

**RENEWABLE ENERGY POLICY
OF
BANGLADESH**

20 November 2023

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1.0 INTRODUCTION

1.1 Preamble

The Government of Bangladesh (GoB) initiated the development of the Renewable Energy Sector with the evolutionary approach by enacting “The Renewable Energy Policy of Bangladesh, 2008”, to increase the deployment of RE technologies. The GoB’s strategic objectives of energy security, reliability and availability of modern electricity, environmental protection, sustainable development, social equity, mitigation of climate changes, and other related issues necessitate a new RE policy.

In the context of global warming and import challenges of fossil fuels, efforts are to be made to initiate the gradual replacement of existing conventional power generation capacities through renewables for securing a stable and economically viable energy supply. Renewable Energies have had significant growth, especially in solar and wind energy, in different parts of the world during the last decade in terms of deployment, technological advancements, and cost competitiveness.

The focus of the Renewable Energy Policy, 2023 is to advance the RE market development in the country through resources, technologies, and capacity development, thus facilitating GoB in meeting the RE target or any other milestones set thereafter. This policy shows the path to decarbonizing the energy system highlighting RE technology adoption, low-carbon investment & framework needed for combating the transition and challenges, aiming for a sustainable future for the country.

1.2 Scope of the Policy

This policy covers all aspects of RE either for captive use and/or for selling of electricity to the public utility or third-party sale, including the Renewable Energy Certificate (REC) mechanism. This includes programmes that may be developed in Private Sector, Public Sector, or Public Private Partnership.

This policy includes all RE resources comprising Solar, Wind, Geothermal, Biomass, Biogas, Waste to Energy (WTE), Hydro, Ocean/Tidal Waves, Hydrogen, and all kinds of Hybrids thereof. It will also include Energy Storage Systems. In addition, any existing or new technology to be developed during the applicability of this policy would also fall under its ambit.

1.3 Legislative Framework

As per SREDA Act, SREDA has been created as the nodal agency of the Government to promote and develop renewable energy and energy efficiency activities in public and private sectors.

1.4 Background

Currently, the energy sector of Bangladesh is mainly dependent on natural gas and other fossil fuels. In light of an impending fuel crisis, as national supplies are presently insufficient to meet the demand and fuels are increasingly being imported to meet demands, the government developed a strategy for power generation to diversify fuel and enhance the energy security of the country. In 2008, Bangladesh adopted the RE policy with the mandate to increase the RE share in the total energy demand of the nation. This is also a step for Bangladesh to comply Paris Agreement and Nationally Determined Contribution (NDC) of Bangladesh.

2.0 POLICY OVERVIEW

2.1 Vision

To develop RE technologies and promote local manufacturing capabilities to ensure an affordable, scalable, reliable, environment friendly and sustainable supply of energy in the country.

2.2 Objectives

- To harness the potential of RE resources and dissemination of RE technologies in the country.
- To scale up RE capacity for ensuring energy security, contributing to the RE targets, and reducing the dependence on fossil fuels in the country.
- To attract investment with proper institutionalization, product standardization, and cost competitiveness in the RE sector.
- To safeguard the environment by increasing the share of “Green Energy” in the overall energy mix.

- To promote sustainable energy projects in the country and to create an energy storage market to integrate more RE into the grid and offer proper grid management.

3.0 RENEWABLE ENERGY RESOURCES & TECHNOLOGIES AND POTENTIAL

3.1 Solar Energy

Bangladesh is naturally bestowed with significant solar energy. This policy will focus on the promotion and development of the following solar energy markets in the country.

- | | |
|---|---|
| a. Grid-connected MW scale solar plants | g. Solar street light |
| b. Solar home system | h. Solar drinking water system |
| c. Rooftop solar | i. Floating solar |
| d. Solar mini/ nano grid | j. Base Transceiver Station (BTS) charging stations |
| e. Solar irrigation | k. Solar thermal power/Concentrated Solar Power (CSP) |
| f. Solar charging station | l. PV pumping or Pumped hydro storage |

3.2 Wind Energy: The recent development of wind turbines for generating wind power from low-velocity wind enthuses wind energy as a suitable renewable resource of RE in Bangladesh. Mainly the technologies now in practice worldwide are a) Onshore wind energy and b) Offshore wind energy.

