, Team leader JICA T/A task team to review last meeting's minutes and to proceed with the agenda-wise discussion. Mr. Kato proceeded and comments raised from the participants during the discussions were as follows:

1. Project Progress Summary (1.1, 1.2 from T/A Task Team)

1.1 Review of the last meetings decisions

- (No.1) It was expected that BIFFL would have Roshawa L/C opened and/or inform the participants through email correspondence on any progress. However, up to now, no update has been shared. In this regard Mr. Siddique Zobair remarked it as a “clear failure from BIFFL side”. He requested BIFFL to have their SFU (Sustainable Finance Unit) participating from the next meetings, so that clear explanation can be given on such delay. He also asked Mr. Rezaul Hoq to arrange an urgent meeting with BIFFL at SREDA on 12th December 2018 at 2:00 pm. Mr. Asif Ahmed Khan added that if they receive the NOC for Roshawa to make change to their equipment, it can minimize the delay in L/C opening. Mr. Siddique Zobair asked the concerned desk of SREDA to review and issue NOC as early as possible. Mr. Parvej informed that due to lack of sufficient human resources for the required process, sometimes it becomes very tough to review the NOC on time. Mr. Siddique Zobair wanted to discuss the issue later.
- (No. 3) In last meeting, Chairman, SREDA has suggested for an easy visual site monitoring system. JICA T/A task team found it possible by setting an IP camera at the sites (on overleaf of Attachment 1, page 2). Mr. Kato opined that if regular monthly meetings are being held, the IFIs will be able to provide an update at the sites, and therefore will not require video monitoring, as it will need cumbersome preparations. With Mr. Zobair's consent it was decided that the meeting will resort to the IFIs' monthly reporting rather than having the cameras installed.
- (No. 5) With the continuing delay in selection of SREDA consultants, JICA T/A Task Team reported that work handover through physical meeting is no longer possible. The team, mentioned that all the documentations are complete and uploaded on the Project MIS functions, to be shared with whoever might be succeeding the Project implementation consulting. It was decided that SREDA's consultant selection should be further monitored.
- (No. 6) JICA T/A Task Team reported that its member Dr. Yoshida has already convened few meetings with SREDA to confirm that the Component III eligibility criteria (whether inverter control is there or not) is appropriate, with reference to representative internationally recognised energy efficiency standards. The T/A Task Team, referring to the Chairman and Mr. Zobair's suggestion to adhere to the current process rather than starting something new, suggested going through the same business procedure for Component III, only with additional calculation effort on energy saving impact in residential sector.
- (No. 8) Regarding the EE&C Business Coalition, JICA T/A task team reported that ANYV is willing to continue with their work, but will not be available before the JS Election (30 December 2018). ANYV's final report has already been shared with SREDA. Mr. Siddique Zobair requested Mr. Kato to arrange a meeting with Professor Roshidul Hasan, ANYV at SREDA during the first week of January.

- (No. 9) IFIs will arrange site visits for the concerned members at January, expected sites considered Pahartali, Tosrifa, Fair Electronics, Meghna etc.

1.2 Progress monitoring:

- There is neither NOC issuing nor L/C opening from the last meeting. Newly observed disbursements was for Tosrifa industries through IDCOL. Up to now, out of 10 valid NOCs 9 all except Roshawa has opened L/Cs.

2. IFIs' progress reporting

2.1 IDCOL

- Mr. Chayan, IDCOL, provided updates including the fact that IDCOL has already received NOC from SREDA for an amount of BDT 2.2 billion and NOC requests pending at SREDA are for BDT 0.22 billion (Fakir and Giant). There are further NOC request to be submitted for BDT 0.52 billion in December. Amount of loan money disbursed to the sub-projects add up to BDT 1.324 billion (for Meghna BDT 1.27 billion and BDT 0.054 for Tosrifa).
- Mr. Chayan added that there are 12 pipeline projects for which the expected loan amount is approximately BDT 2.28 billion (eligibility mostly checked).
- With support from JICA T/A Task Team, IDCOL is updating the MIS for the Sub-Projects and Applications.
Meghna Cement: Fully disbursed. All L/Cs have been opened, machineries installation work is going on at full swing hopefully to be finished by November 2019 and start operation.
Tosrifa Industries Limited (RMG): L/Cs for first lot has been opened. The rest L/Cs will be opened at end of December 2018. They have completed installing boiler and for the Building Energy Management System (BEMS) it will be done phase by phase, hopefully by August 2019.
Shun Shing Cement Industries Limited: Showing through a video clip Mr. Chayan informed, Shun Shing has started piling work, shipment has not reached yet, and hopefully by second half of the next year they will be able to install the VRM. L/C for the entire amount has already been opened. Disbursement will be started after IDCOL's Board approval, which is on December 2018.
Etafil Accessories: Received NOC, L/C has been opened, by January 2018 they will get IDCOL's Board approval and subsequently disbursement will be started.

