

DRAFT

RENEWABLE ENERGY LAW FOR INDIA



Prepared by



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THE (DRAFT) RENEWABLE ENERGY ACT

An Act to promote development and utilization of renewable and sustainable sources of energy, stabilize emissions of greenhouse gases, diversify energy supplies, safeguard energy security, ensure that energy development is ecologically sustainable, protect environment and to realize the goal of sustainable development.

Be it enacted by Parliament in the Fifty- _____ year of Republic of India as follows –

CHAPTER - I

PRELIMINARY

1. **Short title, Extent and Commencement** – (1) This Act may be called the Renewable Energy Act, 2007.
 - (2) It extends to the whole of India except the State of Jammu and Kashmir.
 - (3) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint; and different dates may be appointed for different provisions of this Act except section 3 and any reference in any such provision to the commencement of this Act shall be construed as reference to the coming into force of that provision.
2. **Definitions** – In this Act, unless the context otherwise requires–
 - (a) **Appellate Tribunal** – means Appellate Tribunal for Electricity established under Part XI of the Electricity Act, 2003;
 - (b) **Appropriate Ministry** – means any Ministry of the Central Government or its successor entrusted with the relevant subject matter referred to in any particular Section of this Act;
 - (c) **Aerogenerators** – are small sized wind power generating systems of up to 100 kW capacity;

- (d) **Council** – means the Council for New and Renewable Energy, established under this Act;
- (e) **Central Commission** – means the Central Electricity Regulatory Commission constituted under Section 76 of the Electricity Act, 2003;
- (f) **Designated Agency** – means any agency designated, nominated, authorized or appointed by the Central Government, or governments of the States or Union Territories through an order in writing, to carry out any particular functions as defined in the said order under this Act or under the rules, regulation or notifications issued under this Act.
- (g) **Electricity from Renewable Sources** – means electricity produced using renewable sources including such proportion of electricity produced using non-renewable fuels up to the permitted levels. However, for purposes of renewable obligations, or for computing any financial benefits provided under this Act or otherwise, the portion of such electricity produced from such non-renewable sources shall be deducted.
- (h) **Execution Plan** – means National Renewable Energy Execution Plan prepared under this Act.
- (i) **Externality** – means any adverse environmental, social or economic impact created by the production of energy using fossil fuels.
- (j) **Fuel cell** – means a device that directly converts the chemical energy of a fuel, which is supplied from an external source and an oxidant into electricity by electrochemical and biochemical processes occurring at separate electrodes in the device;
- (k) **Greenhouse Gases** – means and includes (a) carbon dioxide; (b) methane; (c) nitrous oxide; (d) hydrofluorocarbons; (e) perfluorocarbons; (f) sulphur hexafluoride etc.,

- (l) **Hybrid Vehicles** – means vehicles powered by internal combustion engines which run on gasoline or renewable fuels coupled with electric batteries;
- (m) **Market Based Instruments** – means various financial or policy instruments introduced to promote development of renewable energy through the mechanism of the open market, and not involving direct government subsidies;
- (n) **Micro-generation** – means the generation of electricity up to 100 kilowatt or less or equivalent production of thermal energy, which relies wholly or mainly on renewable sources of energy.
- (o) **Ministry** - means the Ministry of New and Renewable Energy or its successor.
- (p) **Notification** – means a notification in the Gazette of India or, as the case may be, the Official Gazette of the particular state concerned.
- (q) **Producer** – means unless otherwise required by the circumstances, the producer of renewable energy.
- (r) **Person** – shall include any company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person.
- (s) **Renewable Energy** - means and includes the following sources-
- i. Wind;
 - ii. Solar radiation;
 - iii. Mini hydro;
 - iv. Biomass;
 - v. Biofuels;
 - vi. Landfill & Sewage gas;
 - vii. Municipal solid waste;
 - viii. Industrial waste;
 - ix. Geothermal energy;
 - x. Ocean energy;

- xi. Hydrogen; and
- xii. Any other energy source, as may be notified by the Ministry.

Explanation – (1) In this definition solar radiation include photovoltaics and solar thermal generation.

Explanation - (2) In this definition biomass comprises solid, liquid, and gaseous fuels from crop residues, including timber and harvest residues as well as wastewood and organic waste from food production and animal husbandry.

Explanation – (3) In this definition ocean energy includes wave, tidal and marine sources based on coastal land and/or shallow coastal waters;

Explanation – (4) In this definition industrial waste includes all solid, liquid and gaseous by-products/effluents which can be used for energy generation, including agro-industrial wastes and by-products.

(t) **Regulations** – means any regulations made under this Act.

(u) **Renewable Electricity Certificates (REC)** – means tradable certificates issued by any authorized agency under this Act.

(v) **Renewable Fuel** – means any fuel which is used to replace or reduce quantity of fossil fuel present in a fuel mix and –

- i. is produced from grain, starch, oilseeds, vegetable, animal, or fish materials including fats, greases and oils, sugarcane, sugar beets, sugar components, tobacco, potatoes, or other biomass; or
- ii. natural gas produced from industrial and agro-industrial waste including a biogas source, a landfill, sewage waste treatment plant, feedlot,

or other place where decaying organic material is found;

Explanation – (1) for this sub-section ‘renewable fuel’ includes, cellulosic biomass ethanol and ‘waste derived ethanol.

Provided that Waste derived ethanol means ethanol derived from -

- (i) animal wastes including poultry fats and poultry wastes and other waste materials; or
- (ii) municipal solid waste.

