

BIOFUELS

A. National Policy on Biofuels-2018

Government has emphasized on achieving energy security of the country with a target of reducing import dependence i.e. usage of fossil fuels by 10% from 2014-15 levels by the year 2022. This target is to be achieved by adopting a five pronged strategy which includes, Increasing Domestic Production, **Adopting Biofuels & Renewable**, Energy Efficiency Norms, Improvement in Refinery Processes and Demand Substitution. This envisages a strategic role for biofuels in the Indian Energy basket. The growing concern about the import dependence for fuel requirement in tandem with environmental pollution issues have driven the need for biofuels that have superior environment benefits and are economically competitive with fossil fuel.

In order to promote biofuels in the country, first National Policy on Biofuels was made by Ministry of New and Renewable Energy during the year 2009. Globally, biofuels have caught the attention in last decade and it is imperative to keep up with the pace of developments in the field of biofuels. This National Policy on Biofuels -2018 builds on the achievements of the earlier National Policy on Biofuels and sets the new agenda consistent with the redefined role of emerging developments in the renewable sector. This policy aims to bring in renewed focus taking into context the international perspectives and National scenario.

Copy of the policy and salient feature and benefits of the policy may be referred at below mentioned links.

<http://petroleum.nic.in/national-policy-biofuel-2018-0>

<http://pib.nic.in/newsite/PrintRelease.aspx?relid=179313>

National Biofuel Coordination Committee (NBCC) Chaired by Minister PNG and representatives from 14 other ministries and department has been constituted to provide overall coordination, taking decision on matters specified in the policy for the committee, effective end to end implementation and monitoring of biofuel program in the country.

A working group on biofuels Chaired by Joint Secretary (Refinery) having representative from Govt. ministries/departments, OMCs, experts in the field of biofuel is constituted to monitor the biofuel program at working level.

B. First Generation Ethanol Blended Petrol (EBP), Programme

Government of India, with effect from 01.01.2003 resolved to supply ethanol blended petrol in nine States and four Union Territories for sale of 5% ethanol blended Petrol. EBP Programme is aimed at achieving multiple outcomes such as; reducing import dependency, conserving foreign exchange, reducing carbon emissions and provide boost to agriculture sector.

2. The Ministry of Petroleum & Natural Gas (MoP&NG) vide its notification dated 20.09.2006 (http://eqazette.nic.in/WriteReadData/2006/E_450_2011_010.pdf) directed the Public Sector Oil Marketing Companies (OMCs) to sell 5% ethanol blended petrol subject to commercial viability as per Bureau of Indian Standards specifications in the notified 20 States and 4 UTs of the country with effect from 1st November, 2006.

3. Department of Food and Public Distribution (DFPD) had put forth a note for the Cabinet dated 25th September, 2007, which was considered by the Cabinet Committee on Economic Affairs (CCEA) in its meeting held on 09th October, 2007. The CCEA in this meeting *inter-alia* decided on 5% mandatory blending of ethanol with Petrol and 10% optional blending w.e.f. October, 2007 and 10% mandatory blending from October 2008.

4. However, low availability and State specific issues continued to hinder the progress of EBP Programme at desired level. The erstwhile National Policy on Biofuels — 2009, promulgated by Ministry of New and Renewable Energy (MNRE) allowed ethanol to be procured from non-food feed stock like molasses, celluloses and lignocelluloses material including petrochemical route. A Gazette Notification was issued on 2nd January, 2013, directing OMCs to sell ethanol blended petrol with percentage of ethanol up to 10% as per BIS Specification to achieve 5% ethanol blending across the country as a whole.

5. Later, CCEA in its decision dated 3rd July, 2013, *inter-alia* decided that ethanol be procured only from domestic sources; ethanol be blended with petrol to meet the mandatory requirement in areas/parts of the country where ethanol from domestic sources becomes available in sufficient quantity, and depending upon the quantity of ethanol available, blending in other parts of the country be increased progressively to reach the mandatory level; and Sugarcane or sugarcane juice may not be used for production of ethanol and it be produced only from molasses.

