

Ethanol Growth Story

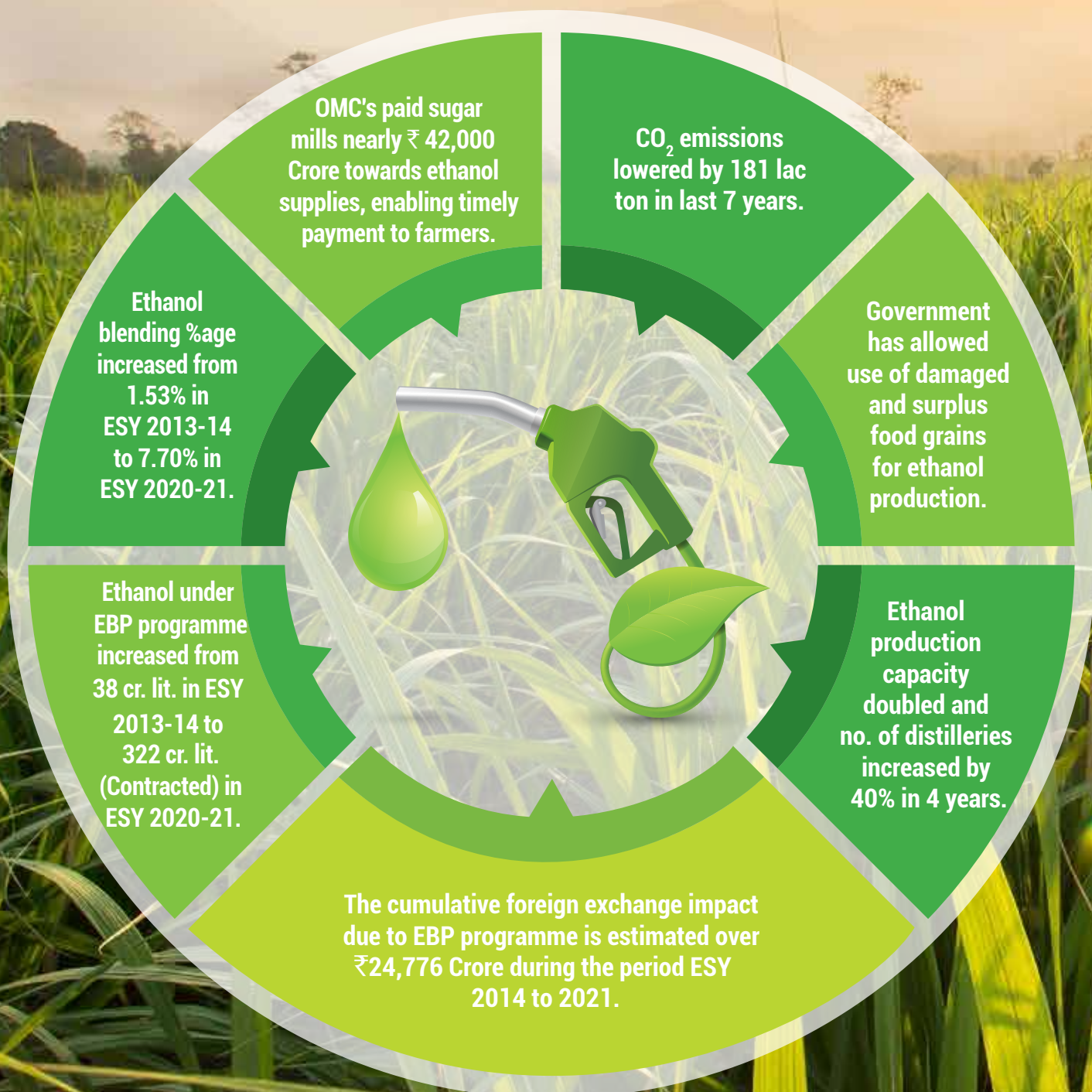
Fulfilling Atmanirbhar
Bharat Dream



Ministry of Petroleum and Natural Gas

The journey from Farm to Fuel

(As on May 2021)








Friends,

Ethanol was rarely discussed in the country about 7-8 years ago. No one even talked about it. And even if it was, it was in a casual manner. But now ethanol has become one of the major priorities of 21st century India. The focus on ethanol is having a better impact on the environment as well as on the lives of farmers. We have resolved to meet the target of 20 percent ethanol blending in petrol by 2025. When we first thought about the target, it was decided to achieve the target by 2030. But in view of the successes in the recent past, public support, awareness among people and the realization of its importance by everybody, we have now decided to meet the target by 2025, five years before the original target.



