



SAARC TRAINING WORKSHOP ON ENERGY AUDIT AND EFFICIENCY IN POWER SECTOR

**MD. GIASH UDDIN MUGAL
SENIOR ASSISTANT SECRETARY
POWER DIVISION**

&

**Q.A. SHARHAN SADIQUE
DEPUTY DIRECTOR (SUSTAINABLE ENERGY)
POWER CELL**

SAARC MEMBER STATES

- AFGANISTAN
- BANGLADESH
- BHUTAN
- INDIA
- MALDIVES
- NEPAL
- PAKISTAN
- SRI LANKA



Bangladesh: A South Asian Country





Country Profile

- **The Country** : The People's Republic of Bangladesh
- **Capital** : Dhaka
- **Area** : 147,570 Sq. Km.
- **Population** : 152 Million
- **Per Capita Income** : US\$ 884
- **GDP Growth Rate** : Around 6 %

Energy Scenario in Bangladesh

Present Structure of Power Sector

Apex Institution

Power Division, Ministry of Power, Energy & Mineral Resources (MPEMR)

Regulator

Bangladesh Energy Regulatory Commission (BERC)

Generation

Bangladesh Power Development Board (BPDB)

Ashuganj Power Station Company Ltd. (APSCL)

Electricity Generation Company of Bangladesh (EGCB)

North West Power Generation Company Ltd. (NWPGCL)

Independent Power Producers (IPPs)

Transmission

Power Grid Company of Bangladesh Ltd (PGCB)

Distribution

Bangladesh Power Development Board (BPDB)

Dhaka Power Distribution Company (DPDC)

Dhaka Electric Supply Company Ltd (DESCO)

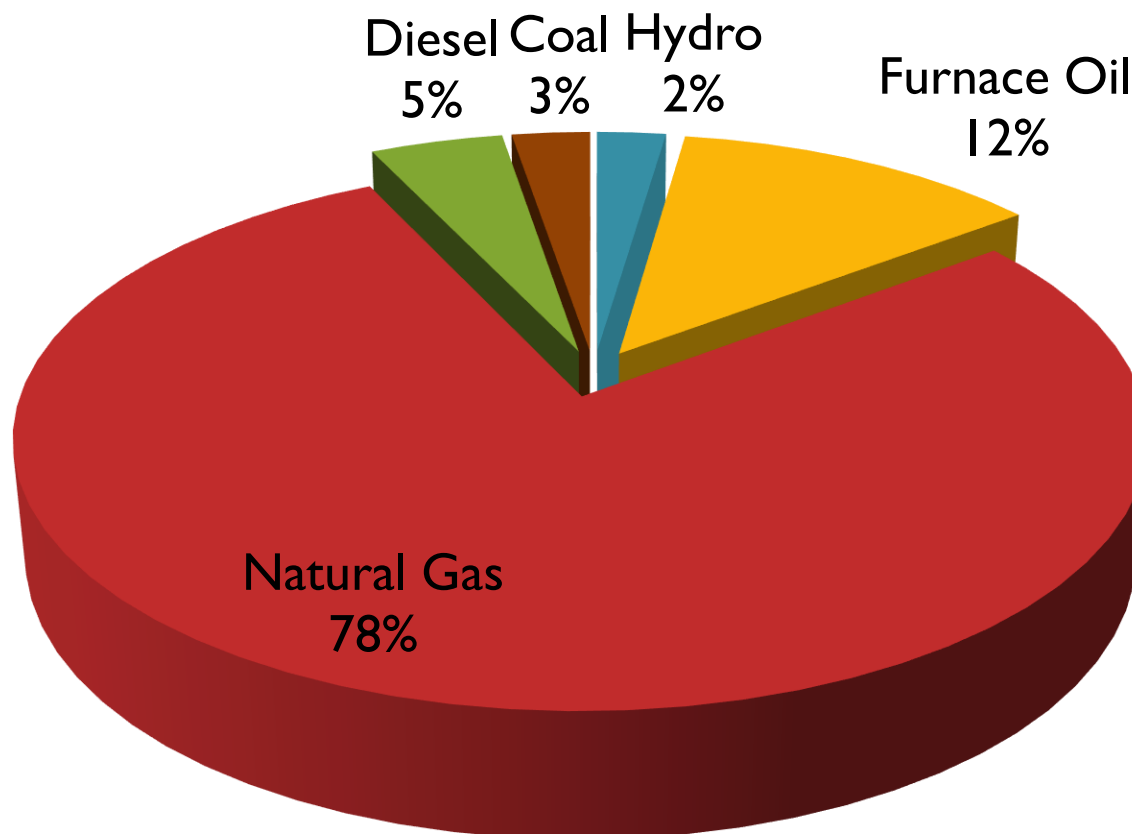
West Zone Power Distribution Company (WZPDC)