2.2 BIFFL

- Aman Spinning Mills Ltd: Mr. Asif Ahmed Khan from BIFFL informed that their disbursed amount has significantly increased as they have disbursed to Aman Spinning Mills Ltd last month. Machineries have reached and within two/three days they will start installing them.
- Roshawa Cotton Mills Ltd: L/C is yet to be opened due to "delay in legal vetting".
- Pahartali Textile & Hosiery Ltd: machineries have arrived (with photos).
- Fair Electronics Ltd: Compressor has been running for six months.
- Bandhab Tex Limited: Their construction is complete; L/Cs opened already.

3. SREDA's progress reporting

3.1 Steering Committee (SC) Formulation

- Mr. Md. Rezaul Hoq, Director (Energy Efficiency & Conservation) SREDA with reference to Mr. Siddique Zobair's information, mentioned that with the signing of the Minutes of Discussion at ERD this morning, it will now be easier for SREDA to formulate the SC.

3.2 Technical Advisory Committee (TAC) Formulation

- Mr. Rezaul Hoq, reported that the TAC will also be formulated soon after the formulation of the SC.

3.3 Procurement of Consulting Service

- Mr. Rezaul Hoq informed, for procurement of consulting team, within 15th December SREDA will be placing their technical evaluation report to JICA for their concurrence.

4. To-Do

4.1 Timetable for Second Phase Project:

Three main points discussed during the Phase 2 Project Appraisal were:

- (1) SREDA Consulting Services for Phase 1 Project: Selection of consultants should be completed **by January 2019** to minimize the vacuum period after the completion of JICA consultants' assignment.
- (2) Establishment of Steering Committee (SC) and Technical Advisory Committee (TAC): The Steering Committee (SC) should be formulated **by December 2018**. The Technical Advisory Committee should be established **by January 2019** (within one month after establishment of the SC).
- (3) Approval of New TAPP for the Consulting Services Contract for SREDA for the Phase 2 Project after completion of the Phase 1 Project: Approval of new TAPP is necessary for the consulting services contract for SREDA for the Phase 2 Project after the completion of the Phase 1 Project. In order to process the contract timely manner, approval of new TAPP should be obtained **by January 2022**.

Schedule -

December 2018 Appraisal Mission (successfully completed)

March 2019 Pledge between GOB and GOJ on 20 billion JPY

May 2019 Loan Agreement Negotiation Mission from Japan will be coming again

By end of **June 2019** Signing of: Exchange of Note (E/N), and Loan agreement (L/A)

4.2 Annual Report (=QPR10) Preparation

- SREDA needs to compile and prepare the annual report for this Project, based on QPRs but with some additional annex formats. Attachment 7 lists up the requirements.
- "Anti-corruption Monitoring Sheet" will be provided by SREDA, except this all the other formats will be provided by both IFIs.
- Among them Certified Audit Report on Statement of Expenditures (Annex 42) 2018 report to be submitted by September 2019 (not in this annual report).

- Necessary reports (or letters) should be prepared and submitted from the IFIs to SREDA within 10 days after the end of the quarter (i.e. 10th January 2019).
- SREDA is requested to compile the annual report, to be submitted to JICA Bangladesh Office by the end of following month (i.e. 31st January 2019).
- For reports that can automatically generated by the IFIs, the IFIs may not have to have them printed out to be submitted to SREDA. Instead, there is a need to inform SREDA that the report available for download from the Project MIS has been institutionally approved in the IFIs, ready for submission as an annual report input.

4.3 Site visits in January (Pahartali, Fair Electronics, Tosrifa, Meghna)

JICA T/A Task Team requested both the IFIs to arrange the site visits between 16th January 28th January 2019 (tentative, as two of the T/A task team members will be available then).

5. Suggestions for improvement in Project Implementation

- No issues were raised.