6. With splitting of Andhra Pradesh and formation of new State Telangana, EBP Programme was being implemented in 21 States and 4 UTs till 31.03.2019, wherein Public Sector OMCs procured ethanol from suppliers and sold up to 10% ethanol blended petrol.

7. However, supplies were not forthcoming. To increase indigenous production of ethanol the Government since 2014 took multiple interventions including, Re-introduction of administered price mechanism, Opening of alternate route for ethanol production, Regular Interaction with the State Governments, Amendment to Industries (Development & Regulation) Act, 1951 which legislates exclusive control of denatured ethanol by the Central Government, Reduction in Goods & Service Tax (GST) on ethanol meant for EBP Programme from 18% to 5%, Notification of National Policy on Biofuels — 2018 which indicates a target of 20% ethanol blending in petrol by 2030, DFPDs Interest Subvention scheme namely — "Scheme for augmenting and enhancing ethanol production capacity".

8. The aforesaid actions helped in increasing ethanol procurement by PSU

OMCs from 38.0 crore litres during ethanol supply year 2013-14 to 150.5 crore litres during 2017-18. Ethanol supply and blending status since 2012-13 is tabulated below:

Ethanol Supply Year	Tendered Qty (crore Lit)	Qty Allocated (crore Lit)	Qty Supplied (crore Lit)	Blending %age OMCs PSU
2012-13	103.0	32.0	15.4	0.67%
2013-14	115.0	70.4	38.0	1.53%
2014-15	128.0	86.5	67.4	2.33%
2015-16	266.0	130.5	111.4	3.51%
2016-17	280.0	80.7	66.5	2.07%
2017-18	313.0	161.04	150.5	4.22%

9. For the sugar season 2018-19 during ethanol supply year from 1st December 2018 to 30th November 2019, the ex-mill price of ethanol based on raw material used is fixed by the Government as under:

(i) From C-heavy molasses at Rs. 43.46 per litre.

(ii) From B heavy molasses / partial sugarcane juice at Rs.52.43 per litre.

(iii) Price of ethanol for the mills, who will divert 100% sugarcane juice for production of ethanol thereby not producing sugar, has been fixed at Rs.59.19 per litre.

b) Additionally, GST as per actual and transportation charges as decided by OMCs shall be payable to the suppliers.

c) Public Sector OMCs to give priority for procurement of ethanol from 1) 100% sugarcane juice 2) B heavy molasses/partial sugarcane juice 3) C heavy molasses and 4) Damaged food grains / Other sources in that order.

10. In addition, OMCs have fixed the ex-mill price of ethanol derived from Damaged Food Grains at Rs.47.13 per lit. Additionally GST and transportation charges are payable to the suppliers.

11. PSU OMCs floated a tender/EOI to procure 329 crore lit of ethanol during ethanol supply year 2018-19. Based on the offers received from ethanol suppliers, OMCs could allocate 268.6 crore lit and have procured 94.1 crore lit till 30.04.2019 achieving average 6.10% blending.

12. With effect from 01.04.2019, EBP Programme has been extended to whole of India except island UTs of Andaman Nicobar and Lakshadweep (<http://egazette.nic.in/WriteReadData/2019/197698.pdf>)

C. Second Generation (2G) Ethanol

The availability of conventional biofuels i.e.1G ethanol and palm Stearin/ non-edible oil seeds based biodiesel is limited. With the recent initiatives such as widening of

feedstock base for ethanol production, scheme of augmenting capacity and exploring Used Cooking Oil (UCO) for Biodiesel production, this figure may increase upto a maximum of 450- 500 crore litres by 2022 which will still be very less as compared to the targets envisaged under National Policy on Biofuels-2018.

Therefore, the thrust is being given to Advanced Biofuels such as Second Generation (2G) Ethanol, BioCNG/ Compressed BioGas (CBG), UCO based biodiesel etc. which can be sourced from wastes such as crop residues, Biomass, industrial waste, sewage water etc. and are abundantly available in the Country.

