



# National Energy Balance 2016-17 (Energy Efficiency Improvement)

October 2018



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(Energy Efficiency Improvement)**

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**Sustainable and Renewable Energy Development Authority**  
People's Republic of Bangladesh



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## National Energy Balance 2016-17 (Energy Efficiency Improvement)

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### **Special Thanks to**

- 1) Mr. Yoshihiko KATO
- 2) Dr. Kimio Yohida



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## **1. Introduction**

Bangladesh is experiencing a gradual depletion of its primary energy resource i.e. natural gas and time has come to explore and harness the full potential of alternative energy sources to ensure our long-term energy security as well as sustainable economic development. Bangladesh Government attaches due importance on renewable energy and energy efficiency issues and as such enacted Sustainable and Renewable Energy Development Authority (SREDA) Act in 2012 to facilitate, regulate and to promote all aspects of energy conservation and development of sustainable renewable energy in the country. SREDA started its official journey from 22nd May 2014 with limited organisational capacity.

The government is committed to ensure access to affordable and reliable electricity for all citizens by 2021. To improve energy access situation, the government has adopted a comprehensive energy development strategy to explore supply-side options along with demand management that conserves energy and discourages its inefficient use. To attain sustainable GDP growth, it deems necessary to meet the essential energy needs. Demand for power is increasing day by day. Moving towards energy sustainability will require development not only in the way energy is supplied, but also in the way it is used as well. Reducing the amount of energy required to deliver various goods or services is also essential in this regard. Energy efficiency is one of the main pillars for sustainable energy. To identify the core actions to achieve energy efficiency national targets SREDA has prepared the “Energy Efficiency and Conservation Master Plan (EE&C MP) up to 2030”, with support from Japan International Cooperation Agency (JICA).

## **2. Policy**

### **2.1 Benefit of Promoting Energy Efficiency & Conservation**

Energy efficiency and conservation (EE&C) are the techniques of achieving the same result with less energy. Efficient use of energy contributes to sustainable transport, affordable energy, competitiveness,



ensure energy security and environmental sustainability. Improving energy efficiency is widely recognised as the easiest and most cost-effective means of reducing carbon emissions. Being more energy efficient offers tremendous financial benefits - industry and society can achieve more with less energy, public services are delivered at lower cost, and fuel poverty is reduced. Reducing demand also put less pressure on energy supplies. However, this can only be achieved with significant changes to the behaviour of individuals, communities, businesses and the public sector. Energy balance calculation for energy efficiency and conservation reaffirms the government's commitment on efficient use of energy. The energy balance calculation helps to set a framework for energy efficiency and conservation that furthers help the government to combat climate change, tackle economic and social agenda. It sets a target of energy saving and identify some actions to meet the target.

Energy efficiency is the first and foremost a matter of controlling and reducing energy demand, and targeted actions are required for both energy consumption and energy supply. As the energy efficiency and conservation is a cross-cutting issue and different government agencies are involved in its implementation, so the energy balance calculation may help to set upcoming plans.