Closing remarks from the SREDA Chairman

- Mr. Siddique Zobair, Member (Energy Efficiency & Conservation) SREDA thanked all for the contributions through valuable comments. As this was the last meeting with Mr. Kato, team leader JICA T/A Task Team, he thanked him for his outstanding support during the period along with the team for their continued and well-organized support and contribution to the Project. He also hoped that there will be an occasion to work with the team so that the best energy efficiency for the country can be achieved.

Decisions taken:

- BIFFL's SFU (Sustainable Finance Unit) should be present from the next meetings to explain clearly on any causes of delay.
- Mr. Rezaul Hoq was requested to arrange an "urgent meeting with BIFFL" at SREDA on **12th December 2018 at 2:00 pm**.
- For component III, an extra calculation on the sub-project effect still needs to be determined.
- JICA T/A Task Team will arrange a meeting on "Business Coalition", with Professor Roshidul Hasan during the **1st week of January**.
- The IFIs will arrange site visits for the concerned members during January 2019 (**16th January to 28th January tentative**). Expected sites considered are: Pahartali, Tosrifa, Fair Electronics, Meghna etc.
- SREDA will share their consultant evaluation result with JICA for their concurrence by **15th December**, to have the selection completed by **January 2019** as agreed with JICA.
- Steering Committee (SC) should be formulated by **December 2018** and the Technical Advisory Committee (TAC) should be established by **January 2019**.
- Approval of new TAPP should be obtained by SREDA by **January 2022**.

-
-
- For preparation of “annual report” the IFIs need to submit their portions to SREDA by **10th January 2019**. SREDA will compile the report into annual report, to be submitted to JICA Bangladesh Office by **31st January 2019**.
 - Next meeting date: **Monday 14th January 2019 at 10 am.**

- The Chairman concluded the meeting with vote of thanks to all.

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No.27.02.0000.020.14.037.17-

Date: 08 December, 2019

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A4 Presentation: "Observations from 4 sub-project visits"

Energy Efficiency & Conservation Promotion Financing Project

Observations from 4 sub-project visits (Jan/2019)



Energy Efficiency & Conservation Promotion Financing Project

JICA Technical Assistance for

Energy Efficiency & Conservation Promotion Financing Project

TEL (BD): +880 (0)17 6836 9744

TEL (JP): +81 (0)3-6705-5438



1. Purpose



- To discuss with sub-project owners how they will monitor and report energy/production data by determining measurement point and measurement devices and to **develop monitoring plan**.
- To observe operation and energy consumption pattern of the existing site (if any).
- To observe whether there are any significant environmental and social impact.

<For sub-projects where new machines have already arrived>

- To confirm whether the **machines are according to NOC**.
- **To check operating conditions and measure the actual energy consumption** of the machines and compare them with projection in NOC application documents.



Energy Efficiency & Conservation Promotion Financing Project

2



Sat 19/Jan	Flight from Dhaka to Chittagong	Chittagong
Sun 20/Jan	Visit Pahartali Textile & Hosiery w/ BIFFL Attend "Grand Financial Closure of Pahartali Textile Mills Limited" organized by BIFFL	Chittagong
Mon 21/Jan	Flight from Chittagong to Dhaka Analysis and reporting on Pahartali	Dhaka
Tue 22/Jan	Visit Fair Electronics w/ BIFFL	Narshindi
Wed 23/Jan	Analysis and reporting on Fair Electronics	Dhaka
Thu 24/Jan	Visit Tosrifa (fabric and garment unit) w/IDCOL	Gazipur
Fri 25/Jan	Analysis and reporting on Tosrifa Industries	Dhaka
Sat 26/Jan	Flight from Dhaka to Jessore, move to Khulna	Khulna
Sun 27/Jan	Visit Meghna Cement w/IDCOL Flight from Jessore to Dhaka	Mongla
Mon 28/Jan	Final reporting at SREDA	Dhaka

<Machine installation and operation>

- All the machines which have arrived at site **match with NOC**.
- Machines which have been installed are in good operation conditions.

<Monitoring plan>

- All of the sub-project owners have **access to MIS**. Some already started to input data.
- Most of the sub-project owners will **not be able to report energy consumption for eligible equipment**, rather they will report for the overall unit/factory including old machines and other non-relevant energy consumption.
- By **introducing simple measurement tools** such as watt meters and flow meters, they can effectively **monitor real time energy consumption of eligible equipment**.
- Such discussions need to be made at the **initial stage of monitoring** to avoid reporting of irrelevant or incomplete data. SREDA should facilitate IFIs and their consultants to closely discuss with sub-project owners.