3.3 Biomass Energy: Biomass is contemplated as an outstanding, reliable, and sustainable energy source. Biomass absorbs CO₂ for photosynthesis within the sight of sun-based energy to deliver the natural mixes. A large share of individuals, immediately or discursively, depend on biomass energy in Bangladesh for purposes, such as heating or cooking. Mainly the technologies in national and global practice are a) Biomass, b) Biogas, and c) Biofuel.

3.4 Waste to Electricity: Cities have been suffering for a long time from tremendous environmental pollution caused by municipal solid waste, medical waste, and various industrial wastes. To save the cities from environmental pollution, waste management, as well as electricity generation from the solid wastes program, is being taken by the Government. Mainly the Incineration, Gasification, and Pyrolysis are the widely used technologies for Waste to Energy production.

3.5 Hydro Energy: Hydroelectric power is the electricity produced by generators driven by turbines that convert the potential energy of falling or fast-flowing water into mechanical energy. Hydropower plants have two basic configurations: i) dams with reservoirs and ii) run-of-river plants.

3.6 Other Renewable Energy Sources: Other significant RE sources include Geothermal, Tidal energy, River current, and Wave energy. The potentialities of these sources are yet to be explored.

4.0 REGIONAL COOPERATION OF RENEWABLE ENERGY

The cross-border trade of RE might contribute to a more dynamic, efficient, and integrated energy market by providing a level playing field among neighboring/regional states.

With a growing energy demand and increasing emphasis on sustainable energy, enhanced regional cooperation is critical for boosting energy security and overall climate resilience in South Asia. Collaboration with inter-country transmission connectivity, supporting energy markets, and better aligning legislative and regulatory frameworks can enable greater electricity trade among the neighboring countries. Such cross-border connectivity with reasonable RE trade on a win-win basis will enrich the development of RE in the country.

5.0 INSTITUTIONAL FRAMEWORKS

5.1 Power Division of the Ministry of Power, Energy, and Mineral Resources (MPEMR) has the overall responsibility for the formulation and execution of Government policies in the power sector coordinating with relevant agencies/authorities/utilities in achieving national policy objectives.

5.2 SREDA has been established under the SREDA, Act 2012, as a nodal agency for the development & promotion of sustainable energy comprising renewable energy & energy efficiency. The Power Division of the MPEMR is responsible for overall policy formulation, execution, and development functions of RE through SREDA.

5.3 BEREC for regulatory functions like license, tariff, dispute settlement, etc.

5.4 Power Generation utilities and Independent Power Producers (IPPs)

5.5 Power Distribution utilities to provide electricity distribution services.

5.6 PGCB is the sole public sector transmission system operator in the country.

- 5.7 Bangladesh Bank, IDCOL, and other financing institutions for bridging the financing gap in developing infrastructure and RE projects in Bangladesh
- 5.8 The Power and Energy Research Council under MPEMR may also be a part of the institutional framework in respect of R&D activities.
- 5.9 BPMI may be an integral part of this policy with the responsibility of skilled human resources development.
- 5.10 BADC and BMDA are working in the irrigation sector to promote RE
- 5.11 Sustainable Energy Development Fund may be established. This fund can play a vital role in financing the R&D and HRD activities of RE.

6.0 PROGRAMME & PROJECT DEVELOPMENT

6.1 General Policy Measures & Supporting Arrangements

6.1.1 SREDA, in coordination with the Power Division of MPEMR, shall be responsible for determining the priorities for renewable energy technology development and programme implementation. SREDA will provide all the institutional support as a nodal agency for the development of the RE programme and project implementation as per the SREDA Act 2012.

6.1.2 SREDA shall develop the RE master plan within a time frame following this policy.

6.1.3 As per BNBC and RE portfolio standards, all power utilities and other government departments, private agencies, and NGOs will develop RE development programmes in consultation with SREDA for implementation throughout the country. Developers shall regularly provide updated information to SREDA.

