



Government of India
Ministry of New & Renewable Energy

National Policy on Biofuels

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National Policy on Biofuels

1.0 PREAMBLE

1.1 India is one of the fastest growing economies in the world. The Development Objectives focus on economic growth, equity and human well being. Energy is a critical input for socio-economic development. The energy strategy of a country aims at efficiency and security and to provide access which being environment friendly and achievement of an optimum mix of primary resources for energy generation. Fossil fuels will continue to play a dominant role in the energy scenario in our country in the next few decades. However, conventional or fossil fuel resources are limited, non-renewable, polluting and, therefore, need to be used prudently. On the other hand, renewable energy resources are indigenous, non-polluting and virtually inexhaustible. India is endowed with abundant renewable energy resources. Therefore, their use should be encouraged in every possible way.

1.2 The crude oil price has been fluctuating in the world market and has increased significantly in the recent past, reaching a level of more than \$ 140 per barrel. Such unforeseen escalation of crude oil prices is severely straining various economies the world over, particularly those of the developing countries. Petro-based oil meets about 95% of the requirement for transportation fuels, and the demand has been steadily rising. Provisional estimates have indicated crude oil consumption in 2007-08 at about 156 million tonnes. The domestic crude oil is able to meet only about 23% of the demand, while the rest is met from imported crude.

1.3 India's energy security would remain vulnerable until alternative fuels to substitute/supplement petro-based fuels are developed based on indigenously produced renewable feedstocks. In biofuels, the country has a ray of hope in providing energy security. Biofuels are environment friendly fuels and their utilization would address global concerns about containment of carbon emissions. The transportation sector has been identified as a major polluting sector. Use of biofuels have, therefore, become compelling in view of the tightening automotive vehicle emission standards to curb air pollution.

1.4 Biofuels are derived from renewable bio-mass resources and, therefore, provide a strategic advantage to promote sustainable development and to supplement conventional energy sources in meeting the rapidly increasing requirements for transportation fuels associated with high economic growth, as well as in meeting the energy needs of India's vast rural population. Biofuels can increasingly satisfy these energy needs in an environmentally benign and cost-effective manner while reducing dependence on import of fossil fuels and thereby providing a higher degree of National Energy Security.

1.5 The growth of biofuels around the globe is spurred largely by energy security and environmental concerns and a wide range of market mechanisms, incentives and subsidies have been put in place to facilitate their growth. Developing countries, apart from these considerations, also view biofuels as a potential means to stimulate rural development and create employment opportunities. The Indian approach to biofuels, in particular, is somewhat different to the current international approaches which could lead to conflict with food security. It is based solely on non-food feedstocks to be raised on degraded

or wastelands that are not suited to agriculture, thus avoiding a possible conflict of fuel vs. food security.

1.6 In the context of the International perspectives and National imperatives, it is the endeavour of this Policy to facilitate and bring about optimal development and utilization of indigenous biomass feedstocks for production of biofuels. The Policy also envisages development of the next generation of more efficient biofuel conversion technologies based on new feedstocks. The Policy sets out the Vision, medium term Goals, strategy and approach to biofuel development, and proposes a framework of technological, financial and institutional interventions and enabling mechanisms.

2.0 THE VISION AND GOALS

2.1 The Policy aims at mainstreaming of biofuels and, therefore, envisions a central role for it in the energy and transportation sectors of the country in coming decades. The Policy will bring about accelerated development and promotion of the cultivation, production and use of biofuels to increasingly substitute petrol and diesel for transport and be used in stationary and other applications, while contributing to energy security, climate change mitigation, apart from creating new employment opportunities and leading to environmentally sustainable development.

2.2 The Goal of the Policy is to ensure that a minimum level of biofuels become readily available in the market to meet the demand at any given time. An indicative target of 20% blending of biofuels, both for bio-diesel and bio-ethanol, by 2017 is proposed. Blending levels prescribed in regard to bio-diesel are intended to be recommendatory in the near term. The blending level of bio-

ethanol has already been made mandatory, effective from October, 2008, and will continue to be mandatory leading upto the indicative target.

3.0 DEFINITIONS AND SCOPE

3.1 The following definitions of biofuels shall apply for the purpose of this Policy:

- i. 'biofuels' are liquid or gaseous fuels produced from biomass resources and used in place of, or in addition to, diesel, petrol or other fossil fuels for transport, stationary, portable and other applications;
- ii. 'biomass' resources are the biodegradable fraction of products, wastes and residues from agriculture, forestry and related industries as well as the biodegradable fraction of industrial and municipal wastes.