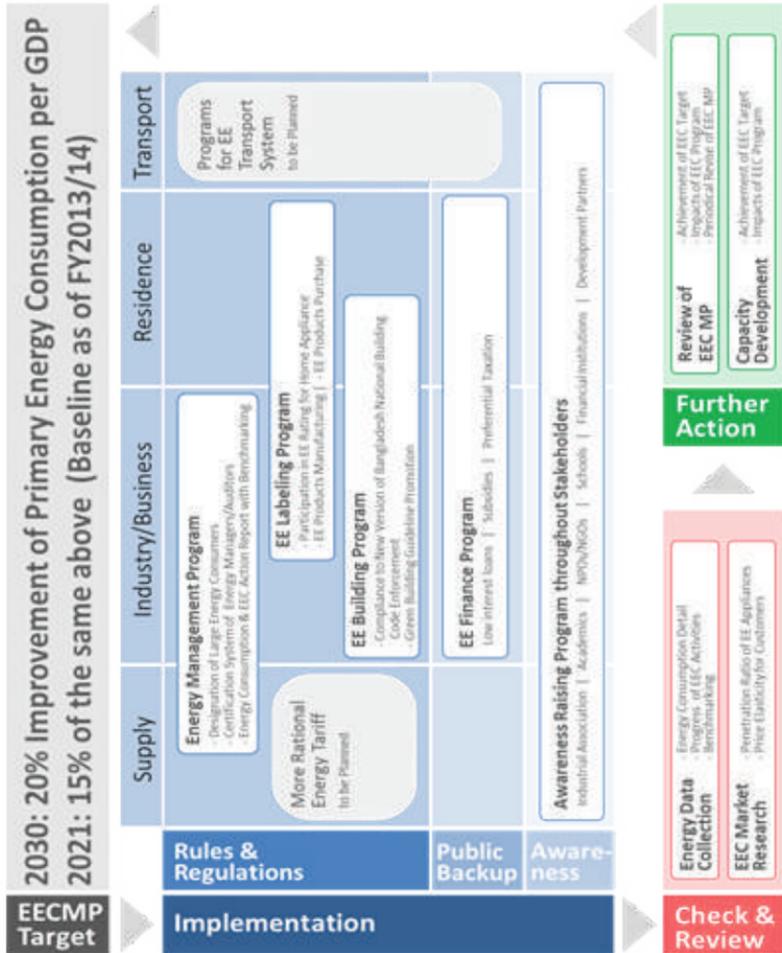
## 2.2 Master Plan Targets

The Government published the Energy Efficiency & Conservation Promotion Master Plan up to FY 2029/30 (EE&C MP) in May 2016. The targets set in the EE&C MP are:

- Target for FY 2020-21 (mid-term): to improve Primary Energy Consumption per GDP (=energy intensity) by 15%
- Target for FY 2029-30 (long-term): to improve Primary Energy Consumption per GDP (=energy intensity) by 20%

(Note: the targets are set against the actual figure observed in FY 2013/14 as the base year)

The following diagram represents an overall framework of the EE&CMP. In the centre of the diagram, there are altogether five core actions which are identified as the means to achieve the EE&CMP targets.



**Figure 1: Structure of the Energy Efficiency & Conservation Master Plan up to 2030**

Source: Energy Efficiency and Conservation Master Plan (EE&CMP) up to 2030



Five core actions to achieve the targets are hereby defined as:

- Implementation of energy efficiency financing program
- Introduction of energy management (audit) program
- Introduction of energy efficiency labelling program
- Introduction of energy efficiency building rating program
- Implementation of awareness raising program

SREDA is the responsible authority to conduct these five actions so as to achieve the national targets set forth in the EE&C MP. Among these five actions identified as programs, SREDA is currently implementing the EE&C Promotion Financing Project (EECPF), with the assistance from JICA, as well as the awareness-raising activities. Energy Audit Regulation has been approved by the government and is in implementation stage now, which is the part of energy management programme. Further, SREDA is in the process of developing energy labelling regulation and building rating programmes.

### **2.3 Necessity of Energy Efficiency & Conservation Promotion**

By achieving the target of 20% improvement of primary energy consumption per GDP, a total of approx. 66 million ton oil or 78 billion m<sup>3</sup> of gas equivalent energy is expected to be saved within the 15 years between 2016 and 2030. The total energy savings in monetary value will amount to approx. BDT 567 billion in the period or an annual average of BDT 37 billion, at the current weighted average natural gas price. The energy intensity in 2030 will be improved by 20% compared to the 2013 level and the energy consumption in 2030 will be reduced by 17% (or by 12 Mtoe) compared with the BAU (business as usual) case. Energy saving activities promoted by SREDA will directly affect power supply through reduced power demand. If the power demand can be gradually reduced in the period between 2015 and 2030 to reach 20% reduction, the peak demand in 2030 will be 26 GW. To supply 26 GW of power, 29 GW of power supply capacity will be required considering transmission and distribution loss among others. On the other hand, in BAU case where energy saving measures are not implemented, 36 GW of power supply capacity will be needed in 2030.



It means that 7 GW (from 36 GW to 29 GW) of power supply capacity can be reduced due to energy-saving activities. In monetary terms, the amount of imports of expensive fuels for power generation will decrease remarkably: The total energy savings would amount to BDT 2.5 trillion (or an annual average of BDT 144 billion), which is equivalent of 6.47% of national budget and 1.86 % of GDP (2013-14).

## 2.4 EE&C in National & International Policies

According to Target no 7.1, 7.2 and 7.3 of Sustainable Development Goals (SDGs), By 2030, ensuring universal access to affordable and modern energy services, increasing substantially the share of renewable energy in the global energy mix, doubling the global rate of improvement in energy efficiency is very important. In the **7th Five Year Plan of Bangladesh** it is mentioned that, the Government has a target to improve 15% Primary Energy Consumption per GDP by 2021 and 20% by 2030 In December 2015, **Paris Agreement** has been issued with 196 countries participation at United Nations Climate Change Conference, COP 21 in Paris. Main discussed issue there was international legal frameworks against global warming after 2020. The key authorized points in this agreement are as follows:

- a) Global average temperature should be well below 2°C compared to pre-industrial levels
- b) Zero net anthropogenic greenhouse gas emissions to be reached during the second half of the 21st century