6.1.4 Electricity generated from RE projects, both in public and private sectors may be purchased by power utilities or any consumer through mutual agreement.

6.1.5 Government shall facilitate the cross-border trading of renewable and clean energy with the neighbouring countries.

6.1.6 SREDA shall encourage human resource development and local production of renewable energy equipment, facilitate and monitor the quality of renewable energy equipment, and will assist in setting up a quality control laboratory to test the renewable energy equipment.

6.1.7 RPO & REC shall be set as a regulatory obligation to the generation & distribution utilities and consumers. SREDA will develop a mechanism to introduce RPO & REC.

6.2 Promotion of Utility Scale Renewable Energy Project

6.2.1 This Policy aims to promote the development of RE Projects with or without storage in the country.

6.2.2 In general, the Government shall select the private developer through transparent competitive bidding, for developing the project as an IPP model. In this case, the Power Division shall routinely announce new capacity requirements, after confirming the interconnection commitments from the relevant entities.

6.2.3 In certain cases, the GoB may find it strategically important to execute projects under Government-to-Government (G2G) frameworks. Such commitments will result after negotiations with other governments, under such framework agreements, where such procurement will be commercially viable based on the national priorities and following the laws of Bangladesh.

6.2.4 Apart from the above, the private RE developers are free to set up the project for the development of RE through availing open access.

6.3 Projects for Residential/Commercial/Industrial Consumer

6.3.1 RE Projects can be set up by any consumer (residential/commercial/industrial/others) on their rooftop/premises.

6.3.2 The government will promote the implementation of Rooftop Solar PV projects as per the Net Metering Guideline or through any other approved arrangements. The government will also promote grid-connected rooftop solar PV projects in public buildings, residential buildings, commercial and industrial establishments, and others.

6.3.3 The Government will also promote Peer-to-Peer (P2P) trading of Rooftop Solar PV energy between two or more grid-connected parties. The implementation of the P2P model shall be as per the guidelines developed by SREDA.

6.3.4 RE projects can also be set up by a developer on the rooftop/premises of a consumer (residential/commercial/industrial/others) for the generation and sale of power to the consumer or other consumers in the same premises for which developer and the consumer shall enter into a lease agreement and /or power sale agreement.

6.3.5 Rooftop Solar PV Projects may be set up by any consumer (residential/commercial/industrial/others) on their rooftop /premises irrespective of consumer-sanctioned load.

6.3.6 Implementation of grid-connected rooftop solar PV projects shall be administered by respective Distribution Utilities (including registration, approval, metering protocols, safety protocols, and standards).

6.3.7 Surplus energy generated from the project after set off on a billing cycle basis shall be purchased by respective utilities at a rate set by BERC.

6.3.8 The project developer shall obtain safety approval from the Office of the Chief Electrical Inspector for rooftop solar PV projects.

6.3.9 Excess drawl by consumers from the grid, if any, after giving set-off shall be charged by the distribution utility at an applicable tariff of the respective category of the consumer as determined by BERC or Power Division from time to time.

6.3.10 Incentives in terms of customs duty on specified items shall be extended to the project developer under this policy.

6.3.11 Solar projects installed on the consumers' rooftops for their captive use isolated from the grid with or without an energy storage system shall be termed standalone and off-grid projects. The Government will promote an off-grid rooftop Solar PV Plant with the provision of this policy subject to safety approval.

6.3.12 The project developer shall adhere to the safety codes, waste disposal/management standard and standards for the safe operation of the off-grid system.

6.4 Promotion of Solar Irrigation

6.4.1 The Government will promote the solarization of existing grid-connected Irrigation pumps and diesel pumps.

6.4.2 SREDA will develop a business model for operating solar irrigation pumps to utilize their capacity beyond the irrigation season.