Subsequent to opening of alternate route i.e. Second Generation (2G) route for Ethanol production Public Sector Oil Marketing Companies (OMCs) i.e. Indian Oil Corporation Ltd (IOCL), Hindustan Petroleum Corporation Ltd (HPCL), Bharat Petroleum Corporation Ltd. (BPCL), Numaligarh Refinery Ltd. (NRL) and Mangalore Refinery and Petrochemicals Ltd. (MRPL) have planned to set up 12 number of 2G Ethanol Biorefineries in 11 States across the country. Their locations are:

IOCL — Panipat (Haryana), Gorakhpur (UP), Dahej *(Gujrat); HPCL — Bhatinda (Punjab), Badaun (UP), Supaul/Saharasa* (Bihar), W. Godavari*(AP); BPCL — Bargarh (Odisha), Bina (MP), Bhandara* (Maharashtra); NRL — Numaligarh (Assam); MRPL — Davangere (Karnataka) {* - tentative locations)

Pradhan Mantri JIVAN Yojana

To incentivize 2G Ethanol sector and support this nascent industry by creating a suitable ecosystem for setting up commercial projects and increasing Research & Development, Government of India on 28.02.2019 launched "Pradhan Mantri DIVAN (Jaiv Indhan- Vatavaran Anukool fasal awashesh Nivaran) Yojana" as a tool to create 2G Ethanol capacity in the country and attract investments in this new sector. The said scheme has been notified on 08.03.2019 in Extraordinary Gazette of India.

Gazette Notification and Press note of cabinet approval of the scheme can be accessed through following links:

<http://petroleum.nic.in/sites/default/files/JI-VAN%20YOJANA.pdf>

<http://www.pib.nic.in/Pressreleaseshare.aspx?PRID=1566712>

The scheme objective is to support 12 Commercial Scale and 10 demonstration scale Second Generation (2G) ethanol Projects with a Viability Gap Funding with a total financial outlay of Rs 1969.50 crore for the period 2018-19 to 2023-24. Out of Rs 1969.50 crore, Rs 1800 crore has been allocated for supporting 12 above mentioned Commercial projects, Rs 150 crore has been allocated for supporting 10 demonstration Projects and remaining Rs 19.50 crore will be provided to Centre for High Technology (CHT) as administrative charges.

The Scientific Advisory Committee (SAC) of Ministry of Petroleum & Natural Gas is the Nodal body for recommending the beneficiaries/ projects under the said scheme. Centre for High Technology (CHT), a technical body under the aegis of MoP&NG, is the implementation Agency for the scheme.

D. Biodiesel - Policy Initiatives

To encourage production of Biodiesel in the country, MoP&NG announced a Biodiesel Purchase Policy, in October 2005, which became effective from 1st January 2006. Under this policy OMCs are to purchase Biodiesel (B 100), meeting the fuel quality standard prescribed by BIS for blending with HSD to the extent of 5% at identified purchase centres across the country.

2. In its meeting held on 16th January 2015, the Cabinet, decided to allow the direct sale of Biodiesel (B 100) by private Biodiesel manufacturers, their authorized dealers and Joint Ventures (JVs) of Oil Marketing Companies (OMCs) authorized by MoP&NG to all consumers.

3. On 10th August 2015, the Government allowed direct sale of Biodiesel (B100) to Bulk Consumers such as Railways, State Road Transport Corporations, etc. by amending the Motor Spirit and High-Speed Diesel (Regulation of Supply, Distribution and Prevention of Malpractices) Order, 2005. Oil Marketing Companies also started selling blended Biodiesel on 10.08.2015 from selected Retail Outlets (petroleum pumps) in the country.

4. Later, MoP&NG issued Gazette notification No. GSR 728 (E) on 29th June 2017 for amending the Motor Spirit and High Speed Diesel (Regulation of Supply, Distribution and Prevention of Malpractices) Order, 2005 which states that the Central Government may permit the direct sale of biodiesel (B100) for blending with high speed diesel to all consumers, subject to the conditions given in the notification.