Shri Narendra Modi
Honourable Prime Minister

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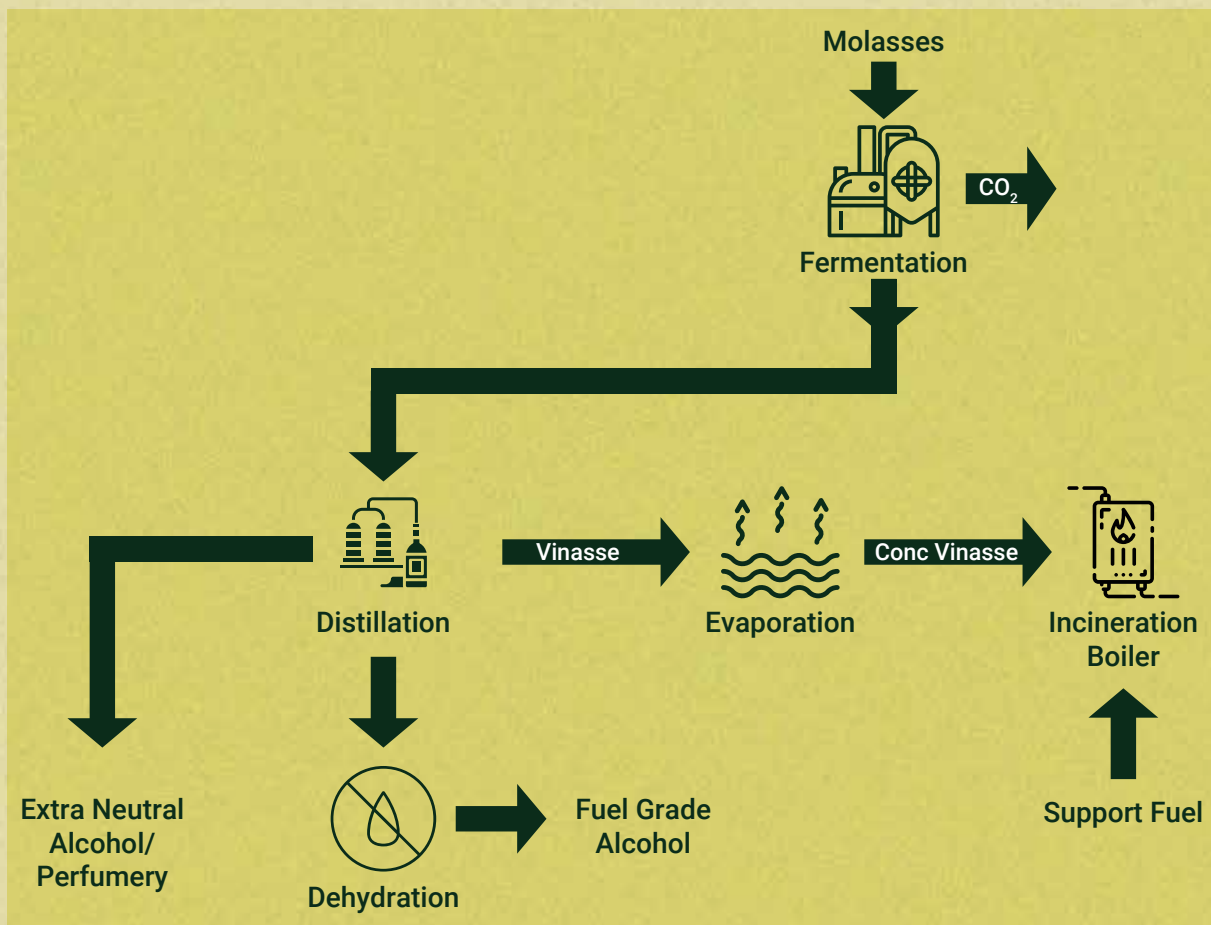
India's Rising Energy Concerns

India is the world's third largest energy consuming nation and a significant part of India's energy requirement is met through oil which continues to rely on imports largely. India's share in global energy consumption is set to double by 2050. A rising energy demand and high reliance on import poses significant energy security challenges. It also leads to massive foreign currency outflow. Further, excessive use of fossil fuels leads to higher carbon emissions and associated health concerns.