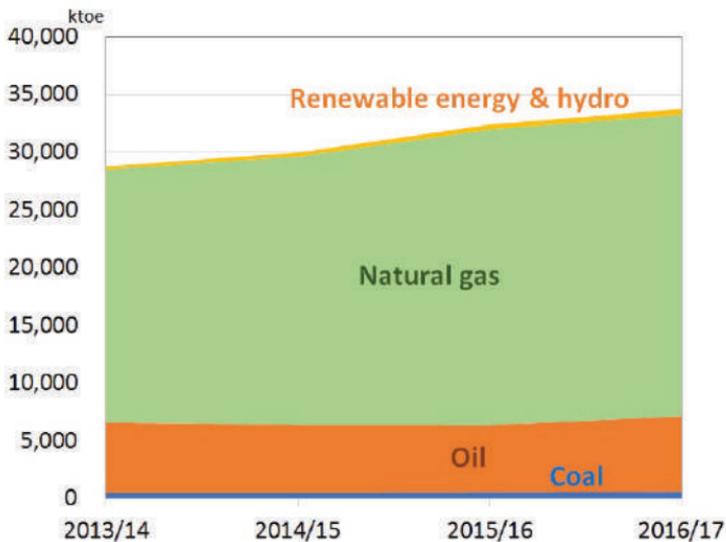
According to IEA for preventing global warming, EE&C is supposed to contribute 44% reduction of GHG emissions reduction by 2040. In accordance with the common understanding for limited fossil energy and the importance of counter measures against global warming, the importance of EE&C will increase more and more. Under this background, SREDA has pivotal role to promote EE&C and reduce CO<sub>2</sub> emissions.



### 3. Energy Supply Demand Situation (FY 2016/2017)

#### 3.1 Primary Energy Supply Trend by Fuel Source

Bangladesh is significantly dependent on its indigenous natural gas production for its national energy supply. The latest data (FY 2016-17, compiled from nationally available data) show that the indigenous natural gas supply of 26,140 ktoe comprised 77% of the total primary energy supply of 33,766 ktoe. Figure 3 on the next page illustrates the primary energy supply by fuel source for the past 4 years.



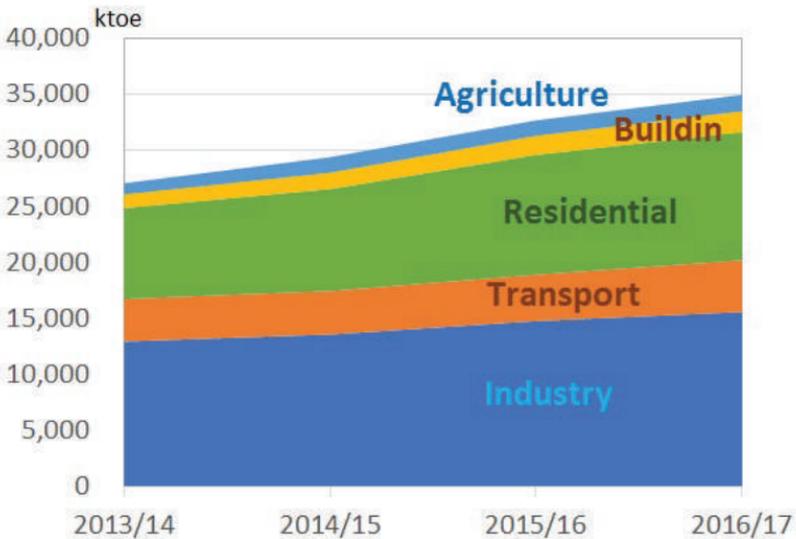
**Figure 2: National Total Primary Energy Supply by  
Fuel Source**

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



### 3.2 Energy Consumption Trend by Sector

Total energy consumption (primary energy base) amounted to 34,969 ktoe in FY 2016-17, according to SREDA compilation from nationally available data (discrepancies exist due to difference in assumptions and level of accuracy among the original data sets). Industry sector consumed 15,599 ktoe, which comprises 45% of the total energy consumption, being the top sector in terms of energy usage. Residential sector's consumption was 11,429 ktoe, which comprises 33% of the total energy consumption, being the second major energy consuming sector. There is a significant increase in building sector consumption, which is attributable to urbanization and the rapid growth of service sector within the national economy.



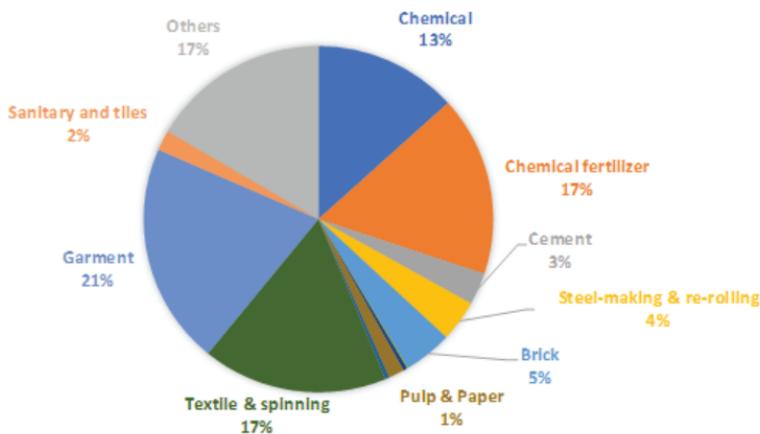
**Figure 3: National Energy Consumption by Sector (Primary Energy Supply Basis)**