<Other observations>

- Some other observations were made to the existing factories with suggestions to improve energy efficiency.

Overview

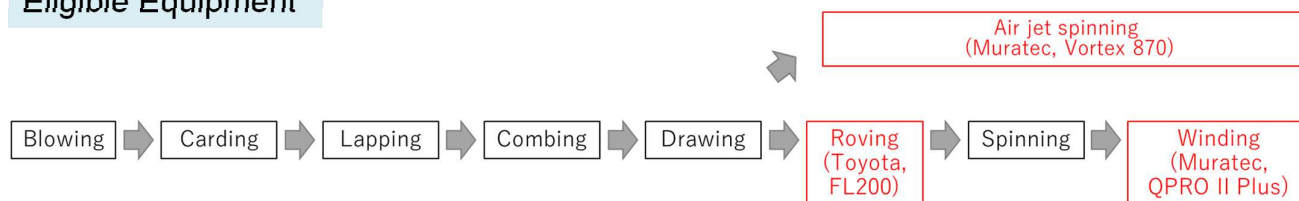
- Located in Chattogram and started spinning business in 1954.
- Supply variety of yarn to export oriented knit and woven industry in the domestic market.
- Currently 4 units (Unit No. 1 to No.4) + The **new unit (Unit No.5) under construction**, with expectation to start their operation in April 2019.

Unit	No. of spindles	Daily production volume
No.1	19,680	• Com yarn: 13,000kg
No.2	23,280	• Card yarn: 5,000kg
No.3	11,616	• Slub yarn: 4,000kg
No.4	14,688	• Melange yarn: 5,000kg • PC/CVC yarn: 9,000kg
No.5	24,642	• Ring & Compact spinning: 14,250kg • Vortex spinning: 6,500kg

New unit (Unit No.5)



Eligible Equipment



NOC(10/June/2018)

	Code	Name of equipment	Brand	Model	Quantity	Eligibility	Quoted price (BDT)
1.	3.1 (1)	Roving frame	Toyota Industries	FL200	5	Eligible	86,394,000
2.	3.1 (3)	Automatic winder	Murata Machinery	QPRO II Plus	14	Eligible	176,577,520
3.	3.1 (4)	Air jet spinning	Murata Machinery	Vortex 870	6	Eligible	211,362,250
4.	9.8.1 (2)	Air conditioner	Ebara Refrigeration Equipment & Systems	REW050E, RFH032Y	1 1	Eligible	29,196,228
5.	9.12.2	Waste heat recovery boiler	Schneider	AHK2100/10	1	Eligible	10,889,268
6.	9.10.1	LED lamp	Osram	Ledvance Osram ST 8A-1.2M 18W/865	3,020	Eligible	2,802,938
7.	9.4.2 (1)	Air compressor	Kaeser	CSDX 140 SFC	7	Not Eligible (As the equipment is for spinning, significant air demand fluctuation cannot be expected.)	18,293,200

4. Findings (1) on Pahartali

Installation and operation

	Name of equipment	Brand	Model	Quantity	Installation	Operation
1.	Roving frame	Toyota Industries	FL200	5	All machines have arrived and under installation	Not yet
2.	Automatic winder	Murata Machinery	QPRO II Plus	14		
3.	Air jet spinning	Murata Machinery	Vortex 870	6		
4.	Air conditioner	Ebara Refrigeration Equipment & Systems	REW050E, RFH032Y	1 1	Not yet arrived at site	Not yet
5.	Waste heat recovery boiler	Schneider	AHK2100/10	1		
6.	LED lamp	Osram	Ledvance Osram ST 8A-1.2M 18W/865	3,020	Under installation (partially completed)	Partially started to operate

Roving frame



Automatic winder



Air jet spinning



LED lamp



4. Findings (1) on Pahartali

Monitoring plan



Current: monitoring electricity and gas consumption for the **entire unit**



Suggested:

Roving frame	• Attach a watt meter to one of the roving frames
Automatic winder	• Install a Watt meter at distribution panel for winder line
Air jet spinning	• Install a meter at distribution panel for VORTEX line
Air conditioner	• Inlet temperature of chilled water (°C)
Waste heat recovery boiler	• Outlet temperature of chilled water (°C)
	• Chilled water flow volume (m ³ /h)
LED	• Measure only operational hours