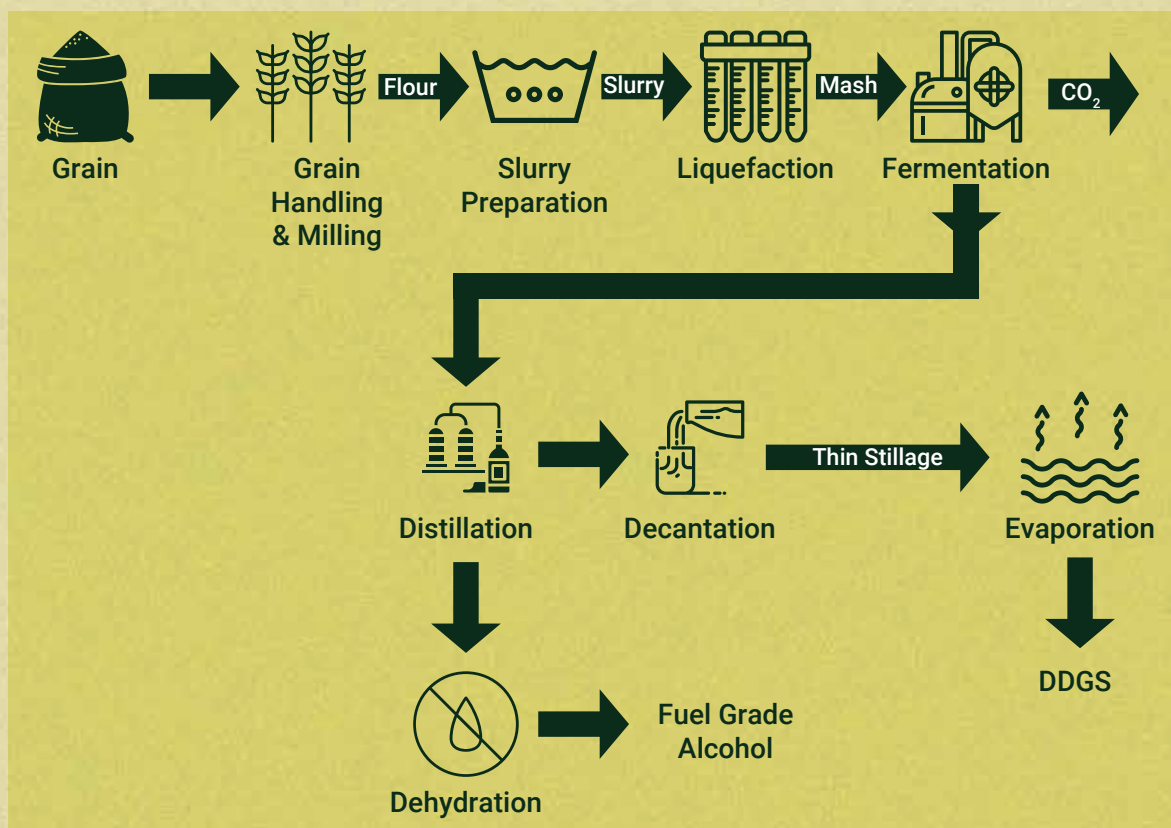
Domestically produced ethanol is a potential opportunity to reduce reliance on oil imports by blending it with conventional fossil fuels for consumption.

India started blending ethanol in petrol on a pilot basis in 2001. The ethanol was produced as a by-product during the process of making sugar from sugarcane. However, despite potential, no significant progress was made under the ethanol programme and the production of ethanol remained stagnated until recently when transformative reforms were carried out. The results are set to help not only the economy but transform farmers' income and recharge the rural economy.

Molasses Plant Process Flow



Grain Plant Process Flow



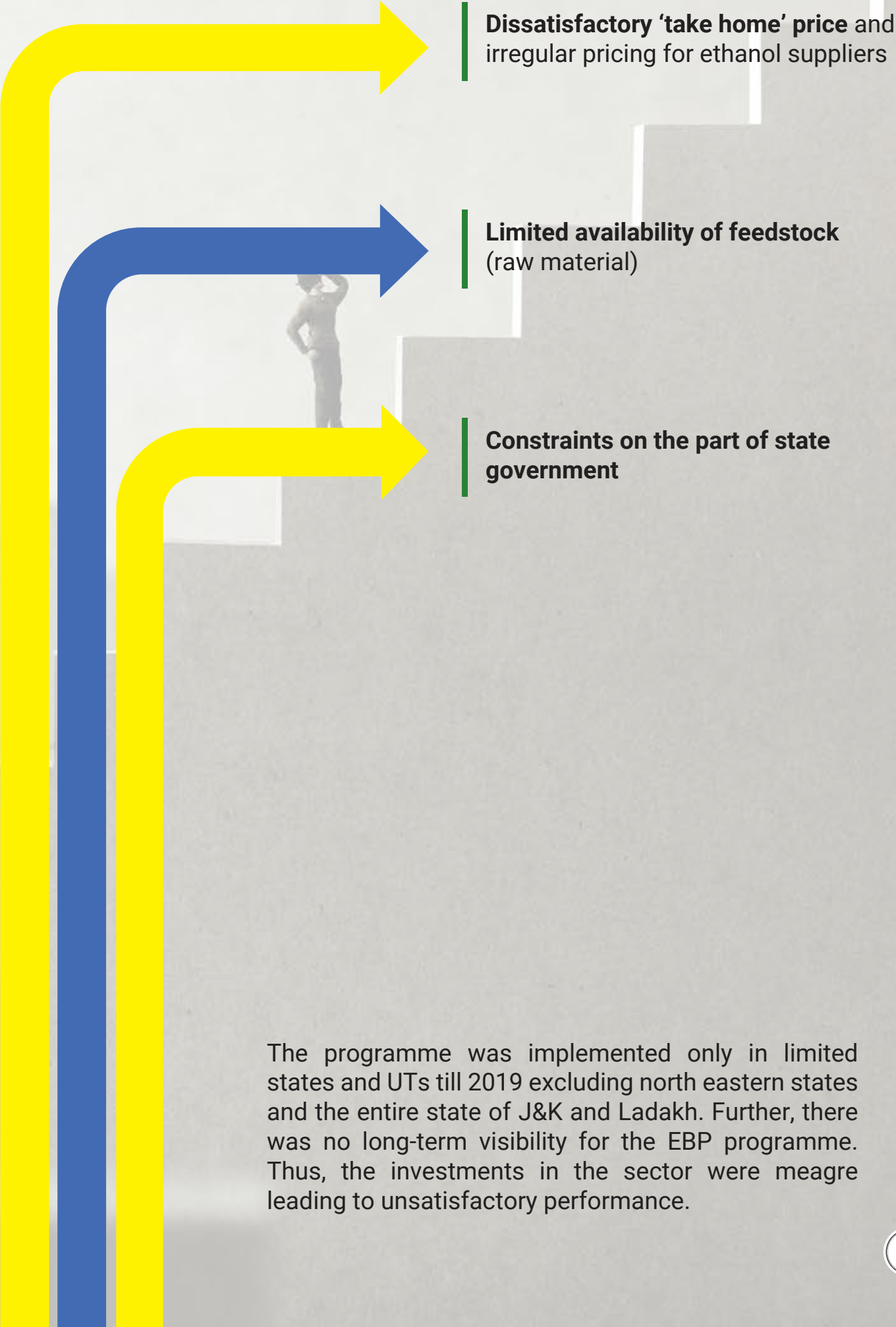
Ethanol Blended Petrol (EBP) Programme - Challenges