6.5 Promotion of Solar Energy for Charging Electric Vehicles and Battery Swapping Stations

6.5.1 The Government will promote the use of RE in the transport sector.

6.5.2 The charging station service providers may set up RE plants within their premises as private charging infrastructure/stations or public charging Infrastructure/stations.

6.5.3 RE plants for charging the EVs/Battery can be with or without energy storage.

6.6 Promotion of Floating Solar Projects

6.6.1 The Government will promote the development of floating solar on existing reservoirs, dams of hydro stations, or any other water bodies, including reservoirs and lakes.

6.6.2 The Government may allocate the water body on a long-term lease/rental basis for the development of projects for the sale of energy to utilities or urban local bodies without compromising the growth and potentiality of the aquaculture sector.

6.6.3 The project developer will have to make connectivity with the grid subject to consent from the concerned utilities/ concerned authorities/ PGCB.

6.6.4 Floating solar projects can be developed with or without an energy storage system.

6.6.5 The guidelines for the implementation of floating solar projects shall be developed by SREDA, incorporating the protection of water bodies, fish feeding habits, reproduction, bio-diversity, navigation etc.

6.7 Other Solar Technologies

6.7.1 The Government will promote the development of other solar technologies such as Solar Street Lights, Solar Drinking Water Systems, Solar Water Heating, Agri-PV, Building-Integrated Photovoltaics (BIPV), BTS charging stations, and any new technology identified as RE, within the scope of this policy.

6.8 Promotion of Wind Energy

6.8.1 Proper wind mapping shall be conducted by SREDA for identifying the potential locations.

6.8.2 Offshore or Onshore Wind Projects with or without energy storage systems can also be developed according to clause 6.2 of this policy.

6.9 Promotion of Biomass Projects

6.9.1 Biomass being a major source of energy in a rural area, a comprehensive plan for the development of biomass energy shall be developed by SREDA based on biomass resource mapping.

6.9.2 The GoB will promote the generation of energy through Biomass to enable the development of bio-energy-based projects in the country.

6.9.3 Developer of the biomass project shall be allowed to use/sell the power for captive as well as third party sale.

6.9.4 Biogas plants may be developed for cooking or bottling or bagging.

6.9.5 For large biomass electricity projects (i.e., greater than 1 MW) the project developer must demonstrate that the biomass is being sustainably harvested and that no adverse impact will result from that development of the project.

6.9.6 Production and use of bio-fuels may be encouraged without compromising crop production and food security

6.9.7 For promoting biomass projects, a guideline will be developed by SREDA.

6.10 Promotion of Waste to Energy Projects

6.10.1 The GoB will promote the generation of energy from wastes to enable the development of waste-to-energy projects in the Country. Procurement of energy from Waste-to-Energy Projects by Utilities shall be as per the tariff determined by the Power Division/BERC. The developer of waste-to-energy projects is allowed to use the power for captive or third party sales within the country.

6.11 Energy Storage Projects for Renewable Energy

The government will facilitate the development of an energy storage market in the country to integrate more RE into to-the grid which can offer grid services such as grid optimization, peak reduction, line congestion, curtailment management, contribution to reliability needs, managing intraday variation and seasonal variations and others, and also to meet the increasing power demand of the country through RE within the provisions of this Policy.

6.11.1 Energy storage service providers can tie up with RE developers or can utilize any energy sources for storing the energy and the stored energy can be sold to Power purchasers (BPDB as a Single buyer/ Distribution Utilities) or Open Access consumers within the country.

6.11.2 Energy storage projects can be either co-located with RE projects or it can be located near the load centers for optimal utilization of existing transmission capacity within the country.

6.11.3 Existing and new RE projects can use energy storage systems to manage variations in generation and offer necessary grid support services/ancillary services to Transmission /Distribution utilities as per their requirements.

6.11.4 RE projects developed under captive/ third-party sale may use an energy storage system. The guidelines for the use of energy storage systems in RE captive/ third-party sale projects will be issued by SREDA with the approval of the Power Division.

6.12 Other RE Sources

6.12.1. GoB will take initiatives for potential assessment of solar thermal, geothermal, mini and small hydro, tidal, wave, river current, hydrogen, green hydrogen, etc., and R&D activities of these RE sources observing the global trend and development.