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



### 3.3 Breakdown of Energy Consumption in Industry Sub-Sector

SREDA, in cooperation with JICA Technical Assistance Task Team, calculated the breakdown of energy consumption among the Industry sector. The calculation is based on sub-sector wise carbon emission data, production data and also with reference to the interview result with the industry owners and academia experts. The result shows that the largest energy consuming sub-sector is the garment sector comprising 21% of the energy usage among the whole industry sector followed by textile & spinning, and chemical sub-sectors, each consuming 17% among the total industry sector energy consumption. It should be noted that the sub-sector breakdown calculation was conducted under restricted data availability and therefore further research and data collection will be required to obtain more accurate and updated data.



**Figure 4: National Energy Consumption by Industry Sub-sector (Primary Energy Supply Basis)**

Source: EECPPF Project T/A Task Team

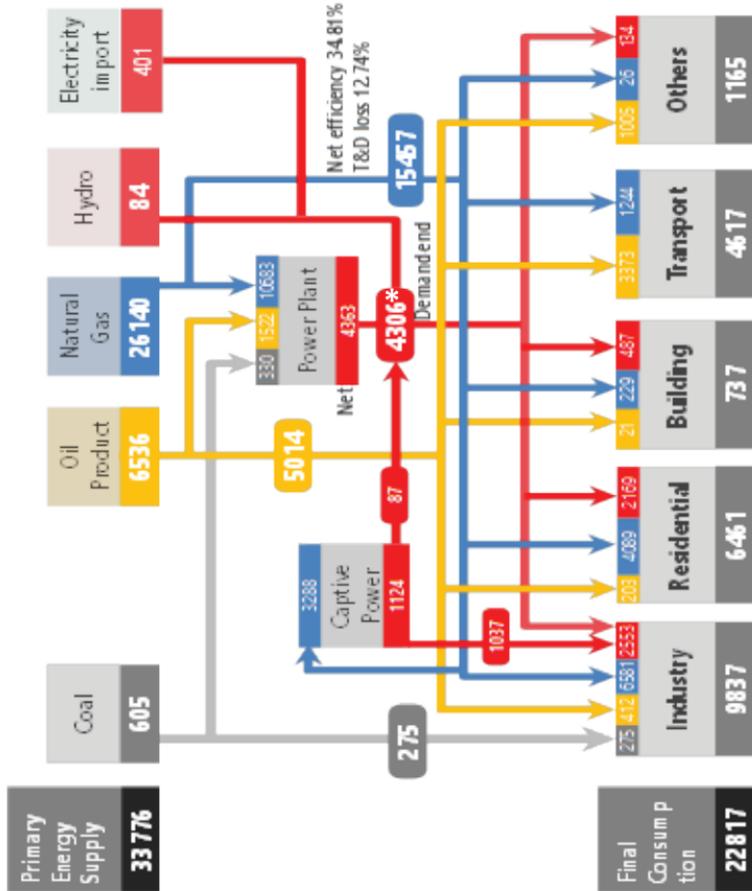


## 4. National Energy Balance

National energy balance is a presentation of a set of data to exhibit the overall energy supply, conversion and demand trends among the major industry sector and by fuel source. It can be described as the input-output data table of energy among the sectors by fuel source (figureNo-5).

Based on nationally available energy supply, conversion efficiency and consumption data, an updated energy balance calculation was conducted at SREDA. Figure 5 is the visual presentation of the national energy balance as of FY 2016-17 (note that there is a slight discrepancy due to data availability and accuracy). Here the energy consumption is shown in actual consumption basis (secondary energy consumption basis for electricity). It shows that approximately a half of the natural gas is being fed into power generation (including captive power generation). It should also be noted, focusing on conversion, that captive power generation is contributing a significant portion of electricity supply to the industry sector (approximately 40%).

Further, looking at fuel source-wise consumption, natural gas is the major source for industry and residential sector, while electricity is the most consumed in the building sector. Transport and other sector is more dependent on petroleum products. Agriculture is included in the other sector, where diesel oil usage comprises a large portion of energy usage.



**Figure 5: National Energy Balance FY2016-17**

Note: Unit = ktoe

Excluding 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, Titas, Hydrocarbon Unit, BPC, LPG association data

\* Considering T & D loss-  $\{(4363+87+84+401) \times (1-12.74)\% \} = 4306$  ktoe



## 5. Energy Intensity

### 5.1 Calculation

The indicator employed in measuring the EE&C target is “primary energy consumption per constant (real) GDP”. General terms for this indicator is the “national energy intensity”. Immediate (by Fiscal year 2020-21) target set in the EE&C MP is to reduce this national energy intensity by 15% in comparison with what was observed in FY 2013-14. The latest trend of national energy intensity (total primary energy supply /gross domestic production) from FY 2013-14 to FY 2016-17 on national basis is as in the following table and chart.