EBP was launched in January 2003. In 2006, the Ministry of Petroleum and Natural Gas directed the Public Sector Oil Marketing Companies (OMCs) to sell 5% EBP in 20 states and 4 UTs. Even though the programme started early it faced multiple inherent challenges leading to slow adoption and growth. But the programme did not meet success.

Non inclusion of conversion of grain to Ethanol, restricting grain-based distilleries to participate in EBP

High taxation of ethanol, rate of 18% applicable

Procurement challenges due to infrastructure and multiple tenders in a given supply year



Dissatisfactory 'take home' price and irregular pricing for ethanol suppliers

Limited availability of feedstock (raw material)

Constraints on the part of state government

The programme was implemented only in limited states and UTs till 2019 excluding north eastern states and the entire state of J&K and Ladakh. Further, there was no long-term visibility for the EBP programme. Thus, the investments in the sector were meagre leading to unsatisfactory performance.

Ethanol Blended Petrol (EBP) Programme - Stimulus

The Government under the leadership of Hon'ble Prime Minister Shri. Narendra Modi, in line with its Energy security, climate change and rural economy enhancement goals initiated multipronged reforms to boost Ethanol usage in the country

**Dec
2014**

Re-introduced administered price mechanism for ethanol to be procured under the EBP Programme.

Opened alternative route for ethanol production (2nd Generation including Petrochemicals), directed Oil PSEs to set up bio-refineries

**Dec
2014**

**ESY
2014-15**

Tendering processes simplified– Multiple EOI, transportation slabs and rates.

IDR Act Amendment on 14th May 2016 to **clarify on the roles of Central and State Government for continuous supply of ethanol** to be blended with petrol under EBP Programme

**May
2016**

**ESY
2016-17**

Regular Interaction with states and all other stake holders to address issues regarding the EBP Programme - This is an ongoing process.

Notified forward looking and updated National Policy on Biofuels – 2018 involving all stakeholders