6.13 Innovation/Pilot Projects

6.13.1 The Government shall promote new and emerging technologies in the Country.

6.13.2 The Government shall endeavor Research and Development activities for the sustained advancement of RE in the country. The proposed sustainable Energy Development Fund may be one of the sources for funding the activities.

7.0 ALLOTMENTS OF PROJECTS

7.1 Government shall facilitate the RE project allotment through a standard process. SREDA will develop the standard documentation mechanism.

8.0 Land

8.1 Maximum utilization of the land shall be ensured considering food security and the environment.

8.2 It is the primary responsibility of the RE project developer to acquire/lease the land required for the project development. The developer shall be permitted to set up Solar Power/Wind project on private non-agriculture land without the requirement of land conversion under the provisions of the GoB Act, and the rules made there under.

8.3 Government may also allocate land such as fallow, government khas land, char, riversides, seashores, hilly terrain, etc. for RE Project Development: as per the provisions of GoB acts & rules. SREDA will process the land allocation procedure. Land having no agricultural value and other co-benefit will be encouraged in the land allotment process. Government land can also be identified for potential hubs of medium and higher capacity solar and Wind Projects, based on feasibility study. The infrastructures for the hubs can be developed in advance by the Government/Private or with the assistant's reliable international financial support and allowing its use by RE developers as leased.

8.4 Different organizations/departments like Bangladesh Railway, Roads & Highways, Bridge Authority, BWDB, BIWTA, EPZ, EZ, BSCIC, etc. own many unutilized unfertile land or open spaces which can be effectively utilized for the development of Solar Projects. The Government could issue a directive order or a policy guideline so that these lands can be used for RE projects.

8.5 Land availability for RE projects is very limited in Bangladesh. The government needs to consider the idea of doing a land study that identifies options for land use for utility-scale renewable energy. The study should include the benefits of using public land, identifying land that might have no agricultural value, and understanding the advantages of designating zones for renewable energy projects.

9.0 Licensing / Registration

9.1 Renewable energy project(s), to sell electricity from plants shall be required to get a power generation license from BERC if the capacity of the project(s) is 5 MW or more.

9.2 All RE projects installed in the Country shall be required to be registered with SREDA.

9.3 No registration will be required for solar power projects connected to a low-tension grid.

9.4 No prior registration with SREDA will be required for participation in bidding as per Private Power Generation Policy. Only successful bidders will be required to register their projects with SREDA.

9.5 The Developer/power producer can transfer its registered capacity or part thereof to its 'holding', 'subsidiary', 'fellow subsidiary', or 'ultimate holding' company with the prior approval of Power Division/SREDA.

10.0 INVESTMENT AND FISCAL FACILITIES

10.1 Investment Facilitations

10.1.1 Prevailing RE financing facility shall be expanded that is bankable for accessing public, private, development partners, and carbon markets for more investments.

10.1.2 In addition to commercial lending, the network of micro-credit support shall be extended in rural and remote areas to provide financial support for purchases of renewable energy equipment.

10.1.3 The Government shall facilitate investment in RE and energy efficiency projects. Parties may raise local and foreign finance under the applicable legal framework.

10.1.4 Private sector participation, including joint venture initiatives in RE development, shall be encouraged and promoted. SREDA will support in identifying the project(s) locations & GoB will support in acquiring land.

10.1.5 SREDA shall develop a guideline for providing incentives for the installation of solar, wind, biomass, or any other RE projects.

10.1.6 Government provisions for extending appropriate financing could be organized to prospective sponsors for implementing RE projects.

10.1.7 The RE developers may also set up projects under the RE Certificate mechanism.

10.1.8 The renewable obligated entities are allowed to set up RE projects to fulfill their Renewable Purchase Obligation (RPO) requirements.

10.1.9 The government of Bangladesh will promote the manufacture of solar energy components including solar cells, Solar panels, Inverters, Mounting structures, Batteries, etc. The government may also provide a Production-linked incentive.