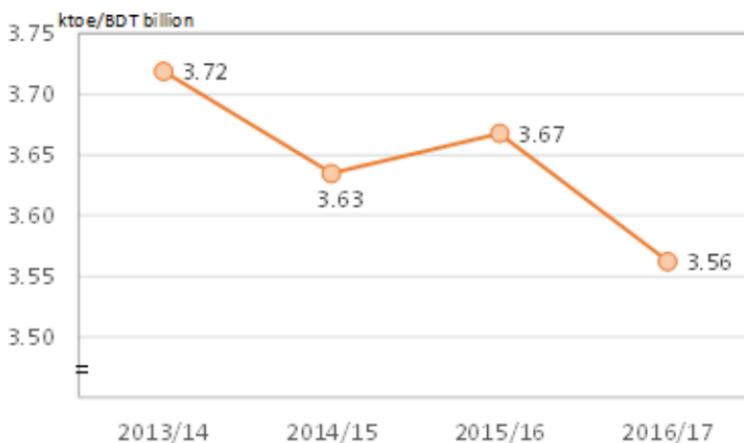
Fiscal year	2013-14	2014-15	2015-16	2016-17
Oil	6,088	5,907	5,834	6,536
Gas	21,926	23,228	25,601	26,140
Coal	526	510	559	605
Power from Hydro & Import	245	339	411	485
Total Primary Energy Supply	28,786	29,984	32,406	33,766
Real GDP in BDT (billion)	7,741	8,249	8,835	9,479
Energy Intensity (TPES/GDP) (ktoe/billion Tk)	3.72	3.63	3.67	3.56
Trend (2013-14=1.00)	1.00 (base year)	0.98	0.99	0.96

**Table 1: National Energy Intensity**



## 5.2 Trend

Figure obtained dividing total primary energy supply by the real GDP (2010 price) is the energy intensity in the unit of ktoe/BDT billion. The national energy intensity for Financial Year (FY) 2016-17 was 3.56 ktoe/billion BDT, which is 4% less than the baseline year (FY 2013-14, billion BDT). It should be noted here that this 4% reduction also represents the effects of intended and non-intended energy efficiency promotion activities. Uninterrupted supply of energy is a major constraint for industrial production in Bangladesh. Saved energy will contribute to increase production in the industries. A simple monetary conversion of the energy conservation which contributed to 4% improvement in energy intensity from FY 2013-14 to FY 2016-17 is equivalent to approximately **BDT 400 billion of production**.



**Figure 6: National Energy Intensity Trend**

Note: National Energy Intensity = TPES / GDP

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



There is a declining trend in national energy intensity, which means the country is producing more using the same amount of energy (or, same production is achieved with lesser energy). Background of this declining trend is the change in industrial structure, especially a shift towards service sector where energy consumption per production is lower compared with the industry sector.

### **5.3 Analysis of the National Intensity Trend**

Apart from the industrial structure shift, there are obviously intended elements that have contributed to the 4% decline in the national intensity during the recent years. First, upgrading of power generation, transmission and distribution, in the supply side of electricity, have contributed to improving the energy conversion/transmission/distribution efficiency (c.f. BPDB information source).

SREDA, having the function to promote EE&C on the demand side, has contributed to relieving the national energy intensity, mainly from the following three activities: (1) promotion of industrial energy efficiency through financing, (2) introduction of energy audit programme, (3) preparation for energy labelling programme, and (4) awareness raising. Details of the activities are as mentioned in the following chapters. Further, another pillar of SREDA activities, which is the promotion of renewable energy has a strong relevance to reducing energy intensity. This is especially true when renewable energy is introduced to substitute conventional grid electricity, gas and petroleum products. By promoting the use of renewable energy, the use of conventional energy will decrease for the same production activities. This has contributed to decline in national energy intensity.



## **6. Activity [I]: Energy Efficiency & Conservation Promotion Financing Project**

### **6.1 Background**

Sustainable and Renewable Energy Development Authority (SREDA)'s Energy Efficiency & Conservation Master Plan EE&CMP up to 2030 sets a mid-term energy efficiency and conservation (EE&C) national target as to reduce the country's energy intensity 15% by fiscal year (FY) 2020-21. To achieve this goal, the master plan identifies five major interventions which are: (i) energy audit, (ii) EE&C building (iii) EE&C labelling (iv) EE&C finance, and (v) awareness raising. Energy Efficiency & Conservation Promotion Financing (EECPF) Project comprises the fourth pillar among the necessary interventions. The significance of implementing this EECPF Project is also outlined in the 7th Five Year Plan and EE&C Regulations of the Government of Bangladesh.