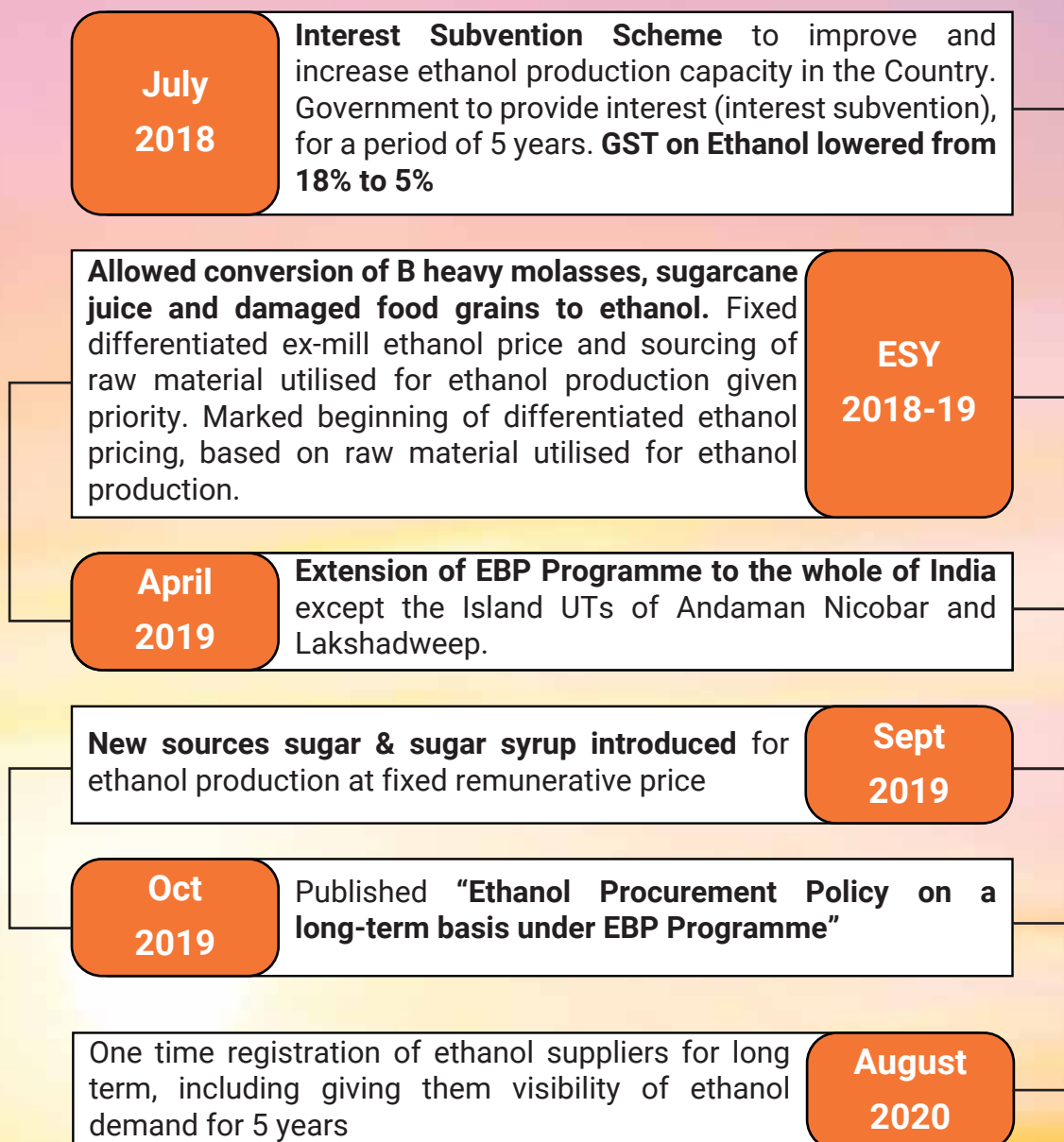
**June
2018**



Biofuels can generate additional income for farmers and boost rural employment



Shri Narendra Modi
Honourable Prime Minister



"The ethanol production capacity in the country should be ramped up so as to achieve the ethanol blending target of 20% by 2025 and the capacity should be in place by 2023-24"

- Shri Dharmendra Pradhan
Minister for Petroleum & Natural Gas and Steel

**Sept.
2020**

OMCs started to provide Off-take guarantee letter and consent to sign tripartite agreement with ethanol suppliers and bankers to support the ethanol capacity expansion projects.

**Oct
2020**

Further ease of tender conditions by OMCs like one time document submission, quarterly bank guarantees, multiple transportation rate slabs and transportation rates being linked to Retail Selling Price (RSP) of diesel, reduction in security deposit and applicable penalty on non-supplied quantity etc. Approval of National Biofuel Coordination Committee (NBCC) to utilise surplus stock of rice lying with Food Corporation of India (FCI) to be released to the distillers for ethanol production.

**Nov
2020**

Approval of NBCC to utilise maize for ethanol production. Interest subvention scheme for enhancement and augmentation of ethanol production capacity extended to grain based distilleries.

**December
2020**

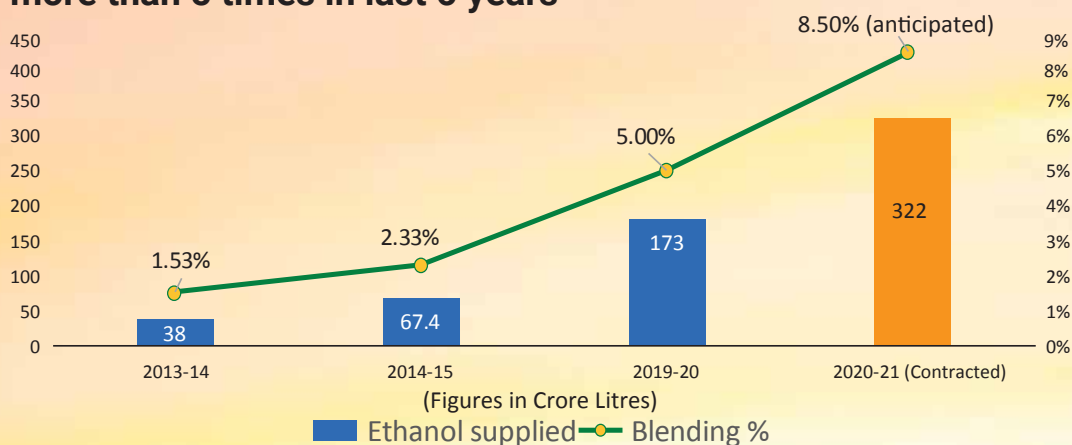
OMCs have increased their ethanol storage capacity from 5.39 Crore litres in November 2017 to 16.9 Crore litres till December 2020, thereby providing ethanol storage cover of over 20 days at their depots. Amount spent by OMCs is approximately ₹200 Crore – This is an ongoing process.