Rural Electrification Board (REB) through Rural Co-operatives

Bangladesh Power Sector: At a Glance (July 2013)

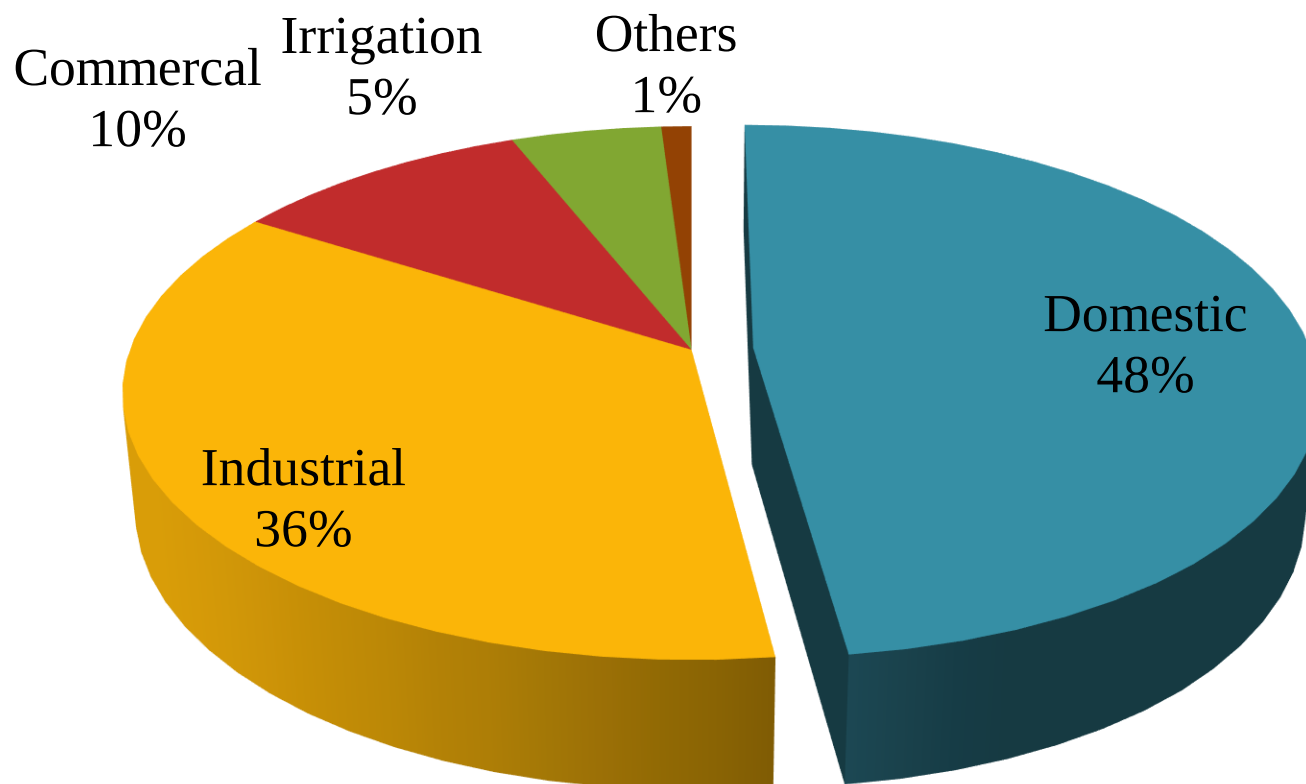
- **Generation Capacity** : 8537 MW
- **Present Generation** : 6500-7000 MW
- **Max. Generation** : 6675 MW
(12 July 2013)
- **Total Consumer** : 10.45 Million
- **Transmission Line** : 9,000 km
- **Distribution Line** : 2,83,000 km
- **Per Capita Generation** : 292 kWh/annum
- **Access to Electricity** : 60%