SREDA, after its establishment in 2014, has been working for promotion of renewable energy and EE&C in collaboration with the governmental organisations, industry financial sector and international development partners. EECPF Project is funded by Japan International Cooperation Agency, using their 0.01% interest rate loan, with the tenure of 40 years among which the first 10 years is the grace period.

### **6.2 Overview of the Project**

EECPF Project utilises a two-step loan (or financial intermediate lending) instrument for the purpose of policy financing. SREDA is facilitating this low interest loan to industries who intend to use energy efficient equipment and machineries in their industrial facilities, which are generally expensive than the conventional type equipment. By offering the benefit of lower financial cost, SREDA is encouraging the investors to select energy efficient equipment as compared with the conventional equipment.



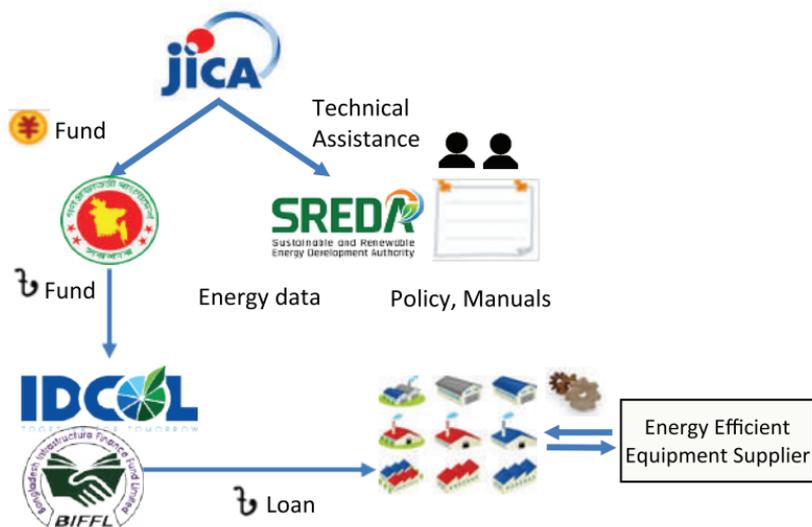
Once the borrower introduces energy efficient equipment which was acquired utilising this low interest loan, the borrower reports to SREDA **energy consumption data through a designated management information system (MIS)**. SREDA aggregates and analyses the reported data to calculate energy conservation effect through the implementation of EECPPF Project. Along with other EE&C promotion activities initiated by SREDA, progress towards achievement of the set goal is being monitored and reported on regular basis.

### 6.3 Project Mechanism

There are three executing agencies who are implementing EECPPF Project, which are SREDA, Infrastructure Development Company Limited (IDCOL) and Bangladesh Infrastructure Financing Fund Limited (BIFFL). Among these three executing agencies, SREDA is the administrative authority of the Project who is managing the overall implementation arrangements. SREDA is also a technical node for the Project, being responsible for judging the eligibility of the energy efficient equipment and calculating the energy saving effect from the Project activities. To these ends, SREDA issues the business process manuals for Project implementation and provides the MIS for data collection and calculation. IDCOL and BIFFL are the implementing financial institutions (IFI's) who extend low interest loan in line with the policies and procedures stipulated in SREDA's business process manuals. This concessional loan channelled to IFIs through the Finance Division of the Government.



The basic structure of the EECPPF Project illustrated below:



### Flow Diagram of Energy Efficiency and Conservation Promotion Financing Project

The borrowers will share their monthly energy consumption data with SREDA through online MIS system.

## 6.4 Progress

As of July 2018, SREDA has approved eight sub-projects. “Table:2” is a list of the ongoing sub-projects which received SREDA’s No Objection Certificates (NOCs). The sub-project proponents are from various industry segments including ready-made garment (RMG), spinning, cement and home appliances assembly. Eligible equipment applied for includes sewing machine, boiler, vertical roller for cement factory, air conditioner, chiller, spinning machine, air compressor, among others. Energy saving potential (on process for which the energy efficient equipment is being introduced) is calculated to be between 10 to 50% in different industries. The energy saving ratio varies due to differences



in equipment, process and available baseline data. The number of approved sub-projects is increasing rapidly as the Project is now in full-swing implementation.

So far, for these eight sub-projects, more than 70% of the available fund has already been allocated. Few more applications are in evaluation stage now. It is likely that the remaining 30% of the entire fund will also be earmarked soon. With considerations for the robustness of demand for this EECPPF Project loan, SREDA is currently seeking additional resources for topping up the fund.