3.2 The scope of the Policy encompasses bio-ethanol, bio-diesel and other biofuels, as listed below:-

- i. 'bio-ethanol': ethanol produced from biomass such as sugar containing materials, like sugar cane, sugar beet, sweet sorghum, etc.; starch containing materials such as corn, cassava, algae etc.; and, cellulosic materials such as bagasse, wood waste, agricultural and forestry residues etc. ;
- ii. 'biodiesel': a methyl or ethyl ester of fatty acids produced from vegetable oils, both edible and non-edible, or animal fat of diesel quality; and ,
- iii. other biofuels: biomethanol, biosynthetic fuels etc.

4.0 STRATEGY AND APPROACH

4.1 The focus for development of biofuels in India will be to utilize waste and degraded forest and non-forest lands only for cultivation of shrubs and trees bearing non-edible oil seeds for production of bio-diesel. In India, bio-ethanol is produced mainly from molasses, a by-product of the sugar industry. In future too, it would be ensured that the next generation of technologies is based on non-food feedstocks. Therefore, the issue of fuel vs. food security is not relevant in the Indian context.

4.2 Cultivators, farmers, landless labourers etc. will be encouraged to undertake plantations that provide the feedstock for bio-diesel and bio-ethanol. Corporates will also be enabled to undertake plantations through contract farming by involving farmers, cooperatives and Self Help Groups etc. in consultation with Panchayats, where necessary. Such cultivation / plantation will be supported through a Minimum Support Price for the non-edible oil seeds used to produce bio-diesel.

4.3 In view of the current direct and indirect subsidies to fossil fuels and distortions in energy pricing, a level playing field is necessary for accelerated development and utilization of biofuels to subserve the Policy objectives. Appropriate financial and fiscal measures will be considered from time to time to support the development and promotion of biofuels and their utilization in different sectors.

4.4 Research, development and demonstration will be supported to cover all aspects from feedstock production and biofuels processing for various end-use

applications. Thrust will also be given to development of second generation biofuels and other new feedstocks for production of bio-diesel and bio-ethanol.

5.0 INTERVENTIONS AND ENABLING MECHANISMS

Plantations

5.1 Plantations of trees bearing non-edible oilseeds will be taken up on Government/community wasteland, degraded or fallow land in forest and non-forest areas. Contract farming on private wasteland could also be taken up through the Minimum Support Price mechanism proposed in the Policy. Plantations on agricultural lands will be discouraged.

5.2 There are over 400 species of trees bearing non-edible oilseeds in the country. The potential of all these species will be exploited, depending on their techno-economic viability for production of biofuels. Quality seedlings would be raised in the nurseries of certified institutions / organizations identified by the States for distribution to the growers and cultivators.

5.3 In all cases pertaining to land use for the plantations, consultations would be undertaken with the local communities through Gram Panchayats/ Gram Sabhas, and with Intermediate Panchayats and District Panchayat where plantations of non-edible oil seed bearing trees and shrubs are spread over more than one village or more than one block/ taluk. Further, the provisions of PESA would be respected in the Fifth Schedule Areas.

5.4 A major instrument of this Policy is that a Minimum Support Price (MSP) for oilseeds should be announced and implemented with a provision for its periodic revision so as to ensure a fair price to the farmers. The details about implementation of the MSP mechanism will be worked out carefully after due

consultations with concerned Government agencies, States and other stakeholders. It will then be considered by the Biofuel Steering Committee and decided by the National Biofuels Co-ordination Committee proposed to be set up under this Policy. The Statutory Minimum Price (SMP) mechanism prevalent for sugarcane procurement will also be examined for extending such a mechanism for oilseeds to be utilized for production of bio-diesel by the processing units. Payment of SMP would be the responsibility of the bio-diesel processors. Different levels of Minimum Support Price for oilseeds has already been declared by certain States.

5.5 Employment provided in plantations of trees and shrub bearing non-edible oilseeds will be made eligible for coverage under the National Rural Employment Guarantee Programme (NREGP).

Processing

5.6 Ethanol is mainly being produced in the country at present from molasses, which is a by-product of the sugar industry. 5% blending of ethanol with gasoline has already been taken up by the Oil Marketing Companies (OMCs) in 20 States and 4 Union Territories. 10% mandatory blending of ethanol with gasoline is to become effective from October, 2008 in these States. In order to augment availability of ethanol and reduce over supply of sugar, the sugar industry has been permitted to produce ethanol directly from sugarcane juice. The sugar and distillery industry will be further encouraged to augment production of ethanol to meet the blending requirements prescribed from time to time, while ensuring that this does not in any way create supply constraints in production of sugar or availability of ethanol for industrial use.