Electricity Generation Capacity By Fuel

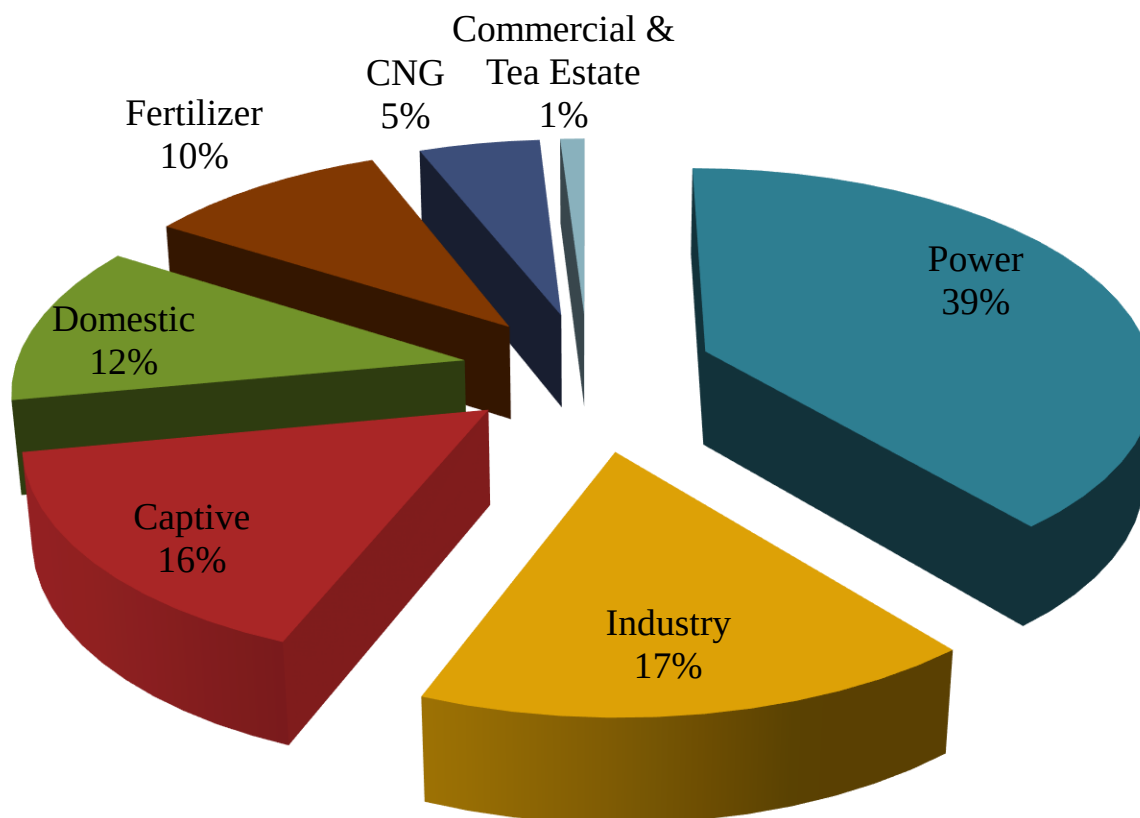


Total Electricity Generation Capacity FY 2012 : 8100 MW

Category Wise Electricity Consumption FY 2011-12

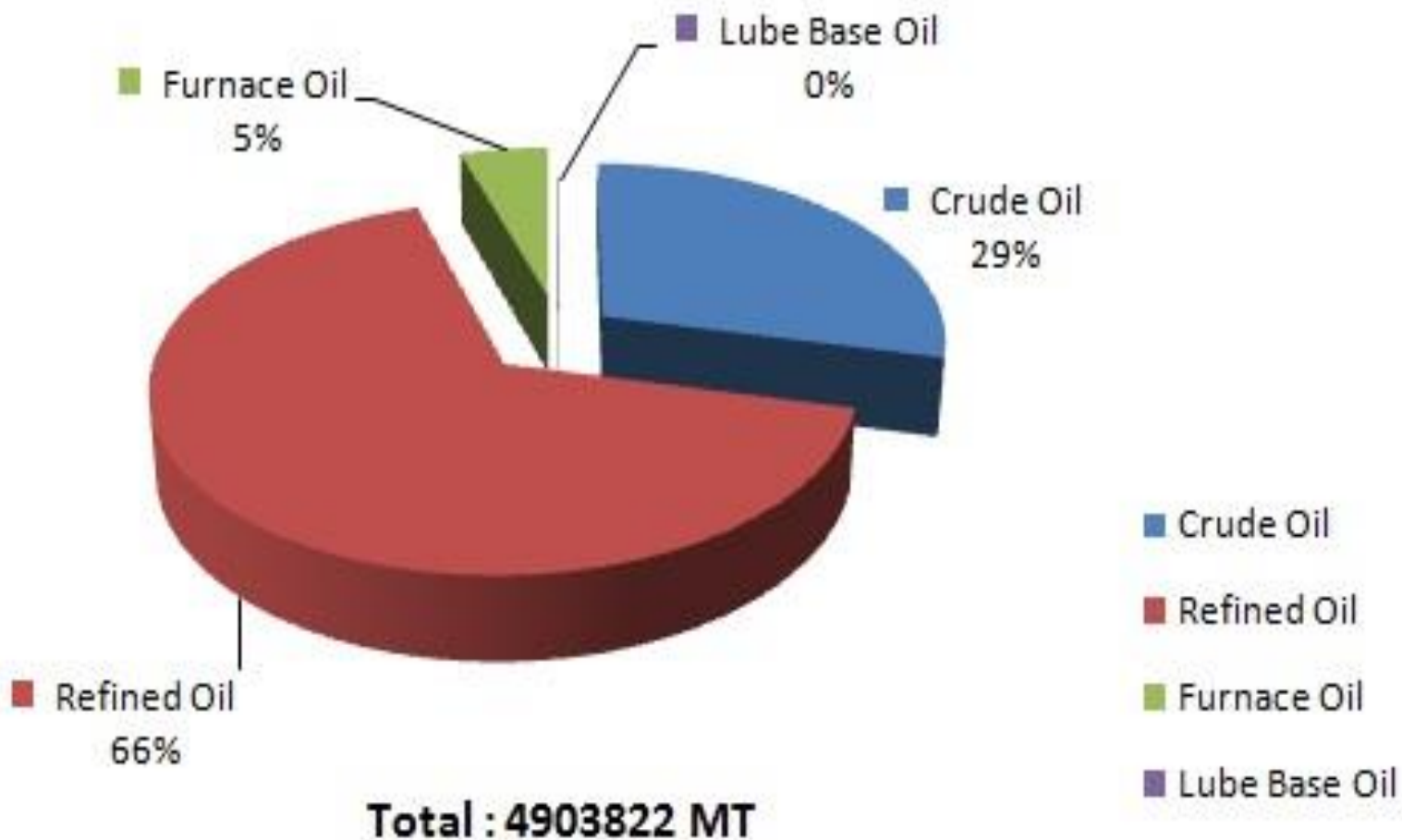