10.1.10 A suitable incentive scheme will be designed to promote the co-utilization of land for solar energy projects, crop cultivation, and water preservation. To promote solar energy generation in the agriculture sector incentives to the farmers may be provided.

10.1.11 Use of grid electricity and gas for water heating will be discouraged to promote RE.

10.2 Fiscal Incentives

10.2.1 To facilitate RE in the total generation mix, all RE components and related raw materials in producing RE equipment may be exempted from import duty and charging VAT from the date of notification of this policy in the official gazette and it will be extended periodically upon impact assessment from time to time.

10.2.2 To prompt RE in the power sector, RE project investors both in the public and in private sectors could be exempted from corporate income tax for 5 years, case by case basis and it will be extended periodically following the impact assessment of tax exemption on renewable energy.

10.2.3 All RE equipment/machinery and related raw materials in producing renewable energy, not manufactured locally, could be free of Customs Duty and Vat if imported with a test report from an accredited laboratory. However, to avail the same, an undertaking shall be provided to SREDA that it shall only bring in, without customs duty, items that are to be installed in its plant and shall not sell any such items in the local market or use for any other purposes than specified.

10.2.4 SREDA or Power division will fix up the acceptable mechanism to reach the benefits of tax exemption to end users in consultation with NBR.

10.2.5 RE Projects set up for Electric Vehicle (EV) charging stations may be exempted from wheeling charges for 5 years from the date of commencing of the Electric Vehicle (EV) charging station.

10.2.6 Waiver of stamp duty to the investor may be exempted.

10.2.7 An incentive mechanism such as “Carbon Foot Print” shall be introduced. Revenue from the carbon trading may be exempted from the income tax of govt. duty.

11.0 CARBON MARKETS

Carbon trading is a mechanism to promote a low-carbon economy. It is recognized under UNFCCC. Bangladesh is a signatory to Paris Agreement that allows accessing global carbon markets and other global financing options for projects under climate change mitigation. These financing options can be accessed by public and private sector entities. GoB encourages the RE project developers to make projects/programmes through various market mechanisms under Paris Agreement and voluntary Carbon markets.

12.0 GRID INTEGRATION

12.1 System Requirements:

To integrate the intermittent nature of RE sources into the grid by ensuring grid stability and power quality, the following requirements need to be addressed.

12.1.1 Standardize the equipment and material of renewable sources of energy as per BSTI or relevant agencies and its amendments issued from time to time.

12.1.2 Grid-interconnected renewable sources must comply with the Grid Code.

12.1.3 Develop flexible and efficient Transmission and Distribution networks for the integration of renewable sources.

12.1.4 Ensure adequate protection mechanism at both plant level and network level for grid stability & safety.

12.1.5 Facilitate regional mixed power generation by sharing renewable and conventional sources of energy.

12.1.6 Implement effective energy storage technologies for grid stability at strategic locations over the grid network.

12.1.7 Facilitate appropriate ancillary systems and technology for better system operation.

12.1.8 Facilitate sufficient spinning reserve to maintain frequency stability for system operation.

12.1.9 Introduce smart grid, microgrid, tie-line, etc. technologies for strong as well as flexible power networks.

12.1.10 Facilitate a well-equipped central monitoring system of RE generation forecasting and generation scheduling aid to system operation.

- 12.1.11 Improve transmission technology for interconnection/tie-line to facilitate generation vs demand balancing through electricity imports and export
- 12.1.12 The Grid Code will need to upgrade from time to time by a comprehensive study for the high penetration of RE set by the government policy.