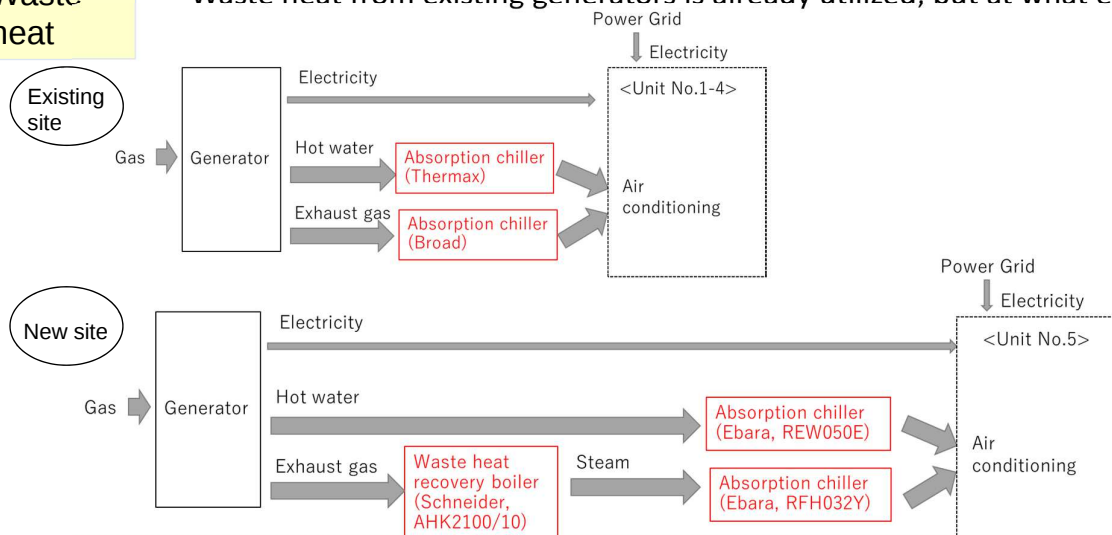
Other observations

Ring frame

- The existing unit (No.4) has a **real time monitoring system** for the power consumption of 9 sets of ring frames.
- It is recommended to install the same monitoring system in the new unit.

Waste heat

- Waste heat from existing generators is already utilized, but at what efficiency?



Other observations

Lighting

- Lighting is weaker in the existing units, compared to the international standard.
- Lighting will be improved in the new unit.

International standard*	Existing Unit	New Unit**
500	Ring frame Section: Unit No.1: 165 Unit No.2: 248 Unit No.3: 194 Unit No.4: 239	Unit No.5 Winder Section: 358 Vortex Section: 284

*Standard is according to ISO 8995-1: 2002 (E)- (for spinning factories).

** In the new unit, the installation of LEDs has not yet completed.

Overview

- Started the assembling plant of home appliances in Narsingdi in 2017.
- Producing Samsung brand's refrigerators, microwave ovens, air conditioners, and washing machines, and in the future, TVs and mobile phones.
- Air compressors are introduced in their **refrigerator unit**. Compressed air is used in every process for pneumatic operations of machines, but especially in the process of Liner/panel forming line,.

Eligible Equipment

	Code number	Name of equipment	Brand	Model	Quantity	Eligibility	Quoted price	Installation	Operation
1	9.4.2 (2)	Air compressor	Comp Air	L160RS	2	Eligible	10,513,200	Yes April/2018	Yes

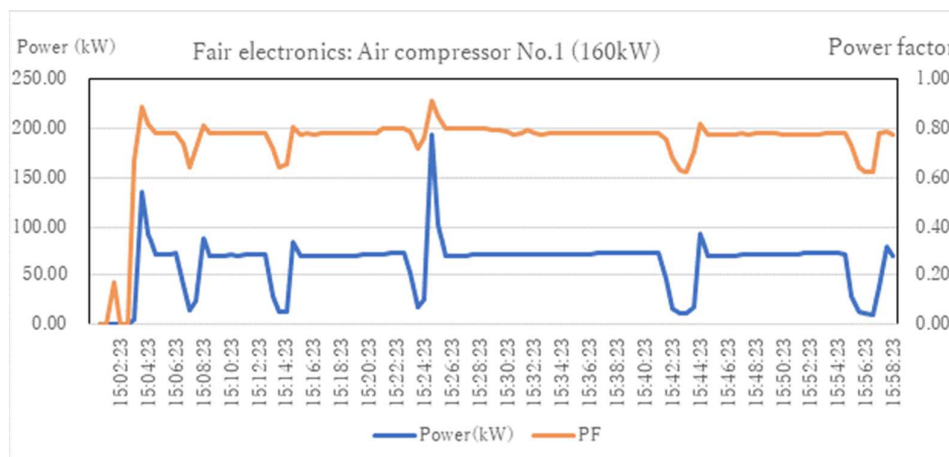


Monitoring plan



Current: monitoring **operation hours** only
Air compressors' power consumption
= On load running hours (hr) * 160 kW (**rated power**)