Sl	Proponent company sector	Energy efficient equipment (examples)	Energy saving ratio
1	Ready-made garment (I)	Direct drive sewing machine Once-through boiler	28%
2	Cement manufacturing	Vertical roller cement mill	34%
3	Ready-made garment (II)	Direct drive sewing machine VRF air conditioner	50%
4	Spinning Mill (I)	Automatic winder Waste heat recovery & absorption chiller	68%
5	Spinning Mill (II)	PM motor-driven ring spinning frame Pneuma-less roving frame	8%
6	Spinning (III)	Air-jet spinning machine Waste heat recovery & absorption chiller	60%
7	Electronics (Home appliances) assembly	Inverter controlled air compressor	21%
8	Ready-made garment (III)	Direct drive sewing machine Building Energy Management System (BEMS)	17%

**Table 2: List of approved Sub-projects under EECPPF Project**

Note: As of August 2018  
 VRF: Variable Refrigerant Flow  
 PM: Permanent Magnet



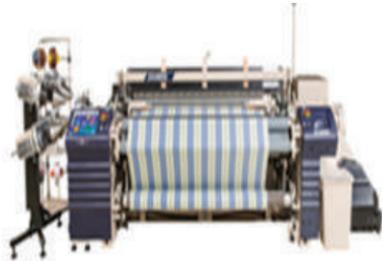
Balloon  
controlled  
automatic  
winder



Once-through  
boiler



Direct-drive  
sewing  
machine



Air-jet  
loom

**Figure 7.1: Examples of Energy Efficient Industry Equipment**



Vertical roller mill



Centrifugal compressor



Gas-turbine cogeneration

**Figure 7.2: Examples of Energy Efficient Industry Equipment**



The IFIs are receiving loan applications from various sectors. Some of the examples are: glass manufacturing, food processing, weaving, electronics, and so on. Upcoming applications include proposals to install equipment such as gas-turbine cogeneration equipment, heat reflective glass for building EE&C, centrifugal air compressor, amorphous-core transformer, air-jet weaving machine, LED lights, etc.

## **6.5 Energy Conservation Effect**

Under assumption that all of these eight sub-projects are in full operation, the expected annual energy saving was calculated to be 12,184 toe (ton oil equivalent) or 43,052 MWh. Assuming the unit cost of 1 MWh of electricity is BDT 8,150, the total cost saving from these eight sub-projects will add up to BDT 351 million per year.

Effect from eight approved sub-projects is derived from allocating 74% of the total fund amount. Assuming that entire fund has been allocated, the effect will be 1.4 times as much as the current calculation. Effect from using the entire fund will therefore be calculated as 16,465 toe or 58,180 MWh, which amounts to approximately BDT 474 million per year.

It should be noted that the direct benefit which is calculated here is only on energy bill cost. Additional benefits, by means of improved production efficiency, higher reliability of equipment, factory space saving, emissions reduction, are also expected. Including these indirect benefits, the EECPPF Project effect is likely to be more that what is being exhibited in the next table.



	Effect from 8 approved sub - projects	Effect from the entire fund amount
Energy	12,184 toe	16,465 toe
conservation	=43,052 MWh	=58,180 MWh
Monetary term	BDT 351 million	BDT 474 million

**Table 3: Expected Energy Conservation Effect of ECPF Project**

Note: As of August 2018

toe: ton oil equivalent = 0.283 MWh (Megawatt hour):

*source = Draft Energy Audit Regulations*

The cost of 1 MWh electricity is converted to BDT 8,150.

*source : 2017 electricity tariff for medium voltage general purpose rate (flat rate)*

## 6.6 Outlook for Future

Once the Government's Energy Audit Regulation comes into force, SREDA intends to integrate the EECPF Project implementation with the energy audit practice. By doing so, the EECPF Project may function as an incentive to accelerate implementation of recommendations made in energy audit report.

Further, SREDA will also encourage the implementation of Component III of this EECPF Project, which is a mechanism to extend low interest loan for purchasing energy efficient home appliances. SREDA will be the introducing energy efficiency labelling programme which facilitates the consumers to acquire energy efficient appliances under concessional loan facility.



Through the implementation of this EECPPF Project, it was found that energy efficient equipment contributes not only to saving energy but also to improving production efficiency in broad terms. There are also cases where the energy efficient equipment also brings higher safety (notably with the case of once-through boiler). Such being the case, SREDA will enhance the EECPPF Project scope so that it will bring about benefits to a wide range of industry.

## 7. Activity [II] Energy Audit Activities

From its establishment, SREDA has been working hard to introduce Energy Management program in industries, and Energy Audit program to ensure EE&C. Intended sectors for the introduction of these programs are the commercial (building) and industry sectors. As a result, the **Energy Audit Regulations 2018** incorporating the introduction of energy managers at industries has been enacted.

Current version of Energy Audit Regulation consists of the following major contents:

- Roles & responsibilities of **designated consumers, energy managers, energy auditors**;
- Certification of energy auditor and Energy Auditing Examination Centre (EAEC);

## 8. Activity [III] Energy Labelling activities

The purpose of the EE&C Labelling Program is to promote the sales of energy efficient appliance in the market. The program is applied mainly on home appliances such as air conditioner, refrigerator, TV, light, fan and motor. Due to the rapid economic growth, the number of home appliances using by the people, is expanding remarkably and will continue in the coming years. In order to achieve the EE&C national target by 2030, the average efficiency of each home appliance is expected to increase by 20-30%. EE&C Labelling Program is deemed to be the most effective measure to promote EE&C in the residential sector.