“Government’s decision to expand interest subvention scheme for enhancement of ethanol distillation capacity will transform our annadaatas into urjadaatas”

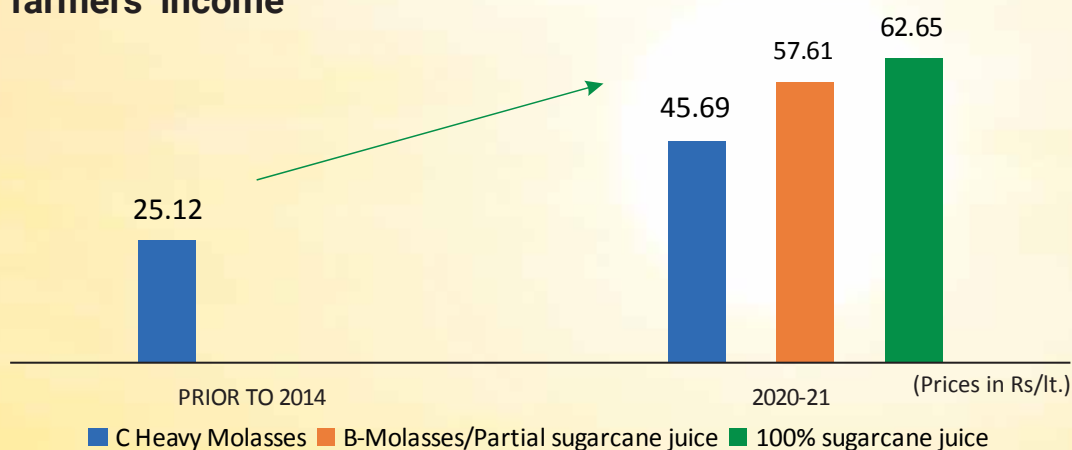
- Shri Dharmendra Pradhan
Minister for Petroleum & Natural Gas and Steel

Effects of Landmark reforms

Ethanol supplies and blending % have increased more than 5 times in last 6 years

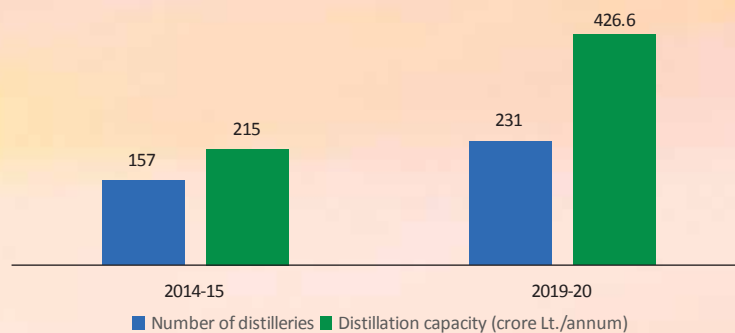


Remunerative prices of ethanol to suppliers have more than doubled in last 6 years-a major boost to farmers' income



Fixed price of ethanol from B heavy molasses and sugarcane juice for the first time during ESY 2018-19, heralding a new era of differentiated ethanol pricing, based on raw material utilized for ethanol production

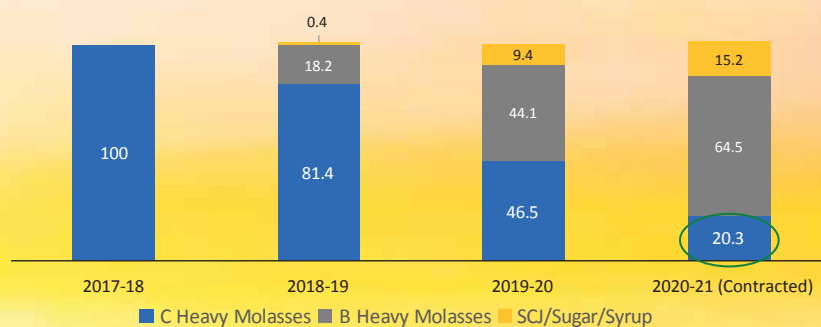
Ethanol distillation capacities almost doubled, and number of distilleries increased by 40% in 5 years.



Ethanol Storage capacity has increased 3 times from 2017 to 2020



Ethanol %age contribution from sugarcane based raw materials



The decision to allow diversion of B heavy molasses, sugarcane juice / sugar / sugar syrup for ethanol production in 2018-19 enabled reliable supply of feedstock and the price stability of sugar.

Protecting economic interest of farmers

Under EBP, OMCs have paid sugar mills nearly ₹42,000 Crore for ethanol supplies in the last seven years, which has helped mills to clear farmers' dues. Additionally, decision is taken to buy damaged and surplus food grains for ethanol production, ensuring price value for surplus grain stock as well as accommodating the fresh season crop to meet EBP target.

Reduced Import Bill and increasing self reliance

The cumulative foreign exchange impact due to EBP Programme is estimated over ₹24,776 Crore during the period ESY 2014 to 2021 (up to May 2021).