5. IS 15607 Biodiesel (B100) — Fatty Acid Methyl Esters (Fame) — Specification has been amended in March 2016 with Scope as follows: "This standard prescribes the requirements and methods of sampling and tests for biodiesel (B100) — fatty acid methyl esters (FAME) for use in compression ignition engines designed for using as stand-alone fuel and as a blend stock for diesel fuel. B 100 stand-alone can also be used for heating applications and industrial engines."

6. BIS has amended IS: 1460 (Automotive Diesel Fuel Specification) in December 2017 as follows: "Bio-diesel (Fatty Acid Methyl Ester, FAME) conforming to IS 15607 may be blended up to 7 percent (v/v) with automotive diesel fuel."

7. Details of Biodiesel procured by the PSU Oil Marketing Companies for blending with high speed diesel are as follows:

Year	Biodiesel Procured by OMCs for blending (Cr Litre)
2015-16	1.19
2016-17	3.59
2017-18	4.36
2018-19	8.21

8. MoP86NG has issued the National Policy on Biofuel -2018 in which an indicative target of 5 % blending of biodiesel in diesel is proposed by 2030.

9. It has been stated in the Policy that in house produced Used/ Waste Cooking Oil (UCO/WCO) offers potential to be a source of biodiesel production. However, the same is marred by diversion of UCO to edible stream through various small eateries/vendors 86 traders and focus will be laid upon laying down the stringent norms for avoiding the entry of UCO in food stream and developing a suitable collection mechanism to augment its supply for biodiesel production.

10. "Guidelines for sale of Biodiesel for blending with high speed diesel for transportation purposes-2019" have been published in the extraordinary gazette of India on 1.5.2019

E. Compressed Bio Gas (CBG)

Bio-gas is produced through a process of anaerobic decomposition from waste / biomass sources like agriculture residue, cattle dung, sugarcane press mud, municipal solid waste, sewage treatment plant waste, etc. After purification, it is compressed and called Compressed Bio-Gas (CBG) which has more than 90 % methane content. Further, Compressed Bio-Gas has properties similar to the commercially available natural gas and can be used as an alternative, renewable automotive fuel.

Benefits of Compressed Bio Gas (CBG):

There are multiple benefits from converting agricultural residue, cattle dung and municipal solid waste into CBG on a commercial scale:

- Responsible waste management, reduction in carbon emissions and pollution
- Additional revenue source for farmers
- Boost to entrepreneurship, rural economy and employment
- Support to national commitments in achieving climate change goals Reduction in import of natural gas and crude oil
- Buffer against crude oil/gas price fluctuations

Sustainable Alternative Towards Affordable Transportation (SATAT):

Government is promoting the use of Compressed Bio Gas (CBG) also known as BioCNG. In a significant push that has the potential to boost availability of more affordable transport

fuels, better use of agricultural residue, cattle dung and municipal solid waste as well as to provide an additional revenue source to farmers, Shri Dharmendra Pradhan, Union Minister of Petroleum and Natural Gas, Skill Development & Entrepreneurship, has kicked-off an innovative initiative titled SATAT i.e. Sustainable Alternative Towards Affordable Transportation initiative on 01.10.2018. Under this initiative, Oil PSUs IOCL, HPCL, BPCL, GAIL and IGL have invited Expression of interest (Eoi) from potential entrepreneurs to procure Compressed Bio Gas (CBG).

Compressed Bio Gas plants are proposed to be set up mainly through independent entrepreneurs. CBG produced at these plants will be transported through cascades or through pipelines to the fuel station networks of Oil PSUs for marketing as a green transport fuel alternative. SATAT initiative envisages establishing 5000 CBG plants across the country with an estimated production of 15 MMT CBG per annum by 2022-23.

Oil PSUs have offered Rs 46/- per kg basic price for procurement of CBG meeting IS 16987:2016 standard compressed at 250 bar and delivered at their Retail Outlets in cascades. This basic price is fixed for a period of three years from 01.10.2018. The entrepreneurs would be able to separately market the other by-products from these plants, including bio-manure, carbon-dioxide, etc., to enhance returns on investment.