Penetration of energy efficient appliances contributes not only to the reduction of energy consumption (kWh), but also to the reduction of electricity demand (i.e., peak load demand in kW) as well as to emission reduction.

Bangladesh has joined BRESL (Barrier Removal and Cost-Effective Efficiency Standards and Labelling) Program under UNDP, and has already started the EE&C Labelling Program. However, the current labelling program has limited impact on the market, due to lack of evaluation, monitoring and supervision. For this reason, SREDA is currently developing more comprehensive energy efficiency & conservation labelling scheme, to be introduced by the year of 2019. Some feature of SREDA's Energy Efficiency & Conservation Labelling Scheme are as follows:

- Manufacturers/importers will get EE test on their products at SREDA approved accredited laboratories;
- Testing laboratories should be accredited by BA (Bangladesh Accreditation Board);
- Manufacturers/importers which have in-house laboratories can conduct tests for certification at their own laboratories, provided that the laboratories are accredited by BAB and approved by the SREDA;
- Label certification body will evaluate the test reports and issue label certificate on the product with “star” or similar kind of rating, to be granted to the manufacturer/importer.
- Manufacturers/importers will affix the label on the products or their packages when distributing the products in the markets.
- Label certification body will carry out “check tests” on the products that are sold in the market by randomly selecting the test samples. The check tests are essential for maintaining the reliability of the labelling scheme, and;
- Anybody can claim “challenge tests” to the label certification body with appropriate fee to cover the test and other administrative costs.



## 9. Activity [IV] Awareness Raising Activities

Government is promoting innovative mechanism to ensure EE&C at industries, residential and service sectors (including commercial buildings). Power Division and SREDA are organizing seminars, workshops, fair, expo, competition etc. on regular basis to raise awareness among relevant stakeholders. The government has taken a number of awareness initiatives for promoting efficient energy use and for reducing the consumption of energy. Activities held are as follows:

- Arranged awareness raising Schooling Programs on responsible use of energy for students;
- Incorporated energy efficiency and renewable energy related topic in primary, secondary and higher secondary level curriculums;
- Arranged awareness raising seminars on EE&C with Division and District level government officials and teachers;
- Arranged Several Mela (Fair) on clean cooking solutions at different districts;
- Joined Sector Leader's Workshops regularly for synchronising the sector with EE&C promotion;
- Joined National Electricity Week every year for raising awareness among the general citizens;
- Telecasted various mass awareness programs in print and electronic media;
- Formulated the "EE&C Business Coalition" in conjunction with the EECPPF Project;
- Incorporated an energy-saving chapter in the "National Building Code";
- Incorporated the features of Green Building to apply for concessional loan under the Bangladesh Bank re-financing scheme;
- Conducted ESCO piloting for LED lighting at a garment factory;
- Organised two international seminar on Green Building in collaboration with Architecture Department, BUET;
- Organised two international seminars on EE&C promotion;



- Organised training sessions on Energy Audit;
- Organised seminars and workshops on renewable energy (RE) and EE&C regularly;
- Formulated the “Country Action Plan” for Improved Cook Stove (ICS) with a target to replace 30 million inefficient traditional cook stoves by improved, clean and modern cook stoves by 2030. Around 1.8 million improved cook stoves have been distributed so far, and;
- Introduced Improved Rice Parboiling System (IRPS) in rice husking mills. So far 75 IRPS are already installed in rice husking mills.
- Set up 122 solar drinking water supply systems in coastal areas etc.

## **10. Further Activities for Achieving the Targets**

Among the five major activities to be promoted and conducted by SREDA, building rating system is yet to be developed. Draft Building Energy Efficiency Rating (BEER) system has been prepared and 2 stakeholder consultation workshop arranged on it. Now the draft BEER system is in public consultation stage.

Energy Efficiency and Conservation Promotion Financing Project, which is currently the flagship project under SREDA, has successfully promoted the introduction of various energy efficient industrial equipment. The equipment will conserve energy as they operate. The effect of the Financing Project will therefore be materialised from now on. Further and significant decline in energy intensity is expected as the project implementation matures. The Financing Project will continue until year 2022, having four more years to go. The Project will continue to be one of the core activities for SREDA to be contributing to promotion of EE&C.

SREDA understands that its activity has its limit in contribution to achieving the national EE&C target. Along with its own programs and projects, SREDA will involve and collaborate with various entities to promote EE&C, as well as to interact with industries and public in general to raise awareness on the necessity of EE&C. Hence, SREDA will continue to function as a hub for all kinds of EE&C promotion activities in the country.



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