- Actual measurement at site:** air compressors are running in **low load condition of 39%** (62kW/160kW).



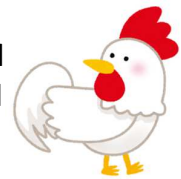
Average Power (kW)	62.09
Average Power Factor	0.74

Monitoring plan

	Assumptions	Electricity consumption (kWh)	Refrigerator Production (sets)	Energy Intensity (kWh/set)
Case-1 Current monitoring system	- Production per day = 400 set/day (maximum capacity) - Operation hours = 10 hr/day * 25 days/month = 250 hr/month	160 kW X 250 hr/month = 40,000 kWh	400 set/day X 25 days/month = 10,000 sets/month	40,000 / 10,000 = 4.0 kWh/set Overestimate..!
Case-2 Actual measurement data	- Production per day = 240 set/day (according to actual production in 2017) - Operation hours = 8 hr/day * 25 days/month = 200 hr/month	62 kW X 200 hr/month = 12,400 kWh	240 set/day X 25 days/month = 6,000 sets/month	12,400 / 6,000 = 2.1 kWh/set



- Recommended measurement:** Actual power consumption (Load Current (A)) and on load running hours (hr) of air compressors should be measured and recorded by utilizing the data recording function of air compressors using SD cards.



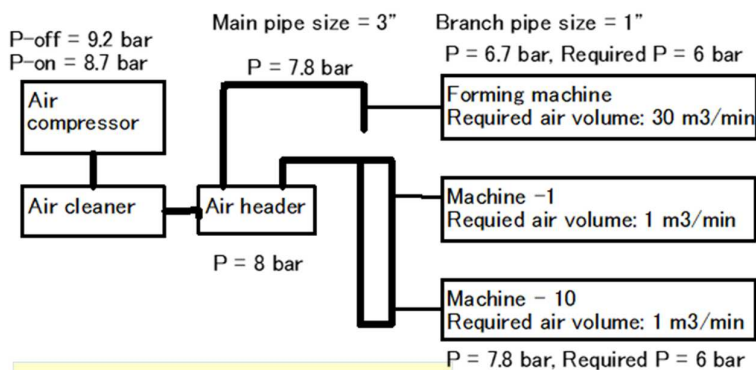
Electricity consumption for Air Compressor (kWh)

$$= \sqrt{3} * \text{average measured current (A)} * \text{voltage (V)} * \text{Power Factor (0.8)} * \text{running hours/month}$$

Other observations

Pressure loss of compressed air

- The pressure loss is notably large.
- Main reason is too small size of branch pipe of forming machine.
- Recommended to replace branch pipe from 1.0" to 1.5" diameter, or to add several branch pipes. Delivery pressure of air compressors can be reduced by 1 bar, leading to 7% reduction in power consumption of air compressors.



Fair Electronics	2 bar loss / 80m
Average in Japan	0.1 bar loss / 100m

Air leakage of compressed air

- Only few leakage.

Fair Electronics	2 to 3% leakage
Average in Japan	5% leakage

Overview

- Located in Gazipur.
- Established in 2002 with aim to produce 100% export oriented knit products.

Fabric unit



Garment unit



Eligible Equipment

	Code	Name of equipment	Brand	Model	Quantity	Eligibility	Quoted price (mil BDT)	Installation	Operation
1	3.3	Sewing machine	Juki	(various models)	17	Eligible	84.29	<Garment > 200 sets installed	200 sets in operation
2	3.3	Sewing machine	Kansai	(various models)	3	Eligible	1.54		
3	9.6.2	Multiple installation of Once-through boilers	Miura	SI-2000GVS	4	Eligible	16.4	<Fabric> Installed in Dec/2017	In operation
4	2CZ00	Building Energy Management System	Reliable Controls	BEMS	1	Eligible	6.8	<Fabric> Not yet	Not yet

Monitoring plan

Current: monitoring electricity and gas consumption for the **entire units**



Suggested:



Sewing machine	• Floor wised power consumption using watt meter • Sewing machine power consumption = Floor total– (Fan + light) power consumption
Boiler	• Natural gas consumption of boilers recorded in daily operation log book
BEMS	(Detailed configurations need to be finalized).