Explanation - (2) Cellulosic Biomass Ethanol – means ethanol derived from any lignocellulosic or hemicellulosic matter that is available on a renewable or recurring basis, including dedicated energy crops and trees, wood and wood residues, plants, grasses, agricultural residues, fibers, animal wastes and other waste materials and municipal solid waste. The term also includes any ethanol produced in facilities where animal wastes or other waste materials are digested or otherwise used to displace 90% or more of the fossil fuel normally used in the production of ethanol.

Explanation - (3) Biodiesel means renewable fuels produced by processing non-edible oil seeds through a process called transesterification. The methyl ester produced through such chemical conversion is called biodiesel.

(w) **State Commission** – means the State Electricity Regulatory Commission constituted under the Electricity Act, 2003 (36 of 2003);

(x) **State Nodal Agencies** – means the state level agencies specified by the State Governments for renewable energy development in the respective state;

(y) **Schedule** – means the Schedule appended to this Act;

(z) Words and expressions used and not defined in this Act but are defined in the Indian Electricity Act, 2003, and the Energy Conservation Act, 2001 (52 of 2001) shall have the meanings respectively assigned to them in those Acts.

CHAPTER – II

NATIONAL RENEWABLE ENERGY COUNCIL AND ITS ROLE

3. **Council for New and Renewable Energy** – Within six months from the date of Notification of this Act, the Central Government shall, by notification, establish a Council for New and Renewable Energy for the purposes of this Act.
4. **Constitution of the Council** – The Council shall consist of the following members namely;
 - (a) The Minister in-charge of the Ministry, who shall be the Chairperson of such Council;
 - (b) The Secretary in-charge of the Ministry, who shall be the Member Secretary of such Council;
 - (c) The Secretaries to the relevant energy related Ministries of the government shall be ex-officio members of the council.
 - (d) Number of members including Chairman and Secretary shall be Twenty One.
 - (e) Council shall consist of government and non-government members representing various stakeholders such as producers and users of renewable energy sources, utilities, academia, research, etc.
 - (f) The number of government representatives in the Council shall not exceed fifty percent of the total number.
 - (g) Any person, unless otherwise required, will continue to be the member of the Council for a period of three years;
 - (h) In case of resignation, death or retirement, the Ministry shall notify new members within a period of three months.
5. **Procedure for Meetings of the Council** – (1) The Council for New and Renewable Energy shall meet as and when necessary, but minimum four meetings shall be held every year.

(2) The Council shall frame its own procedures for conduct of its business and meetings.

(3) Period between any two consecutive meetings shall not be more than four months.

6. **Role of the Council for Renewable Energy** – It shall be the primary responsibility of the Council to advise and guide the Central Government on following issues :

- (a) National Renewable Energy Policy and Execution Plan;
- (b) Fiscal, financial, regulatory and institutional mechanisms for large-scale development, deployment and export of renewable and sustainable energy technologies;
- (c) Private sector and user community participation in renewable and sustainable energy projects and services;
- (d) Quantification of externalities of all energy technologies on a life cycle basis;
- (e) Policies to create awareness and educate the masses for adoption of renewable energy technologies.
- (f) Policies for involvement of academic and educational institutions in promotion of renewable technologies.
- (g) The development of human resources for facilitating accelerated growth of the renewable energy sector.
- (h) Standards and norms for resource assessment (of various renewable and sustainable energy sources), technologies and products.
- (i) Development of indigenous technology, manufacturing base, and export of the same.
- (j) Technology missions created under this Act.
- (k) Ways and methods to support research and development of renewable energy technologies – including in the private sector.

(1) Any other policy or other initiatives to achieve the objectives of this Act.

7. **Allocation of Budget for Council** – For the purpose of discharging the duties and responsibilities of the Council and the programmes initiated by it, separate budget shall be provided by the Ministry within its annual budget every year.

8. **Resource Assessment Report** – (1) Not later than six months after the date of enactment of this Act and once in five years thereafter, the Ministry shall review and publish a report on the assessment of renewable energy resources, and undertake new assessments as necessary.

(2) While carrying out assessment under section 8(i) above, the Ministry shall be guided by the factors such as advancement in technologies, new technologies, energy infrastructure, market conditions, etc.

9. **National Renewable Energy Policy** – (1) The Ministry shall in due consultation with the State Governments and the Council, prepare and publish the National Renewable Energy Policy from time to time to achieve the objectives of this Act.

(2) While preparing the policy as envisaged in (1) above, the Ministry shall be guided by the following factors:

(a) Reduction in harmful emissions generally;

(b) Overall energy security of the nation;

(c) Optimal utilisation of the energy infrastructure;

(d) Access to energy resources and equity in the use of energy for all sections of society.

(e) Development of indigenous manufacturing capacity for all renewable technologies, including in critical areas like solar photovoltaic cells.

(f) Export of renewable energy technologies.

10. **National Renewable Energy Execution Plan** - (1) The Ministry in due consultation with the Council and on the basis of the Resource Assessment Report and National Renewable Energy Policy shall prepare a National Renewable Energy Execution Plan to be implemented by the Ministry.
- (2) The Ministry shall publish the plan as mentioned in (1) above once in five years.
- (3) While preparing such plan, the Ministry shall be guided by the following factors:
- (a) Resource Assessment Plan prepared under section 8(1) above.
 - (b) The National Renewable Energy Policy prepared under section 9(1) above.
 - (c) Special attention to indigenous manufacturing of critical resources like PV grade silicon.
 - (d) Availability of financial resources.
 - (e) Commercial viability of the technologies.
 - (f) Barriers to deployment of renewable technologies.
 - (g) Adequacy of energy infrastructure.