Sector Wise Gas Consumption

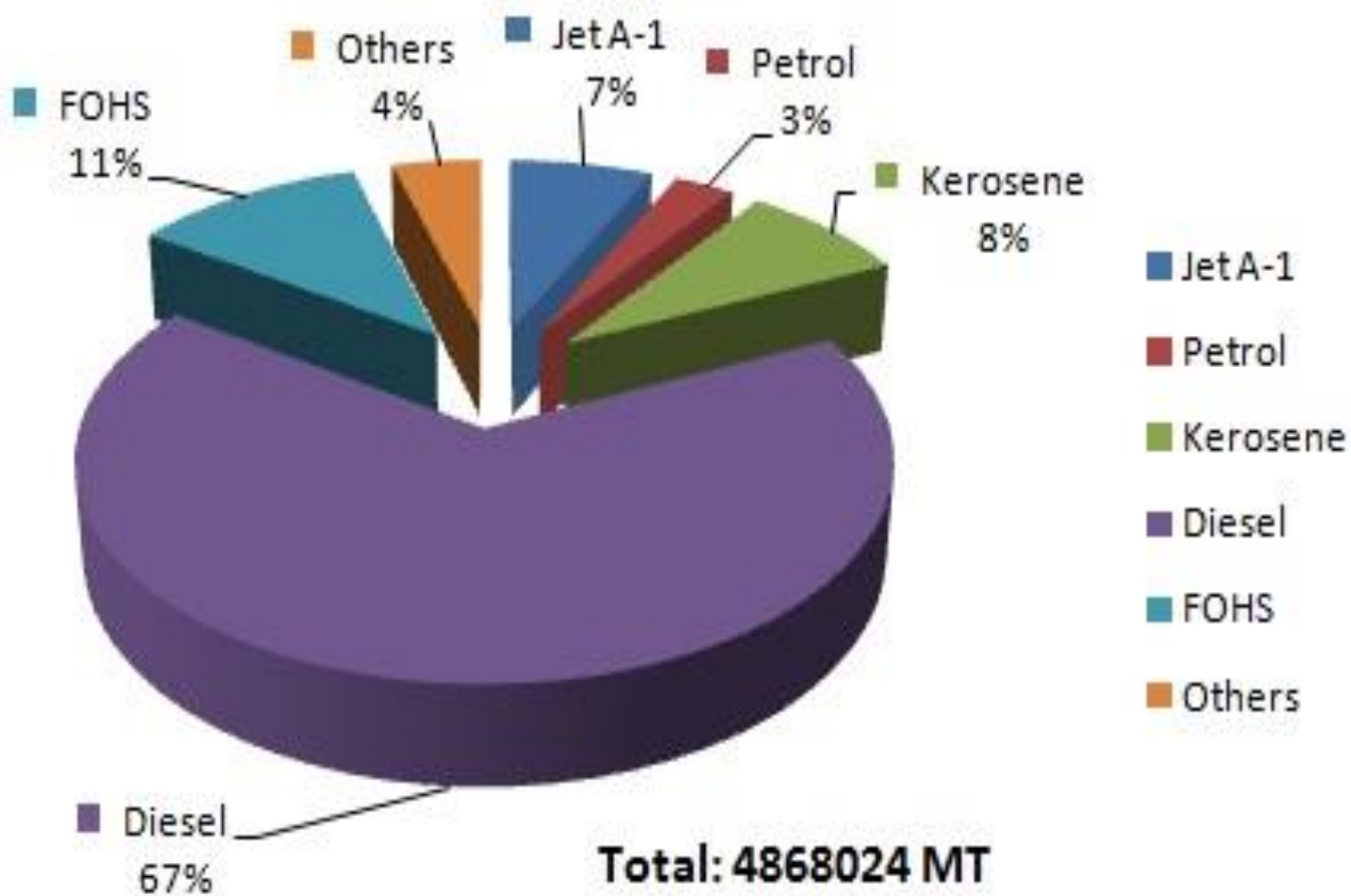


Total Gas Consumption FY 2011: 714.4 BCF

Petroleum Products Imported, FY 2011



Sale of Petroleum Products, FY 2011



Electricity Generation Capacity by RE June 2013

Renewable Energy Source	MW
Solar Home System (SHS), 2.2 million nos.	88
Solar System at Govt./ Private Office	1
Solar PV Cell for New Power Connection	8
Wind Energy	2
Biomass Based Electricity	1
Biogas based Electricity	1