Sewing machine



Once-through boiler



Other observations

Efficiency of once-through boilers

By analyzing Flue gas from boilers (flue gas temperature, O₂%), the boiler efficiency was **94.5 %**.

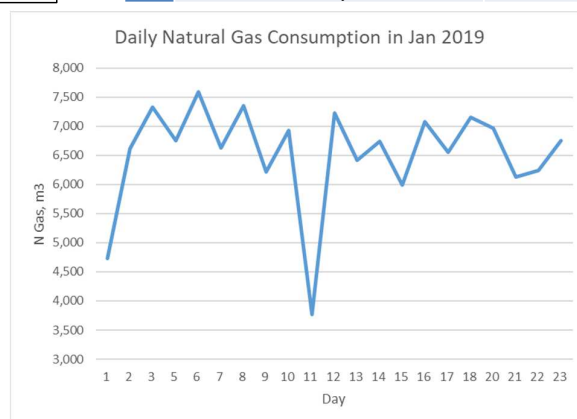
- Flue gas temperature at outlet of economizer (average) = 79.8 deg.C
- O₂% in the flue gas = 5.7 %
- Ambient temperature = 33.8 deg.C
- Measuring Instrument: E-Instruments E-6000 model



	Parameter	Value
1	Exhaust heat loss ratio	2.5 %
2	Radiation heat loss ratio	2.0 %
3	Other heat loss ratio	1.0 %
4	Boiler Efficiency	94.5 %

Load factor of once-through boilers

By analyzing Jan/2019 record, load ratio **51.9 %**.



Insulation of valves

7 sets of steam valves are **not insulated**, which causes large **heat loss**



- Measured surface temperature of valves: 170 degC
- Assumed surface temperature after insulation: 45 degC
- Assumed annual operation hour: 7200 hour/year



Recovered heat loss of seam valves by insulation

Valve size	Equivalent length (m)	Q'ty	Surface temp. at present (°C)	Surface temp. after insulation (°C)	Recovered heat loss (Mcal/y)
3 inch	1.25	4	170	45	15,300
4 inch	1.27	1	170	45	12,900
6 inch	1.5	1	170	45	20,000
Total		6			48,200



Recovered heat by insulation is 48,200 Mcal/year = **5,133 natural gas m3/year**

= > **Recovered cost is 40,000 BDT/year. Payback period is 1 year.**

Energy saving effect of new sewing machines

Measured item	New sewing machine	Existing sewing machine
Average voltage	385V	385V
Average power factor	0.5	0.5
Average power	884 W	2,215 W

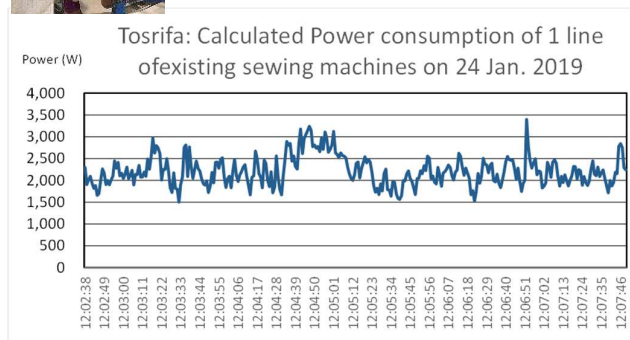
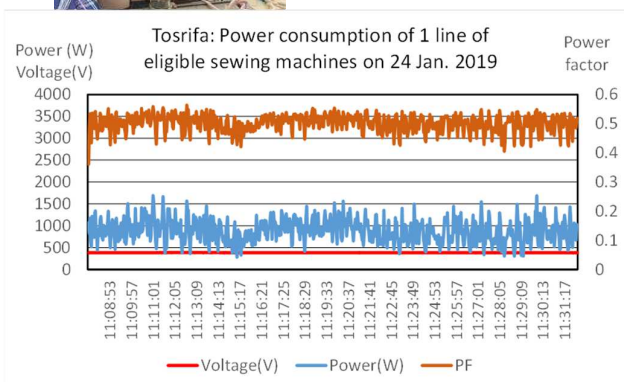


New machines



Existing machines

- 60%



Overview

- Meghna Cement Mills Limited is the enterprise of Bashundhara Group.
- Established in 1992 and operates cement factories on the bank of Pashur River and Mongla Port.
- Bashundhara cement also operates in the same premises.