CHAPTER - III

GRID CONNECTED RENEWABLES

A. RESOURCES

- 11. Re-assessment of Grid Connected Renewable Potential –** Within three months from the commencement of this Act, the Ministry shall initiate a comprehensive programme to re-evaluate the potential of grid-connected renewable electricity generation in the country. Such an assessment shall bring out the real potential of renewables and aim at 50 percent of all electricity generation in the country from renewables by 2050.
- (1) Such re-assessment shall take into account technology leap-frogging in the sector and incorporate all new and emerging technologies with vast grid-connection potential like Concentrating Solar Power.
- (2) Such programme shall include institutional strengthening of C-WET, Solar Energy Centre, State Nodal Agencies and other appropriate institutions for quick capacity building in the area of resource assessment of diverse renewable sources.
- (3) The Ministry shall also establish collaborative arrangements with other relevant public and private agencies as appropriate, to deploy latest satellite-based and geographical information system-based technologies in such resource mapping.
- 12. Interactive Web-based Services –** The re-assessment of resources, based on new technologies should also result in creation of interactive resource maps of different renewable technologies. Such maps should, besides being available in the printed format, also be web-enabled and be available to the public to enable investors and developers to calculate on line the potential of a particular renewable resource at any defined location. Such a web-enabled service will facilitate speedy project development and market expansion.
- 13. Facilitating Quick Technology Transfer and Adoption –** Notwithstanding the country's efforts to develop indigenous technology and without adversely affecting such national efforts,

attempts should be made to transfer, integrate and adapt clean energy technologies developed abroad also.

(1) While doing this, after giving due consideration to national interests, efforts should be made to join global initiatives in such technology development like the Global Market Initiative for grid-connected solar concentrating power.

(2) The Ministry may also, in consultation with other relevant agencies of the government, establish appropriate guidelines, terms and conditions, for such technology transfer, adaptation and diffusion within the country. These guidelines should aim at indigenous capacity building and employment generation.

B. POLICY

14. **Target for Renewable Electricity Generation** – Notwithstanding any thing contained in this Act or any other Act, the Ministry shall, within three months of the enactment of the Act, in consultation with the Council, specify the target as percentage of total energy input for purchase / generation of electricity from renewable sources of energy.

15. **Access to Grid** – (1) Notwithstanding anything contained in this Act or any other enactment, the operators of the transmission and / or the distribution system, as the case may be, shall be obliged to connect the renewable energy generator to the system.

(2) Provided that the operator of the transmission and / or distribution system shall do so within 30 days from the date of application or commencement of generation, whichever is later.

(3) Provided further that the operator of the transmission and / or distribution system, as the case may be, shall upgrade the network to ensure reliability of the interconnection as per specified standards.

16. **Grid Cost Bearing** – (1) The renewable energy generator shall bear the expenses associated with the interconnection of this facility to the network provided that the interconnection point is within the radius of five kilometers from the generating station.

(2) The costs associated with strengthening the grid beyond the interconnection point shall be borne by the operator of the network system whose grid needs strengthening.

17. **Tariff Setting** – (1) The State Commission, while determining normative tariff as specified under Section 62 of the Electricity Act, 2003, shall be guided by the following –
- a) Technology being used by the generator;
 - b) Costs associated with construction, commissioning, operation and maintenance of the plant;
 - c) Operating norms for the specific technology under consideration;
 - d) As far as possible, the tariff shall be specified for the life of the plant.
18. **Charges for Access to Network** – The State Commission shall give due consideration to the factors specified under Section 12 above and Section 86(1)(e) of the Electricity Act, 2003, while determining charges for access to the network.
19. **Integration with the Electricity Market** – The State Commission while developing regulations for Market Development under section 60 and 66 of The Electricity Act, 2003, shall take into account specific characteristics of renewables such as infirm nature of generation (where applicable) and will make suitable provisions in their regulations to ensure that renewable energy projects are suitably integrated into the power systems.
20. **Grievance Redressal** – Any person aggrieved by denial of opportunity to access the network under section 12 or any other matter specified under sections 13 and 16 may approach the State Commission for remedial measures.

CHAPTER - IV

DECENTRALIZED RENEWABLE MICROSYSTEMS

21. **Micro-generation** – (1) The Ministry while developing the policy under Section (9) of this Act shall give due consideration to micro-generation for promoting decentralized and stand-alone systems of power generation in the rural and urban areas.

(2) The Ministry shall make competitive, merit-based grants to deserving research agencies for the development of micro-generation energy technology who shall explore –

(a) the use of small-scale combined heat and power in residential heating appliances;

(b) the use of excess power to operate other appliances within the residence; and

(c) the supply of excess generated power to the power grid.

22. **Decentralised Energy Technology Development & Demonstration Programmes** – (1) The Ministry shall carry out programmes of research, development, demonstration, and commercial application on decentralized energy resources and systems reliability and efficiency, to improve the reliability and efficiency of decentralized energy resources and systems.

(2) The Ministry may provide financial assistance to deserving institutions for demonstrations designed to accelerate the use of decentralized energy technologies such as fuel cells, micro-turbines, reciprocating engines, thermally activated technologies, and combined heat and power systems.