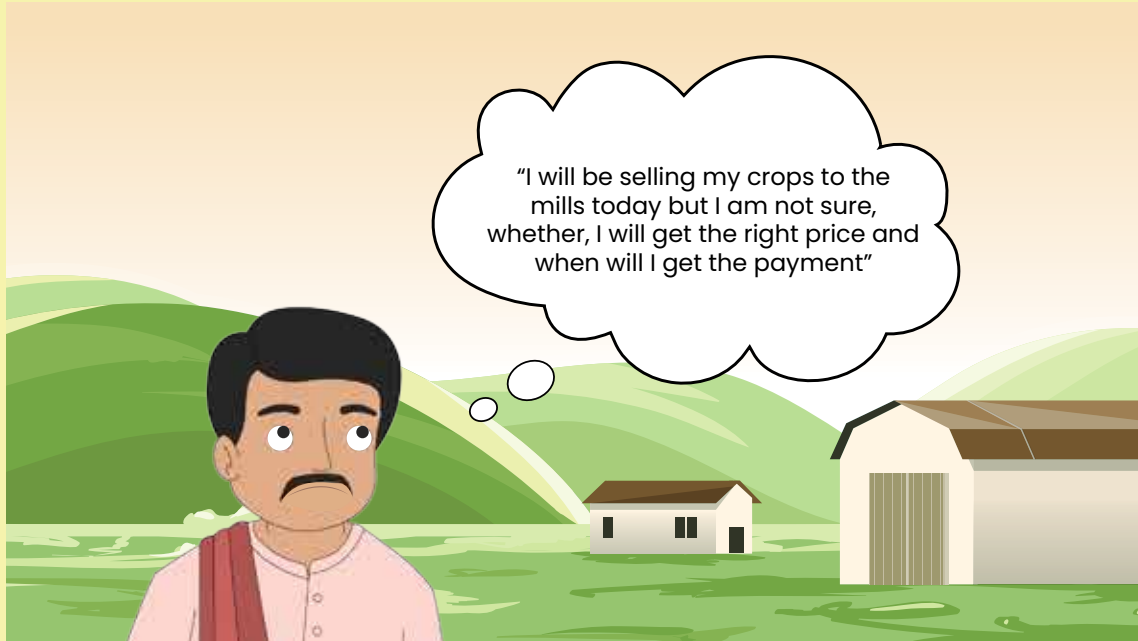
Lowered CO₂ emissions, cleaner environment

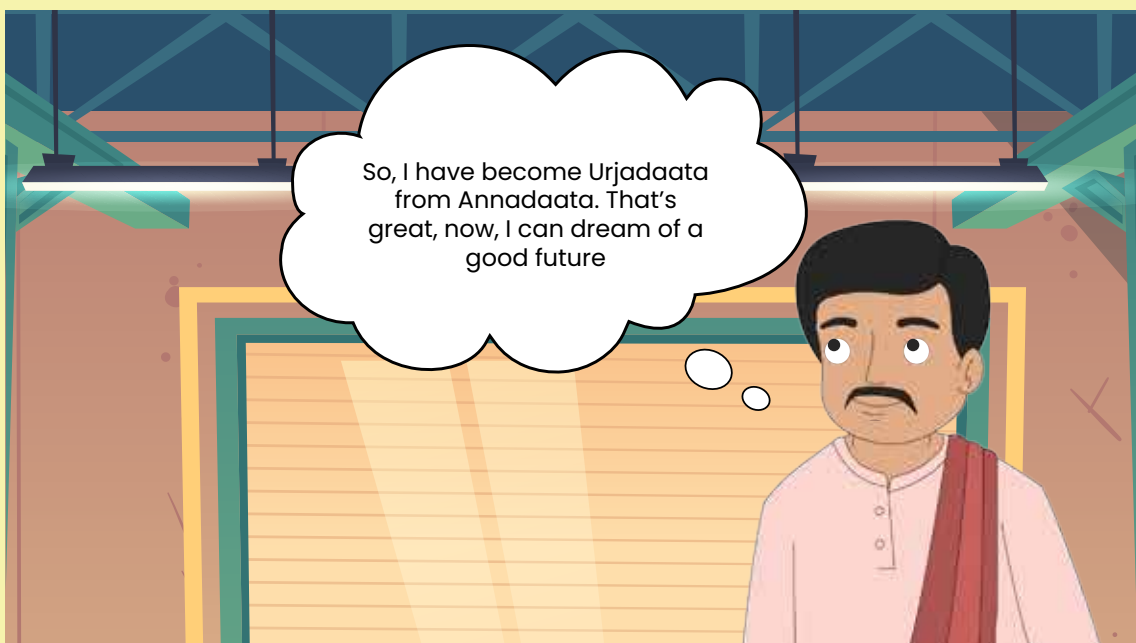
One Crore litre of ethanol blended petrol can save around 20,000 tons of carbon dioxide (CO₂) emission. Greenhouse gas emissions due to the EBP Programme lowered by 181 lac tons from 2014 to 2021 (up to May 2021).

Encouraging Ease of Doing Business through Technology

The IDR Act implementation enabled State Governments to avoid complicated documentation procedures and conduct pro-business activities like e-approvals, online permits, electronic locking, GPS tracing of vehicles carrying ethanol etc. thereby shortening the overall process and reducing time to help the business.

A Farmer's Journey from an 'Annadaata' to 'Urjadaata'





The Future Landscape of Opportunities

Ethanol Industry is expected to grow by 500%

By 2025, at 20% blending level, ethanol demand will increase to 1016 Crore litres. Therefore, the **worth of the ethanol industry will jump by over 500%** from around ₹9,000 Crore to over ₹50,000 Crore

Ethanol distillation capacity to grow by more than three times to 1,500 Crore litre annually

Financial assistance scheme introduced by DFPD during 2018-2021 to increase ethanol production capacity.