Total Capacity: 101 MW



Energy Conservation Program in Bangladesh

Background

- **Energy Monitoring Unit (EMU) originated from a joint concern of M/O Energy and Mineral Resources & World Bank in 1983**
- **Renamed as Energy Monitoring and Conservation Centre (EMCC) in 1991**
- **Renamed as Energy Audit Cell (EAC) & attached with the office of Electrical Advisor and Chief Electric Inspector in 1999**

Initial Objectives / Works done

- Develop, Initiate and Carry out a national industrial energy conservation and diversification program to improve energy use efficiency in the industrial sectors
- Completed Energy Audits of 47 large and medium sized industrial energy users as follows:

Jute, Textiles, Power Plants, Food, Cement, Pulp & Paper, Sugar, Rice, Tea, Iron & Steel, Brick & Glass Kilns and Fertilizer.

- Recommended over 200 Energy Efficiency Improvement Options (EEIOs) in 47 plants based on 1983/1984 Energy consumption data

Initial Objectives / Works done (Contd.)

- Based on audit results, estimated national energy efficiency improvement potential was forecasted (i.e. 19 PJ/yr.)
- Another TA Project was taken up in 1990-94 financed by British ODA and implemented by National Industrial Fuel Efficiency Services (NIFES), UK in 1990-94
 - **Conducted Energy Audits in energy intensive industries**

Works done

- **Energy Audit:** Energy audits in over 200 industrial units, commercial establishments & other bulk energy consumers
- **Training Program**
- **Seminar / Workshop**
- **Technical Library**
- **Manuals and other Reports**

Present Situation

- **SREDA (Sustainable & Renewable Energy Development Authority) Act enacted in December 2012**
- **EAC will be abolished**

Functioning of SREDA

- Overall mandate of SREDA is to promote Renewable Energy (RE), Energy Efficiency (EE) and Energy Conservation (EC).

SREDA will focus on the following

- Assist MPEMR to formulate appropriate policies on RE, EE and EC
- Conduct studies, research, action research and pilot demonstrations for stakeholders
- Provide training for capacity building at institutional levels
- Provide advisory services to private sector corporate bodies and government and non-government agencies/ organizations
- Promote regional and international experience sharing in the field of RE, EE & EC for capacity building
- Manage an Energy Fund to promote innovative pilot projects in the country to enhance RE, EE & EC coverage in the country
- Advocacy and awareness raising
- Documentation and dissemination of results and information

Role of SREDA for EE & EC

Regulatory Role

- Prescribe minimum energy performance standards and informative labels for end use equipment and appliances
- Assist the government in the development and implementation of Energy Conservation Building Codes
- Enhance energy efficiency of high energy using sectors defined as designated consumers by:
 - Develop specific energy consumption norms
 - Certify Energy Managers and Energy Auditors
 - Accreditation of Energy Auditors
 - Define manner and periodicity of mandatory energy audits
 - Develop reporting formats on energy consumption and action taken on the recommendations of the energy auditors

Role of SREDA for EE & EC

Promotional Role:

- Create awareness and disseminate information on energy efficiency and its conservation
- Strengthen consultancy services to the entrepreneur in the field of energy conservation
- Promote research and development
- Formulate pilot projects and demonstration projects
- Facilitate implementation of pilot/ demonstration projects
- Promote use of energy efficient processes, equipment, devices and systems

Role of SREDA for EE & EC

Promotional Role:

- Encourage preferential treatment for use of energy efficient equipment and appliances
- Promote innovative financing of energy efficiency projects
- Create provision for incentives of energy efficiency projects
- Implement international co-operation programs relating to efficient use of energy and its conservation
- Encourage the use of energy efficient equipment and appliances
- Encourage consumers to use energy star labeled equipment and appliances