(3) The Ministry shall establish a research, development and demonstration programme to develop working models of small scale portable power devices;

Explanation - For the purposes of this sub-section the term ‘small scale portable power device’ means a field-deployable portable mechanical or electromechanical device that can be used for applications such as communications, computation, mobility enhancement, optical devices, cooling, sensors,

medical devices, charging devices and active biological agent detection systems.

23. **Solar Concentrators for Industrial Applications** - (1) The Ministry within six months from the date of commencement of this Act, shall initiate a programme for –

(a.) Utilization of solar concentrating technology for industrial applications such as;

- (i.) Food processing, juice concentration, particularly sugarcane;
- (ii.) Wood processing;
- (iii.) Solar-based drying, heating and refrigeration systems;
- (iv.) Energy saving construction techniques.
- (v.) Processing and preservation treatment for wood-bamboo composites;
- (vi.) Extracting chemicals such as phenols from biomass.

(b.) Supporting studies of solar thermal energy demand for the industrial sector;

(c.) Promoting setting up of small service enterprises (private or cooperative) for installation and maintenance of solar thermal energy equipment.

24. **Use of Photovoltaic Energy in Public Buildings** – (1) The Ministry shall establish a photovoltaic energy commercialization programme for the procurement and installation of photovoltaic solar electric systems for electricity production and/or cooling or heating in new and existing public buildings.

(2) The following shall be the objectives of such programme in (1) above –

(a) To accelerate the growth of the photovoltaic industry and to demonstrate the use of this energy system to the general public as an option.

(b) To attain the goal of installing solar photovoltaic energy systems in all Central and State Government buildings by 2012.

(c) To stimulate the general use within the Government of life-cycle costing and innovative procurement methods.

(3) The programme shall provide for the acquisition of photovoltaic solar electric systems for use in public buildings and the same shall have at least cumulative peak generation of 100 megawatts during the five years of the programme.

(4) The Ministry shall administer the programme through the State Nodal Agencies and shall -

(a) Issue such rules and regulations as may be appropriate to monitor and assess the performance and operation of photovoltaic solar electric systems installed pursuant to this sub-section;

(b) Develop innovative procurement strategies for the acquisition of such systems; and

(c) Transmit to the Council an annual report on the results of the programme.

(5) The Ministry shall establish a photovoltaic solar energy systems evaluation programme to evaluate such systems as are required in public buildings, and incorporate it in the Renewable Energy Execution Plan.

25. Materials Assessment, Evaluation, and Manufacturing within the Country – Many critical materials required for the solar industry like PV grade silicon are important for the sector's development. The Ministry should, within 90 days from the date of commencement of this Act, indicate a programme to assess and evaluate the availability of indigenous resources and to promote indigenous manufacture of critical components to facilitate rapid growth of the industry.

26. Solar Water Heating – (1) Within six months of the commencement of this Act, the Ministry shall in consultation with the State Governments initiate a nation-wide programme

for making solar water heating mandatory in all buildings with defined floor area or size in the urban areas of the country.

Provided that this should be done in phases, after considering the situations prevailing in different states, and geographical regions of the country.

(2) The Ministry shall formulate a definite time-bound programme, in coordination with State Governments, Municipal Corporations or such other local bodies to amend laws, bye-laws or rules and regulations to facilitate such mandatory use so as to ensure that this programme shall be completed by 2012.

(3) The Ministry, within six months from the commencement of this Act shall formulate a definite time bound programme for implementation of solar water heating systems in public buildings for reducing electrical heating load. The programme shall be administered by the Ministry through State Nodal Agencies.

27. **Renewable Hybrids** – (1) The Ministry shall, within three months of the commencement of this Act, conduct an evaluation of the pilot renewable hybrid systems it has funded so far, and chart out a programme for their popularization, by gradually phasing out the subsidies.

(2) The Ministry shall, within six months of commencement of this Act, initiate a research programme to indigenously develop optimally efficient and cost-effective aerogenerators, which may be done by coordinating various isolated research activities under way in the institutions and universities, IIT's, industrial units, etc. An indigenous prototype should be produced within thirty months from the enactment of this Act and the same be commercialized soon thereafter.

28. **Biofuel-based Captive Power Generation** – India has at present 30,000 MW capacity captive electricity generating units, out of which about 18,000 MW are diesel-based. Within six months from the commencement of this Act, the Ministry should prepare and launch a time-bound programme to convert these diesel captive generating units to biofuel-based generation.

29. **Dispersed Pumping Energy** – (1) Within twelve months from the commencement of this Act, the Ministry shall in consultation with other appropriate Ministries and State Government prepare and launch a programme -

(a) To serve dispersed pumping energy demands by channeling assistance and concessional finance to user groups aiming at improved efficiency, reliability and availability on demand, of water for improvement of water use efficiency, productivity of agriculture and farm forestry.

(b) Develop evaluation criteria to arrive at optimum package of financing and cost recovery to promote decentralized solar thermal energy use for pumping along with co-generation and hybridization with biogas to enhance dependability.

30. **Promotion of Biomass-based Energy Systems** – (1) Within twelve months from the commencement of this Act, the Ministry shall, in consultation with other appropriate Ministries and State Governments prepare and launch a programme to –

a. Assist users for exploring avenues of increasing biomass availability with optimization of land use and water allocation;

b. Reorient development financing and administration to support initiative for increasing biomass availability and appropriate water, land and produce entitlements to resource-poor households;

c. Provide technology and management support for optimizing biomass use through end use demand management aiming at value addition and energy use efficiency;

d. Facilitating integrated development of energy and infrastructure sectors to generate demand for biomass-based techniques for providing materials and high value biofuels.