- 895 proposals with loan amount of ₹70,419 Crore.
- Estimated 165 LMT of surplus grain to be utilized annually from 2025 to produce ethanol which would result in 30,000 crore payment to farmers.
- Launch of new vehicles compatible to run on E20 fuel from 2023 and flex fuel vehicles from 2024.

This will attract new investment and create employment opportunities.



An Integrated Bio-Refinery Model

The concept of an integrated Bio-Refinery model or Bio-park is being envisioned which will encompass integration of the following facilities:

- 1. 2G Ethanol plant:** Second Generation or 2G ethanol plant can convert agricultural residues like rice straw, wheat straw, energy crops etc. to ethanol. With around 160MMT of surplus agricultural residues generated in India annually, 2G ethanol plants offer significant opportunity in India. A 100 kl per day plant can utilize 2 lakh tonne per annum of agricultural residue to generate around 3 crore litres of ethanol per annum.
- 2. Grain based 1G Ethanol Plant:** Grain based First Generation or 1G Ethanol Plant can convert the starch present in grains like rice, corn etc. to ethanol. Some by-products like CO_2 & Dried Distillers Grains with Solubles (DDGS) are also generated which can generate additional revenue. A 100 kl per day 1G plant is estimated to incur capital expenditure of around ₹170 to 200 crores with a land requirement of approximately 20 acres.
- 3. CBG Plant:** Compressed Bio Gas (CBG) or Bio-CNG can be produced from agricultural residue, Municipal Solid Waste (MSW), cow dung etc. CBG can easily replace CNG. The bio-manure produced in the plant is an additional source of revenue. The estimated capital expenditure for a 15 tonne per day CBG plant is around Rs.60-100 crores, depending on the feedstock and the land requirement of approx. 15 acres.
- 4. Production of Chemicals:** Production of bio-chemicals in the Bio-refinery will improve its economics significantly. Some technologies for production of bio-chemicals are ready for commercialization while many are still in development stage.

5. Cogeneration Plant: Setting up of a Cogen plant by using Lignin (generated in 2G plant) & Biogas (CBG plant) can ensure continuous & reliable power supply to the Bio-Refinery.

Some of the advantages of Integration of various plants in a Bio-Refinery are:

- Improved economics with reduced cost of feedstock and sustenance of biomass supply-chain on long term basis. With the setting up of 1G, 2G and CBG plants in the same premises, there can be a common source/agreement for supply of grains (for 1G Ethanol Plant) and supply of waste straw/agricultural residue generated (feedstock for 2G/CBG Plants).
- Optimization of common resources like Utilities (Cooling tower, Boiler, ETP etc.) & Offsite facilities (tankages, loading Gantry, firefighting system etc.) can reduce capital expenditure.
- Integration of 1G ethanol and CBG plants with established & proven technologies can bring in economic viability & sustainability of the Bio-Refinery since 2G ethanol technologies are still in the maturing stage.
- Optimization of Equipment Spares & Manpower required for Operation / Maintenance of the plants.



"There is growing acceptance of ethanol across India. Based on people's response, we have decided to advance the target of 20 per cent blending of ethanol in petrol to 2025 from the earlier target of 2030."

- Shri Narendra Modi
Prime Minister of India
(CERAWEEK 2021)

Media Coverage



HT Hindustan Times

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ANALYSIS

How biofuels can double farm incomes

A total of Rs 1 lakh crore worth of biofuel will be purchased every year by oil marketing firms in the future for blending. This money will be ploughed back to the rural economy

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Govt For Pvt Sector Participation In Doubling Farmers' Income

The minister assured for minimum support price (MSP) in maize and said that it is a cereal crop of versatile use and must be promoted as intercrop





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ETHANOL

Government policy targets of blending 20% ethanol in petrol by 2030

Several supply and demand side interventions have been initiated by the Government including enhancing scope of raw material for ethanol production and fixing remunerative prices of ethanol from different feedstocks being utilized for ethanol production.

THE TIMES OF INDIA

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Ethanol policy gets a thumbs up from industry bodies, farmers

TNN / Mar 18, 2021, 04:00 IST

TUE, JUN 01, 2021 | UPDATED 10:51 IST

ANI

South Asia's Leading Multimedia News Agency

If ethanol becomes Rs 2 lakh crore economy, Rs 1 lakh crore will go into pockets of farmers: Gadkari

ANI | Updated: Dec 15, 2020 08:23 IST

Abbreviation	Full Form
%	Percentage
DFPD	Department of Food and Public Distribution
EBP Programme	Ethanol Blended Petrol Programme
EOI	Expression of Interest
ESY	Ethanol Supply Year (period from December of a year to November of the following year)
FCI	Food Corporation of India
GST	Goods and Services Tax
IDR Act	Industries (Development and Regulation) Act
NBCC	National Biofuel Coordination Committee
NPB-2018	National Policy on Biofuels – 2018
OMCs	Oil Marketing Companies
pa	Per annum
PSEs	Public Sector Enterprises
UTs	Union Territories



Ministry of Petroleum and Natural Gas