5.7 Setting up of processing units by industry for bio-oil expelling/extraction and transesterification for production of bio-diesel will be encouraged. While it is difficult to exactly specify the percentage of bio-diesel to be blended with diesel in view of the uncertainty in the availability of bio-diesel at least in the initial stages, blending will be permitted upto certain prescribed levels, to be recommendatory initially and made mandatory in due course. Gram/Intermediate Panchayats would also be encouraged to create facilities at the village level for extraction of bio-oil, which could then be sold to bio-diesel processing units.

5.8 The prescribed blending levels will be reviewed and moderated periodically as per the availability of bio-diesel and bio-ethanol. A National Registry of feedstock availability, processing facilities and offtake will be developed and maintained to provide necessary data for such reviews with a view to avoid mismatch between supply and demand.

5.9 In order to take care of fluctuations in the availability of biofuels, OMCs will be permitted to bank the surplus quantities left after blending of bio-diesel and bio-ethanol in a particular year, and to carry it forward to the subsequent year when there may be a shortfall in their availability to meet the prescribed levels.

5.10 The blending would have to follow a protocol and certification process, and conform to BIS specification and standards, for which the processing industry and OMCs would need to jointly set up an appropriate mechanism and the required facilities. Section 52 of the Motor Vehicles Act already allows conversion of an existing engine of a vehicle to use biofuels. Engine manufacturers would need to suitably modify the engines to ensure compatibility with biofuels, wherever necessary.

Distribution & Marketing of Biofuels

5.11 The responsibility of storage, distribution and marketing of biofuels would rest with OMCs. This shall be carried out through their existing storage and distribution infrastructure and marketing networks, which may be suitably modified or upgraded to meet the requirements for biofuels.

5.12 In the determination of bio-diesel purchase price, the entire value chain comprising production of oil seeds, extraction of bio-oil, its processing, blending, distribution and marketing will have to be taken into account. The Minimum Purchase Price (MPP) for bio-diesel by the OMCs will be linked to the prevailing retail diesel price. The MPP for bio-ethanol, will be based on the actual cost of production and import price of bio-ethanol. The MPP, both for bio-diesel and bio-ethanol will be determined by the Biofuel Steering Committee and decided by the National Biofuel Coordination Committee. In the event of diesel or petrol price falling below the MPP for bio-diesel and bio-ethanol, OMCs will be duly compensated by the Government.

Financing

5.13 Plantation of non-edible oil bearing plants, the setting up of oil expelling/extraction and processing units for production of bio-diesel and creation of any new infrastructure for storage and distribution would be declared as a priority sector for the purposes of lending by financial institutions and banks. National Bank of Agriculture and Rural Development (NABARD) would provide re-financing towards loans to farmers for plantations. Indian Renewable Energy Development Agency (IREDA), Small Industries Development Bank of India (SIDBI) and other financing agencies as well as

commercial banks would be actively involved in providing finance for various activities under the entire biofuel value chain, at different levels.

5.14 Multi-lateral and bi-lateral funding would be sourced, where possible for biofuel development. Carbon financing opportunities would also be explored on account of avoidance of CO₂ emissions through plantations and use of biofuels for various applications.

5.15 Investments and joint ventures in the biofuel sector are proposed to be encouraged. Biofuel technologies and projects would be allowed 100% foreign equity through automatic approval route to attract Foreign Direct Investment (FDI), provided biofuel is for domestic use only, and not for export. Plantations would not be open for FDI participation.

Financial and Fiscal Incentives

5.16 Financial incentives, including subsidies and grants, may be considered upon merit for new and second generation feedstocks; advanced technologies and conversion processes; and, production units based on new and second generation feedstocks. If it becomes necessary, a National Biofuel Fund could be considered for providing such financial incentives.

5.17 As biofuels are derived from renewable biomass resources they will be eligible for various fiscal incentives and concessions available to the New and Renewable Energy Sector from the Central and State Governments.

5.18 Bio-ethanol already enjoys concessional excise duty of 16% and bio-diesel is exempted from excise duty. No other Central taxes and duties are proposed to be levied on bio-diesel and bio-ethanol. Custom and excise duty concessions would be provided on plant and machinery for production of

bio-diesel or bio-ethanol, as well as for engines run on biofuels for transport, stationary and other applications, if these are not manufactured indigenously.