12.2 Connectivity

- 12.2.1 RE project developer is allowed to connect the RE generation to the grid network subject to conducting a feasibility study and grid impact study (as per guidelines of the relevant utility).
- 12.2.2 Utilities shall provide a time-bound clearance for power evacuation approval for the particular RE developer for potential connection point.
- 12.2.3 The transmission charges and losses shall be applicable for the RE developer due to the use of the transmission system as determined by BERC in its tariff orders issued and amendments issued from time to time.
- 12.2.4 A group of RE project developers may facilitate a common evacuation power line for sharing multiple RE plants in a common area for minimizing the project implementation cost.
- 12.2.5 Wheeling, Cross Subsidy Surcharge, and any other applicable open access charges shall be determined by BERC for RE developer.
- 12.2.6 In case of a drawl of reactive power from the grid system, a charge shall be payable by the RE power producer at the rate prescribed by the BERC.
- 12.2.7 The RE power producer shall comply with all existing Codes (Grid Code, Distribution Code, Metering Code, Safety Code etc.) and other relevant regulations/orders/practices of the BERC/utilities as applicable from time to time.
- 12.2.8 The RE power producer shall provide unit commitment and day-ahead schedule to the system operator.
- 12.2.9 The RE power producer shall follow the dispatch order/instruction issued by the system operator for smooth system operation.
- 12.2.10 The generated energy of the RE sources shall be metered by prescribed/applicable single/three-phase unidirectional bidirectional meter at a common point for billing.

13.0 Regulatory Policy

- 13.1 Renewable purchase obligation (RPO) and Renewable Energy Certificates (REC) shall be introduced to the Generation, Distribution utilities, and at the Consumer levels. SREDA will formulate the mechanism or guideline for introducing RPO & REC.
- 13.2 BERC shall approve the energy tariff in consultation with the Power Division of MPEMR/SREDA as per the provision of the BERC Act 2003, where applicable.
- 13.3 The project developers shall comply with the BERC Regulations on Forecasting, Scheduling, and Deviation Settlement, as applicable, and are responsible for all liabilities related to Access and connectivity.
- 13.4 For interconnection with the grid and metering, the project developer shall abide by applicable Grid Code, Grid Connectivity Standards, and Regulations on Communication Systems for transmission of electricity and other Regulations issued by the BERC from time to time.

14.0 RESEARCH, DEVELOPMENT& CAPACITY BUILD-UP

- 14.1 Renewable energy technologies being alternatives to fossil fuel technologies need support through research and development (R&D) considering the national and international perspectives of the food, water, and environmental protection of Bangladesh. Efficient disposal of waste generated by RE related activities shall also be the part of research, development and capacity build-up.
- 14.2 SREDA shall be the nodal agency for the promotion of new initiatives /pilot projects in the country. Therefore, SREDA shall promote and strengthen conducting training and R&D activities on different Renewable Energy Technologies and RE waste management.
- 14.3 Public & Private Universities shall initiate to start introducing specific courses on RE technology with R&D activities.

14.4 BEPRC and BPMI shall also be equipped for conducting training and R&D activities on different RETs.

14.5 SREDA shall facilitate R&D initiatives on RE components and emerging RE technologies suitable for the country.

14.6 Power Division/SREDA/BEPRC can take initiatives to seek funds from Development Partners/Bilateral/Multilateral Financial Institutions in addition to GoB funds for R&D in the Power and Energy sector. The Sustainable Energy Development Fund may also be one of the sources for funding the activities.

14.7 GoB shall encourage the initiatives from the private sector in Research and Development (R&D) activities for the advancement of RE.

15.0 AWARENESS & EDUCATION

15.1 Initiatives shall be required from the regulatory bodies for awareness creation to the public, students, and stakeholders.

15.2 Renewable energy-related fields of study and curricula will be included in academic institutions from the primary level to the universities.

15.3 The objectives of awareness creation on RE from the educational perspective shall be (a) to improve knowledge and understanding and to create a favorable environment for the achievement of RE policy goals, (b) to identify renewable and non-renewable sources of energy, (c) enhance motivation for creating strategies to overcome challenges and, (d) to support for Government's vision of transitioning towards RE in the power sector and more important, e) to develop Human resources for RE Technologies.

16.0 Environmental Issues

Current national policies, rules, and regulations related to the environment apply to RE projects. In addition to the current policies, some additional issues need to be included.