CHAPTER – V

BIOFUELS AND TRANSPORTATION ENERGY

31. **Integrated Renewable Fuel Policy** – Within six months of the commencement of this Act, the Central Government shall prepare and publish an Integrated Renewable Fuel Policy covering all aspects of its development, after due consultation with all stakeholders and State Governments. This policy shall be raised and updated at least once in five years, or as and when necessary.
32. **Renewable Fuel Programme** – (1) Within six months from the date of commencement of this Act, the Central Government shall promulgate regulations to ensure that gasoline (excluding aviation turbine fuel) and diesel sold or introduced into commercial use in India on an annual average basis, is blended with a certain fixed volume of the relevant renewable fuel determined in accordance with various situations obtained in the country relating to their cultivation, processing and marketing.

Further, regardless of the date of promulgation, the regulations promulgated under (1) above shall contain compliance provisions applicable to refineries, blenders, distributors and importers, manufacturers of internal combustion engines, as appropriate, to ensure that the requirements of this paragraph are met.

(2) For the purpose of (1) the applicable volume for any of calendar years 2007 to 2012 shall be determined by the Central Government after considering the growth of production of renewable transport fuel.

(3) Subject to (1) the applicable volume for calendar year 2013 and each calendar year thereafter shall be determined by the Central Government, based on a review of the implementation of the programme during calendar years 2007 to 2012 including review of –

- (a) The impact of the use of renewable fuels on the environment, air quality, impact on health, energy security, job creation and rural economic development; and

(b) The expected annual rate of future production of renewable fuels, including cellulosic ethanol, without jeopardizing the nation's food security.

(c) Agricultural land or forest land should not be diverted for biofuel production and only wasteland should be used.

33. **Economic Linkages of the Programmes** – The Central Government shall in consultation with such other Ministries, State Governments and all stakeholders, initiate a nation-wide programme to establish a backward and forward linking economic chain from farming, harvesting, extraction, to processing, blending and marketing.

34. **Biodiesel Engine Testing Programme** – (1) Within six months from the date of commencement of this Act, the Central Government shall initiate a programme in partnership with diesel engine, diesel fuel injection system, and diesel vehicle manufacturers and diesel and biodiesel fuel providers, to include biodiesel testing in advanced diesel engine and fuel system technology.

(2) The programme in (1) shall provide for testing to determine the impact of biodiesel from different sources on current and future emission control technologies, with emphasis on –

(a) The impact of biodiesel on emissions warranty, in-use liability, and anti-tampering provisions;

(b) The impact of long-term use of biodiesel on engine operations;

(c) The options for optimizing these technologies for both emissions and performance when switching between biodiesel and diesel fuel;

(3) Within two years from the date of commencement of this Act, the appropriate Ministry in Central Government shall provide an interim report to the Cabinet on the findings of the programme, including a comprehensive analysis of impacts from biodiesel on engine operation for both existing and expected future diesel technologies, and recommendations for

ensuring optimal emissions reductions and engine performance with biodiesel.

35. **Hybrid Vehicles** – (1) The Central Government shall establish a programme to encourage domestic production and sales of efficient hybrid vehicles by entering into memorandum of understandings with automobile manufacturers to encourage domestic production of efficient hybrid vehicles (Gasoline-Electric or Diesel-Electric).

(2) The Central Government shall accelerate efforts directed towards the improvement of batteries and other rechargeable energy storage systems, power electronics, hybrid systems integration, and other technologies for use in hybrid vehicles.

36. **Fuel Cell Transit Bus Demonstration** – (1) The Central Government shall establish a transit bus demonstration programme to make competitive, merit based awards for five year projects to demonstrate not less than 25 fuel cell transit buses in all regions of the country.

(2) In selecting projects in (1) the Central Government shall give preference to projects that are most likely to mitigate congestion and improve air quality.

37. **Railroad Efficiency** – (1) The Central Government shall establish a cost-shared public-private research partnership involving railroad carriers, locomotive manufacturers and equipment suppliers, etc., to develop and demonstrate railroad locomotive technologies that use new fuels like biofuels, increase fuel economy, reduce emissions, and lower costs of operation and promote the necessary shift from road to rail in bulk transportation (and water-based transportation systems, as appropriate);

(2) The Ministry shall, in consultation with other appropriate Ministries and Agencies, develop a programme for application of renewable technologies in Railways and in all possible areas like engineering, etc.

38. **Ultra-efficient Engine Technology for Aircraft** – (1) The Central Government shall enter into a cooperative agreement

with the Hindustan Aeronautics Limited and such other Research Organizations for the development of ultra-efficient engine technology for aircraft, in military, as well as civilian use.

(2) The following time-bound performance objectives shall be established for the programme in (1) above –

- (a) A fuel efficiency increase of at least 10 percent;
- (b) A reduction in the impact during landing and take-off of nitrogen oxide emissions on local air quality by 50 percent;
- (c) Exploring advanced concepts, alternate propulsion and power configurations, including hybrid fuel cell powered systems;
- (d) Exploring the use of alternate aviation fuel (derivatives of renewable fuels) in conventional or non-conventional turbine-based systems, including use of decommissioned turbines for electricity generation.