Research & Development and Demonstration

5.19 A major thrust would be given through this Policy to Innovation, Research & Development and Demonstration in the field of biofuels. Research and Development will focus on plantations, biofuel processing and production technologies, as well as on maximizing efficiencies of different end-use applications and utilization of by-products. High priority will be accorded to indigenous R&D and technology development based on local feedstocks and needs, which would be benchmarked with international efforts and patents would be registered, wherever possible. Multi-institutional, time-bound research programmes with clearly defined goals and milestones would be developed and supported.

5.20 Intensive R&D work would be undertaken in the following areas:

(a): Biofuel feed-stock production based on sustainable biomass with active involvement of local communities through non-edible oilseed bearing plantations on wastelands to include inter-alia production and development of quality planting materials and high sugar containing varieties of sugarcane, sweet sorghum, sugar beet, cassava, etc.

(b): Advanced conversion technologies for first generation biofuels and emerging technologies for second generation biofuels including conversion of ligno-cellulosic materials to ethanol such as crop residues, forest wastes and algae, biomass-to-liquid (BTL) fuels, bio-refineries, etc.

(c): Technologies for end-use applications, including modification and development of engines for the transportation sector based on a large scale centralized approach, and for stationary applications for motive power and electricity production based on a decentralized approach.

(d): Utilisation of by-products of bio-diesel and bio-ethanol production processes such as oil cake, glycerin, bagasse, etc.

5.21 Demonstration Projects will be set up for biofuels, both for bio-diesel and bio-ethanol production, conversion and applications based on state-of-the-art technologies through Public Private Partnership (PPP).

5.22 For R&D and demonstration projects, grants would be provided to academic institutions, research organizations, specialized centers and industry. Strengthening of existing R&D centers and setting up of specialized centers in high technology areas will also be considered. Linkages would be established between the organizations / agencies undertaking technology development and the user organizations. Transfer of know-how would be facilitated to industry. Participation by industry in R&D and technology development will be encouraged with increased investment by industry with a view to achieve global competitiveness.

5.23 In regard to Research and Development in the area of biofuels, a Sub-committee under the Biofuel Steering Committee proposed in this Policy comprising Department of Bio-Technology, Ministry of Agriculture, Ministry of New and Renewable Energy and Ministry of Rural Development would be constituted, led by Department of Bio-Technology and coordinated by the Ministry of New and Renewable Energy.

6.0 QUALITY STANDARDS

6.1 Development of test methods, procedures and protocols would be taken up on priority alongwith introduction of standards and certification for different biofuels and end use applications. The Bureau of Indian Standards (BIS) has already evolved a standard (IS-15607) for Bio-diesel (B 100), which is the Indian adaptation of the American Standard ASTM D-6751 and European Standard EN-14214. BIS has also published IS: 2796: 2008 which covers specification for motor gasoline blended with 5% ethanol and motor gasoline blended with 10% ethanol.

6.2 The Bureau of Indian Standards (BIS) would review and update the existing standards, as well as develop new standards in a time-bound manner for devices and systems for various end-use applications for which standards have not yet been prepared, at par with international standards. Guidelines for product performance and reliability would also be developed and institutionalized in consultation with all relevant stakeholders. Standards would be strictly enforced and proper checks would be carried out by a designated agency on the quality of the biofuel being supplied.

7.0 INTERNATIONAL COOPERATION

7.1 International scientific and technical cooperation in the area of biofuel production, conversion and utilization will be established in accordance with national priorities and socio-economic development strategies and goals. Modalities of such cooperation may include joint research and technology development, field studies, pilot scale plants and demonstration projects with active involvement of research institutions and industry on either side.

Technology induction/ transfer would be facilitated, where necessary, with time-bound goals for indigenisation and local manufacturing. Appropriate bilateral and multi-lateral cooperation programmes for sharing of technologies and funding would be developed, and participation in international partnerships, where necessary, will also be explored.

8.0 IMPORT AND EXPORT OF BIOFUELS

8.1 Import of biofuels would only be permitted to the extent necessary, and will be decided by the National Biofuel Coordination Committee proposed under this Policy. Duties and taxes would be levied on the imports so as to ensure that indigenously produced biofuels are not costlier than the imported biofuels. Import of Free Fatty Acid (FFA) oils will not be permitted for production of biofuels.