Company	No.	Location	Mill	Capacity	Installation	Product *
Meghna Cement Mills	1	Mongla	2 ball mills	80 TPH X 2 = 160TPH	2002	OPC (main) PCC
	2	Mongla	VRM (FLSmidth)	OPC - 380TPH PCC - 415TPH	2020 (to be expected)	OPC PCC (main)
Bashundhara cement	3	Mongla	VRM (Loesche)	250 TPH	2012	BFC
	4	Dhaka	VRM (Loesche)	250 TPH	2015	

*OPC= Ordinary Portland Cement, PCC=Portland Composite Cement, BFC=Blast Furnace Slag Cement

	OPC	PCC	PCC	BFC
Mill	Ball mill, VRM	Ball mill	VRM	VRM
Clinker	95-96%	65%	50-55%	50%
Slag	4-5%	15%	25-30%	46%
Fly ash	-	10%	10%	-
Lime stone	-	6%	6%	-
Gypsum	-	4%	4%	4%

Eligible Equipment

	Code	Name of equipment	Brand	Model	Quantity	Eligibility	Quoted price (mil BDT)	Installation	Operation
1	5.1	Vertical roller grinding mill for cement clinker and slag (VRM)	FLSmidth	OK54-6	1	Eligible	1,270	Under installation	Not yet

No.2
New
VRM



No.1
Existing
Ball mills



No.3
Existing
VRM



Monitoring plan

Current: Realtime monitoring and recording through VRM Monitoring system



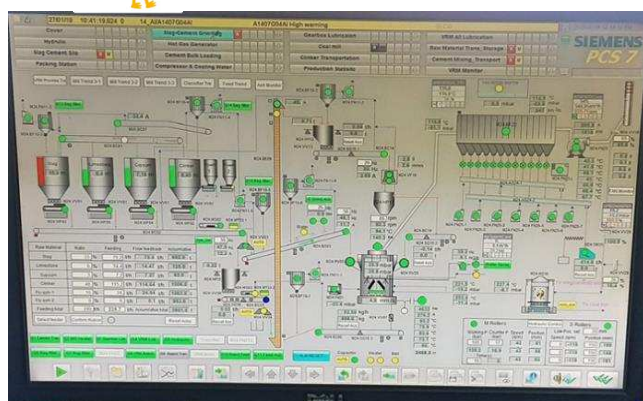
Suggested:

Power consumption

- Realtime monitoring and recording through VRM Monitoring system

Coal

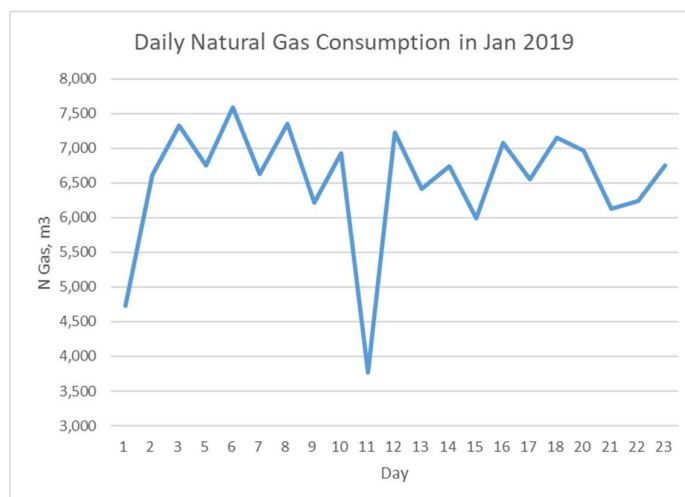
- Coal consumption need to be included**, as coal is an essential source of energy to operate VRM.



Other observations

Production pattern

- Production peak season is said to be from May to November, while production decreases in rainy season.
- The difference between the peak month (March) and off-peak month (January) is nearly three times in 2018.



Electricity saving effect

Existing VRM*	Existing BM
33.40 kWh/ton	41.82 kWh/ton

- 20%

* Excluding coal consumption

THANK
YOU