CHAPTER – VI

HYDROGEN & FUEL CELLS

39. **The Purpose** – The purpose and objective of the provisions in this chapter are –
- a) To enable and promote comprehensive development, demonstration, and commercialization of hydrogen and fuel cell technology in partnership with industry;
 - b) To make critical public investments in building strong links to private industry, institutions of higher education, national laboratories, and research institutions to expand innovation and industrial growth;
 - c) To build a mature hydrogen economy that creates fuel diversity in the massive transportation sector in India;
 - d) To sharply decrease the dependency of India on imported oil, reduce emissions from the transportation sector, and greatly enhance our energy security; and
 - e) To create, strengthen, and protect a sustainable national energy economy.
40. **Coordinated Plan** – Not later than 6 months after the date of commencement of this Act, the Ministry shall submit to the cabinet a coordinated plan for the programmes described in this Chapter and any other programmes of the Ministry that are directly related to fuel cells or hydrogen. The plan shall describe, at a minimum—
- a) the agenda for the next 5 years for the programmes authorized;
 - b) the types of entities that will carry out the activities under and what role each entity is expected to play;
 - c) the milestones that will be used to evaluate the programmes for the next 5 years;

- d) the most significant technical and non-technical hurdles that stand in the way of achieving the goals described herein, and how the programmes will address those hurdles; and
- e) the policy assumptions that are implicit in the plan, including any assumptions that would affect the sources of hydrogen or the marketability of hydrogen-related products.

41. **Role of the Ministry** – (1) The Ministry, in consultation with the Council, State governments and the private sector, shall conduct a research and development programme on technologies relating to the production, purification, distribution, storage, and use of hydrogen energy, fuel cells and related infrastructure.

(2) The goal of the programme shall be to demonstrate and commercialize the use of hydrogen for transportation (in light-duty vehicles and heavy-duty vehicles), utility, industrial, commercial and residential applications.

(3) In carrying out activities under this section, the Ministry shall focus on factors that are common to the development of hydrogen infrastructure and the supply of vehicle and electric power for critical consumer and commercial applications, and to achieve continuous technical evolution and cost reduction, particularly for hydrogen production, the supply of hydrogen, storage of hydrogen and end uses of hydrogen that –

- (a) steadily increase production, distribution, and end use efficiency and reduce life-cycle emissions;
- (b) resolve critical problems relating to catalysts, membranes, storage, lightweight materials, electronic controls, manufacturability, and other problems that emerge from the programme;
- (c) enhance sources of renewable fuels and biofuels for hydrogen production; and
- (d) Enable widespread use of distributed electricity generation and storage.

(4) In carrying out this section, the Ministry shall support enhanced public education and research conducted at institutions of higher education in fundamental sciences, application design, and systems concepts (including education and research relating to materials, subsystems, manufacturability, maintenance, and safety) relating to hydrogen and fuel cells.

(5) The Ministry, in partnership with the private sector, shall conduct programmes to address –

- (a) Production of hydrogen from diverse energy sources, including – (i) hydrogen-carrier fuels (including ethanol and methanol); and (ii) renewable energy resources, including biomass;
- (b) Use of hydrogen for commercial, industrial and residential electric power generation;
- (c) Safe delivery of hydrogen or hydrogen-carrier fuels, including –
 - i. Transmission by pipeline and other distribution methods; and
 - ii. Convenient and economic refueling of vehicles either at central refueling stations or through distributed onsite generation;
- (d) Advanced vehicle technologies, including –
 - i. Engine and emission control systems;
 - ii. Energy storage, electric propulsion, and hybrid systems;
 - iii. Automotive materials; and
 - iv. Other advanced vehicle technologies;
- (e) Storage of hydrogen or hydrogen-carrier fuels, including development of materials for safe and economic storage in gaseous, liquid, or solid form at refueling facilities and onboard vehicles;
- (f) development of safe, durable, affordable, and efficient fuel cells, including fuel-flexible fuel cell power systems, improved manufacturing processes, high-temperature membranes, cost-effective fuel processing for natural gas,

fuel cell stack and system reliability, low temperature operation, and cold start capability; and

(g) The ability of domestic automobile manufacturers to manufacture commercially available competitive hybrid vehicle technologies in India.

(h) Programme Goals shall be to –

i. enable a commitment by automakers no later than year 2015 to offer safe, affordable, and technically viable hydrogen fuel cell vehicles in the mass consumer market; and

ii. enable production, delivery and acceptance by consumers of model year 2020 hydrogen fuel cell and other hydrogen-powered vehicles that will have, when compared to light duty vehicles in model year 2005 – (I) fuel economy that is substantially higher; (II) substantially lower emissions of air pollutants; and (III) equivalent or improved vehicle fuel system crash integrity and occupant protection.

42. **Hydrogen Energy and Energy Infrastructure** – For hydrogen energy and energy infrastructure, the goals of the programme are to enable a commitment not later than 2015 that will lead to infrastructure by 2020 that will provide –

(a) safe and convenient refueling;

(b) improved overall efficiency;

(c) widespread availability of hydrogen from domestic energy sources through--

(i) production, with consideration of emissions levels;

(ii) delivery, including transmission by pipeline and other distribution methods for hydrogen; and

(iii) storage, including storage in surface transportation vehicles;

(d) Hydrogen for fuel cells, internal combustion-engines, and other energy conversion devices for portable, stationary,

micro, critical needs facilities, and transportation applications; and

(e) Other technologies consistent with the Ministry's and Council's plan.

43. **Fuel Cells** – The goals for fuel cells and their portable, stationary and transportation application are to enable –

(a) Safe, economical, and environmentally sound hydrogen fuel cells;

(b) Fuel cells for light duty and other vehicles; and

(c) Other technologies consistent with the Ministry's and Council's plan.