16.1 All RE projects need to be included in the DoE Categorization list;

16.2 Easiness' of Environmental Clearance Procedure for RE Projects;

16.3 Formulation of separate guidelines for disposal, and or recycling of battery, and PV panels;

16.4 Formulation of specific guidelines for the management of bio-slurry.

17.0 Quality Assurance

17.1 National Standards and Specifications for RE components shall be set by BSTI in consultation with SREDA.

17.2 Manual for quality assurance for Solar Panels' and RE components shall be developed and published by BSTI in collaboration with SREDA. SREDA shall maintain a list of accredited laboratories in association with BSTI where the RE components can be tested.

17.3 Government will facilitate the establishment of accredited laboratories to maintain the standards and be fully equipped with the requirements for testing of RE components, locally manufactured or imported.

17.4 No RE equipment will be manufactured or to be imported unless it satisfies the National standard & Specifications and passes the testing procedure as per the quality assurance manual to be developed by BSTI.

17.5 All utilities or developers related to RE generation, manufacturers, and importers of RE products shall have the bindings for abiding by the above policy issues.

18.0 Operation & Maintenance

18.1 SREDA will prepare Guidelines for the maintenance of Solar Panels, Inverters, and associated equipment and components of solar energy plants. Similarly, the guidelines for the maintenance of wind energy plants and Biogas plants will be prepared by SREDA.

18.2 The project developer will be responsible for the maintenance of a RE Plant. SREDA/Utilities may enlist a few maintenance groups with proper training for carrying out scheduled maintenance of the systems.

19.0 TARGET

19.1 RE targets:

Following RE Policy 2008, concerning relevant existing policy documents, Acts, and rules with potential RE resources and best-practicing technology focused its future opportunities. Techno-economic impact, alignment of policy with national & international plans, global technological development, and trends led to illustrating the upcoming RE scenario. R&D, Infrastructures & Institutions, Incentives, Grid integration & sustainability issues are significant to cope with the target. Challenges and barriers can be overcome through proper programs and plans. Moreover, Bangladesh is a signatory of Paris agreements. Countries containing capacity, Governments upholding strong commitment, and undertaking action and plan will be a boost to RE growth.

Considering all the progress, potentials & possibilities, capacities & commitments the RE target may be set as follows:

Phase	Years limit	Target MW (cumulative)
1 st phase	Up to 2025	2500
2 nd phase	Up to 2030	6000
3 rd phase	Up to 2041	20,000

20.0 Right to Interpretation

1. Section headings are for convenience only and shall not affect the interpretation of any section.
2. In case of ambiguity about the interpretation of any provision of these Guidelines, GoB's interpretation shall be final.

21. GLOSSARY OF ABBREVIATIONS/ ACRONYMS/ TERMS

BERC	Bangladesh Energy Regulatory Commission
BIWTA	Bangladesh Inland Water Transport Authority
BOO	Built-Own-Operate
BPDB	Bangladesh Power Development Board
BREB	Bangladesh Rural Electrification Board
BPDB	Bangladesh Power Development Board
BPMI	Bangladesh Power Management Institute
BTS	Base Transceiver Station
CDM	Clean Development Mechanism
CERC	Central Energy Regulatory Commission (India)
CSP	Concentrated Solar Power
EPRC	Energy and Power Research Council
GOB	Government of the People's Republic of Bangladesh
GST	Goods and Services Tax
IDCOL	Infrastructure Development Company Limited
IPP	Independent Power Producer
LGED	Local Government Engineering Department
BB	Bangladesh Bank
MOF	Ministry of Finance
MPEMR	Ministry of Power, Energy and Mineral Resources
NEP	National Energy Policy
NGO	Non-Government Organization
NOC	No-objection Certificate
P2P	Peer-to-Peer
PV	Photo Voltaic
PLF	Plant Load factor

PSMP	Power System Master Plan
PSPP	Pumped Storage Power Plants
RE	Renewable Energy
REC	Renewable Energy Certificate
RPO	Renewable Purchase Obligation
SHS	Solar Home System
SREDA	Sustainable and Renewable Energy Development Authority
RETs	Renewable Energy Technologies
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value Added Tax