Role of SREDA for EE & EC

Development and Facilitation Role:

- Maintain list of certified energy managers and energy auditors
- Maintain list of designated consumers and their energy Consumptions
- Promote capacity building/training activities
- Prepare and implement energy efficiency roadmap for utilities
- Develop testing and certification procedures and promote testing facilities

Role of SREDA for EE & EC

Development and Facilitation Role:

- Include CDM activities for prospective new and existing industries
- Coordinate among different ministries, departments, divisions and GoB agencies for adhering to a sustainable energy regime
- Promote innovative financing of energy efficiency projects
- Evolve instruments and delivery mechanisms for implementing energy efficiency projects
- Promote private-public partnership in efficient use of energy

Ongoing Activities

- **Action Plan for Energy Efficiency & Energy Conservation has been adopted**
- **Objective of Action Plan**

To consolidate efforts and coordinate different EE & EC programs and measures towards achieving a set of national targets under a single government umbrella through establishment of SREDA

Vision of Action Plan

Government has a stated vision of improving the primary and secondary energy saving level for sustainable energy security including low carbon emission

Mission of Action Plan

The government has set the following targets to ensure sustainable energy security:

- 10% of primary and secondary energy saving by 2015
- 15% by the 2021 and
- 20% by 2030

On-Going EE & EC Activities

- Introduce Energy Efficiency building concept in the National Building Code (revision)
- Energy Efficiency measures, alternative and renewable energy subjects have been introduced in the national Text Book Curriculum of schools, madrasas and colleges
- Installation of solar panels for solar power production in all the government, non-government and autonomous institutions
- Installation of CFL, T- 5 tube light instead of incandescent bulb and replacement of electronic ballast by magnetic ballast

On-Going EE & EC Activities

- Free CFL Distribution program (Phase-1 replacement of incandescent bulb with CFL bulb) has been conducted
- Energy Star Labeling Program has been started
- Efficient Rice Husk Parboiling Program has been initiated
- Improved Cook Stove Program is going on
- Improving Kiln Efficiency in the Brick Manufacturing Industry is going on
- Electricity Week program is being observed since 2010 with a view to promote energy saving campaigns at consumer and school levels. This program is nationally observed on 7th December each year.

ENERGY EFFICIENCY IN GENERATION SECTOR

- Rehabilitate old and inefficient power plants as per the Policy Guidelines for Enhancement of Private Participation in the Power Sector
- Replacement or repowering of some of the power plants that are still running at very low efficiency
- Each power plant must have a responsible technical person who will identify the possible energy loss, and take measures for prevention of the same in the power station and assist the energy audit system in the power sector

ENERGY EFFICIENCY IN POWER TRANSMISSION

- Power factor and voltage drop
- Prevention of Forced outage, blackout and synchronization mismatch
- Up gradation of line and transformer capacity
- Automatic Generation Control, Smart grids and System Metering
- In-house Capacity building and HR Strengthening measures

ENERGY EFFICIENCY IN POWER DISTRIBUTION

- Up gradation of distribution lines and substations
- Power Factor Improvement
- Modern Metering and service drop
- Prevention of pilferage and in house Capacity building

DEMAND SIDE INITIATIVES FOR ENERGY EFFICIENCY

- Time of Use (TOU) metering
- Prepaid Metering
- Identification of energy inefficient equipment and appliances
- Demand savings program
- Energy Efficiency in the Construction Sector
- CFL distribution program
- Street Light program

DEMAND SIDE INITIATIVES FOR ENERGY EFFICIENCY

- LED Security lighting in urban areas
- Commercial and Industrial FL Re-lamping Program

EE in the Industrial Sector

- Energy Audit Program
- Introduction of Solar Water Heater
- Retrofitting Urea Fertilizer Plants for Improving Energy Use
- Steel Mill Furnace Rehabilitation for Energy Efficiency
- Energy Efficiency of Gas Burners
- Introduction of Gas Meters
- Utilization of Exhaust Heat/steam
- Cogeneration
- Energy Efficiency of Boilers

Thank You