44. **Funding** – (1) the Ministry shall carry out the programmes under this section using a competitive, merit-based review process and consistent with the generally applicable laws and regulations governing awards of financial assistance, contracts, or other agreements.

(2) Activities under this section may be carried out by funding nationally recognized university-based or national laboratory research centers or private research centers as well as research centers in autonomous institutions.

45. **Establishment of Technology Mission** – Not later than 120 days after the date of enactment of this Act, the Central Government shall establish a technology mission to implement the objectives laid down herein.

CHAPTER – VII

RENEWABLE OBLIGATIONS AND CERTIFICATES

46. **Renewable Electricity Purchase Obligation** – (1) Where as sub-clause (e) of sub section (1) of Section 86 of Electricity Act, 2003 (36 of 2003), provides for the State Electricity Regulatory Commissions to bring out an order mandating all electricity utilities to compulsorily purchase electricity from renewable generating sources, such percentage of their total purchase to be determined through notification from time to time.
- (2) Whereas many State Commissions have issued such orders.
- (3) Whereas the open access and captive consumers are also required to purchase renewable power.
- (4) Whereas for the compliance of power purchase obligations if an entity liable to comply with the obligation is unable to produce or purchase the renewable electricity within the state, there is a need to develop and implement an instrument enabling such purchase.
47. **Renewable Electricity Certificates** – (1) Within six months from the commencement of this Act, the Ministry shall in consultation with the council issue guidelines for institution of a scheme of such tradable RECs in all states.
- (2) Any person who has to comply with the renewable purchase obligation shall generally acquire the certificates by purchasing them.
- (3) Provided that no producer or trader shall transmit or sell RECs in any form without authorization by the appropriate authority. Violation of this provision is punishable under the laws of the nation.
48. **Renewable Transport Fuel Obligation** – (1) The Ministry of Petroleum and Natural Gas, shall in consultation with other appropriate Ministries and State Governments specify, within six months from the date of commencement of this Act, the national indicative target as of 31 March, 2012 and in every five

year plan period thereafter - for the use of biofuels in the transportation sector.

Further, within six months from the date of commencement of this Act, a specific renewable fuel obligation shall be imposed upon transport fuel manufacturers/importer/distributors, through a notification.

(2) The Ministry of Petroleum and Natural Gas may impose on each transport fuel supplier/importer of a specific description, to be specified, the obligation mentioned in sub-section (1) above - a renewable transport fuel obligation.

(3) The obligation above is an obligation, for such specified period, for the supplier to produce to the Ministry of Petroleum and Natural Gas or its designated agencies, by the specified date, an evidence which –

(a) Is of the specified kind and in the specified form; and

(b) Shows that during the specified period the specified amount of renewable transport fuel was supplied at or for delivery to places in India;

(4) No such renewable transport fuel obligation in (1), be made unless the Ministry of Petroleum and Natural Gas, consults such person appearing to represent persons whose interests will be affected by such order, and any such other person, as the Ministry of Petroleum and Natural Gas considers appropriate.

(5) A person who does not wholly discharge his renewable transport fuel obligation for a period by the production of evidence will be liable to a penalty payable to Central Government or its designated agencies at the Centre and states. The Central Government or its designated agencies shall direct the defaulter to make such payment, in the means and quantum to be prescribed separately through notification by the Central Government for this purpose.

CHAPTER - VIII

OTHER PROMOTIONAL MEASURES & INSTRUMENTS

49. **Central Government's Power to Reserve Land and Waters** – (1) In furtherance of the spirit of this Act, and promotion of the objectives to be achieved, the Central Government may reserve some land area under this Act, which shall include an area submerged into water or area extended into sea (i.e. territorial waters), through such notification.
- (2) Any such land reservation can be done by the Central Government after consultation with the holder of any license on or over such land and such other person the Central Government may deem fit.
50. **Technology Missions** – Subject to any specific regulations to be made in this behalf, the Central Government may constitute Technology Missions, to begin within the areas of Solar Energy (covering all types of solar technologies), Biofuels and Hydrogen, and such other technology missions as may be considered necessary at a later date.
51. **Establishment of Renewable Energy Fund by the Central and State Governments** – (1) The Central Government and State Governments shall constitute Renewable Energy Funds, if such funds are not already constituted, to be called the Central and State Renewable Energy Funds respectively, for the purposes of promotion and popularization of renewable energy.
- (2) The Central and State Renewable Energy Funds shall be created by way of cess imposed upon conventional energy producers and / or sources, by appropriate legislation or amendment within one year from date of commencement of this Act.
- (3) To the funds shall be credited all grants and loans that may be made by the Central or State Governments or any other organization including international organization or individual for the purpose of this Act.

(4) The Central Renewable Energy Fund shall be administered by the Ministry or its designated agency and shall be applied for the following purposes:

- (a) Promoting nation-wide research in renewable energy technologies;
- (b) Training of personnel for nation-wide capacity building in the government and non-profit, non-government sector;
- (c) Rendering assistance for pilot projects for designing and developing new equipments and devices with the object of utilizing renewable energy sources;
- (d) Grant of subsidies for promotion of the use of new equipments or devices;
- (e) Dissemination of information related to renewable energy technologies;
- (f) Funding policy studies by reputed non-profit, non-government institutes for renewable energy development;
- (g) Institutional strengthening of non-profit, non-governmental institutions working for the development of sustainable energy in the country.