8.2 Export of biofuels would only be permitted after meeting the domestic requirements and would be decided by the National Biofuel Coordination Committee.

9.0 ROLE OF STATES

9.1 The role and active participation of the States is crucial in the planning and implementation of biofuel programmes. The State Governments would be asked to designate an existing agency, or create a new agency suitably empowered and funded to act as nodal agency for development and promotion of biofuels in their States. Certain States have already set up such agencies. Other concerned agencies, panchayati raj institutions, forestry departments, universities, research institutions etc. would also need to be associated in these efforts. While a few States have announced policies for biofuel development,

other States would also need to announce suitable policies in a time-bound manner in line with the broad contours and provisions of this National Policy.

9.2 State Governments would also be required to decide on land use for plantation of non-edible oilseed bearing plants or other feedstocks of biofuels, and on allotment of Government wasteland, degraded land for raising such plantations. Creation of necessary infrastructure would also have to be facilitated to support biofuel projects across the entire value chain.

10.0 AWARENESS AND CAPACITY BUILDING

10.1 Support will be provided for creation of awareness about the role and importance of biofuels in the domestic energy sector, as well as for wide dissemination of information about its potential and opportunities in upgrading the transportation infrastructure and supporting the rural economy.

10.2 Significant thrust would be provided to capacity building and training and development of human resources. Universities, Polytechnics and Industrial Training Institutes will be encouraged to introduce suitable curricula to cater to the demand for trained manpower at all levels in different segments of the biofuel sector. Efforts will also be directed at enhancing and expanding consultancy capabilities to meet the diverse requirements of this sector.

11.0 INSTITUTIONAL MECHANISMS

11.1 Under the Allocation of Business Rules, the Ministry of New & Renewable Energy has been given the responsibility of Policy and overall Coordination concerning biofuels. Apart from this, the Ministry has also been given the responsibility to undertake R&D on various applications of biofuels. Responsibilities have also been allocated to other Ministries viz. Ministry of

Environment & Forests, Ministry of Petroleum & Natural Gas, Ministry of Rural Development and Ministry of Science & Technology to deal with different aspects of biofuel development and promotion in the country.

11.2 In view of a multiplicity of departments and agencies, it is imperative to provide High-level co-ordination and policy guidance / review on different aspects of biofuel development, promotion and utilization. For this purpose, it is proposed to set up a National Biofuel Coordination Committee (NBCC) headed by the Prime Minister. Ministers from concerned Ministries would be Members of this Committee. The Committee would meet periodically to provide overall coordination, effective end-to-end implementation and monitoring of biofuel programmes.

11.3 The National Biofuel Coordination Committee will have the following composition:

Chairman: Prime Minister of India

Members:

- i. Deputy Chairman, Planning Commission
- ii. Minister of New and Renewable Energy
- iii. Minister of Rural Development
- iv. Minister of Agriculture
- v. Minister of Environment & Forests
- vi. Minister of Petroleum & Natural Gas
- vii. Minister of Science & Technology
- viii. Secretary, Ministry of New and Renewable Energy -**Convener**

Coordinating Ministry: Ministry of New and Renewable Energy

11.4 In order to provide effective guidance and to oversee implementation of the Policy on a regular and continuing basis, it is proposed to set up a Biofuel Steering Committee headed by the Cabinet Secretary, and comprising Secretaries of concerned departments.

11.5 The Biofuel Steering Committee will have the following composition:-

Chairman: Cabinet Secretary

Members:

- i. Secretary, Ministry of Finance
- ii. Secretary, Ministry of Rural Development, Department of Land Resources
- iii. Secretary, Department of Agricultural Research and Education
- iv. Secretary, Ministry of Environment & Forests
- v. Secretary, Ministry of Petroleum & Natural Gas
- vi. Secretary, Department of Science & Technology
- vii. Secretary, Ministry of Panchayati Raj
- viii. Secretary, Department of Biotechnology
- ix. Secretary, Planning Commission
- x. Secretary, Department of Scientific & Industrial Research
- xi. Secretary, Ministry of New & Renewable Energy....**Member Secretary**

Coordinating Ministry: Ministry of New and Renewable Energy

11.6 In order to enable the Ministry of New & Renewable Energy to effectively carry out its role as the coordinating Ministry for the National Biofuel Programme, it will be necessary for it to be suitably strengthened through augmentation of its manpower with the flexibility of hiring external professional manpower and services.

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