(5) The State Funds shall be applied for meeting the expenses incurred for implementation of the objectives and provisions of this Act relating to the States, and may be used for –

- (a) Promotion of investments in renewable energy projects by giving credit guarantees, interest subsidy etc.;
- (b) Infrastructure development for renewable energy;
- (c) Research and development at the state level;
- (d) Equity participation in renewable energy projects;
- (e) Promotion and launch of such programmes for adoption of international best practices.

Explanation – The lists envisaged in sub-section (4) and (5) above are only indicative and can be elaborated or amended as decided from time to time by the Central and State Governments.

(6) The State Funds created under sub-section (1) shall be administered by the State Nodal Agencies in the respective states, in such manner as may be specified in the rules made by the State Government or the Governing bodies of the State Nodal Agencies in this regard.

52. **Introduction of Market Based Instruments** – (1) The Central Government may, within one year from the date of commencement of this Act, issue such direction in writing as it may deem fit for introducing any such Market Based Instruments to promote the use of various renewable energy resources, after surveying the numerous international best practices pertaining in this regard, and introduce any such other creative measures to achieve the policy objectives of this Act. This is intended at facilitating gradual phasing out of any subsidies that may exist and promote the sector and facilitate growth through the market mechanisms.

(2) Some examples of such market based instruments prevalent in the world are, Renewable Energy Certificates, Green Tag Purchase Programme, Alternative Energy Rebate Programme, etc.

(3) No such Market Based Instrument may be introduced by the Central Government without publishing policy paper in this regard, and consulting all stakeholders to be affected through such public consultations to be conducted, as may be prescribed by the Central Government in this regard.

CHAPTER - IX

PENALTIES

53. **Penalty** – (1) if any person fails to comply with the provisions of this Act shall be liable to a penalty, with an additional penalty for continuing failure.

Explanation – The provisions in Electricity Act, 2003 (Part – XIV and XV) in this regard shall have application.

(2) provided that no such penalty shall be imposed under (1) until offering an opportunity to be heard by the defaulting person.

(3) Any amount payable under this section, if not paid, may be recovered as if it were arrears of land revenue.

54. **Appeal to Appellate Tribunal** – Any person aggrieved by an order made under Section 52 may prefer an appeal to the Appellate Tribunal for Electricity, constituted under the Electricity Act, 2003.

55. **Civil Court not to have Jurisdiction** – (1) Subject to the provisions of Part XI (Appellate Tribunal for Electricity) of the Electricity Act, 2003, any Civil Court shall not have jurisdiction to entertain any suit or proceeding in respect of any matter upon which the Appellate Tribunal is empowered to determine.

(2) No injunction shall be granted by any court or other authority in respect of any action taken or to be taken in pursuance of any power conferred by or under this Act.

(3) Action taken in good faith etc. (see Electricity Act, 2003)

CHAPTER – X

MISCELLANEOUS

56. **Enforcement of the Act** – The Ministry should within six months from the commencement of this Act, identify the amendments that are required to various other Central or State legislation to facilitate implementation of the provisions of this Act.
57. **Reporting by the Central Government** - The Central Government shall publish every year, not later than 31st May a report for the preceding financial year called “Sustainable Energy Report” on the progress made in the reporting period towards achieving all objectives laid down in this Act.
58. **Power of the Central Government to Issue Direction** – The Central Government may give directions to the State Government or any such other state instrumentality as to carry out execution of this Act in the state.
59. **Protection of Action taken in Good Faith** – No suit, prosecution or other legal proceeding shall lie against the Central Government or Secretary or State Government or any officer of those Governments or State Commission or its members or any member or officer or other employee for anything which is in good faith done or intended to be done under this Act or the rules or regulations made hereunder.
60. **Delegation** – The Central Government may, by general or special order as to be prescribed in writing, delegate to any member, members of the Council or any other person or agency, subject to such conditions, if any, as may be specified in order, such of its powers and functions under this Act as it may deem necessary.
61. **Power of the Central Government to Make Rules** – The Central Government may, by notification, make rules for carrying out the provisions of this Act.
62. **Power of the State Government to Make Rules** – The State Government may, by notification, make rules for carrying out

the provisions of this Act not inconsistent with the rules, if any, made by the Central Government.

63. **Rules and Regulations to be laid before Parliament and State Legislature** – (1) Every rule made by the Central Government and every regulation made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or regulation shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under the rule or regulation.
- (2) Every rule made by the State Government shall be laid, as soon as may be after it is made, before each House of the State Legislature where it consists of two Houses, or where such Legislature consists of one House, before that House.
64. **Application of Other Laws not Barred** – The provisions of this Act shall be in addition to and not in derogation of, any other law for the time being in force.
65. **Provisions of the Act not to Apply in Certain Cases** – The provisions of this Act shall not apply to the Ministry or Department of the Central Government dealing with Defence, Atomic Energy or such other similar Ministries or Departments or undertakings or Boards or institutions under the control of such Ministries or Departments as may be notified by the Central Government.
66. **Power to Remove Difficulty** – (1) Upon any difficulty arising in giving effect to the provisions of this Act, the Central Government may, by order, published in the Official Gazette, make such provisions not inconsistent with provisions of this Act as may appear to be necessary for removing the difficulty.

Provided that no such order shall be made under this section after the expiry of five years from the date of commencement of this Act.

(2) Every order made under this section shall be laid, as soon as, may be after it is made, before each House of Parliament.
