



ETHANOL IN INDIA: STATUS, PLAN AND ROADMAP

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Outline of presentation

- Objectives of India's ethanol policy
- Capacity and quantity requirement by 2025
- Supply side comfort
- Demand side planning and challenges

Ethanol policy of India based on 5 pillars

INCOME OF FARMERS:

- Timely payment of remunerative price to cane, corn & paddy farmers.
- Addresses surplus grain problem

DOMESTIC SUGAR INDUSTRY

- Diversion of 6 million tons of surplus sugar into ethanol
- Improves Liquidity & Checks fall in sugar price.
- Product Diversification

IMPROVES AIR QUALITY

- Burns fuel better**
- Reduces pollution**

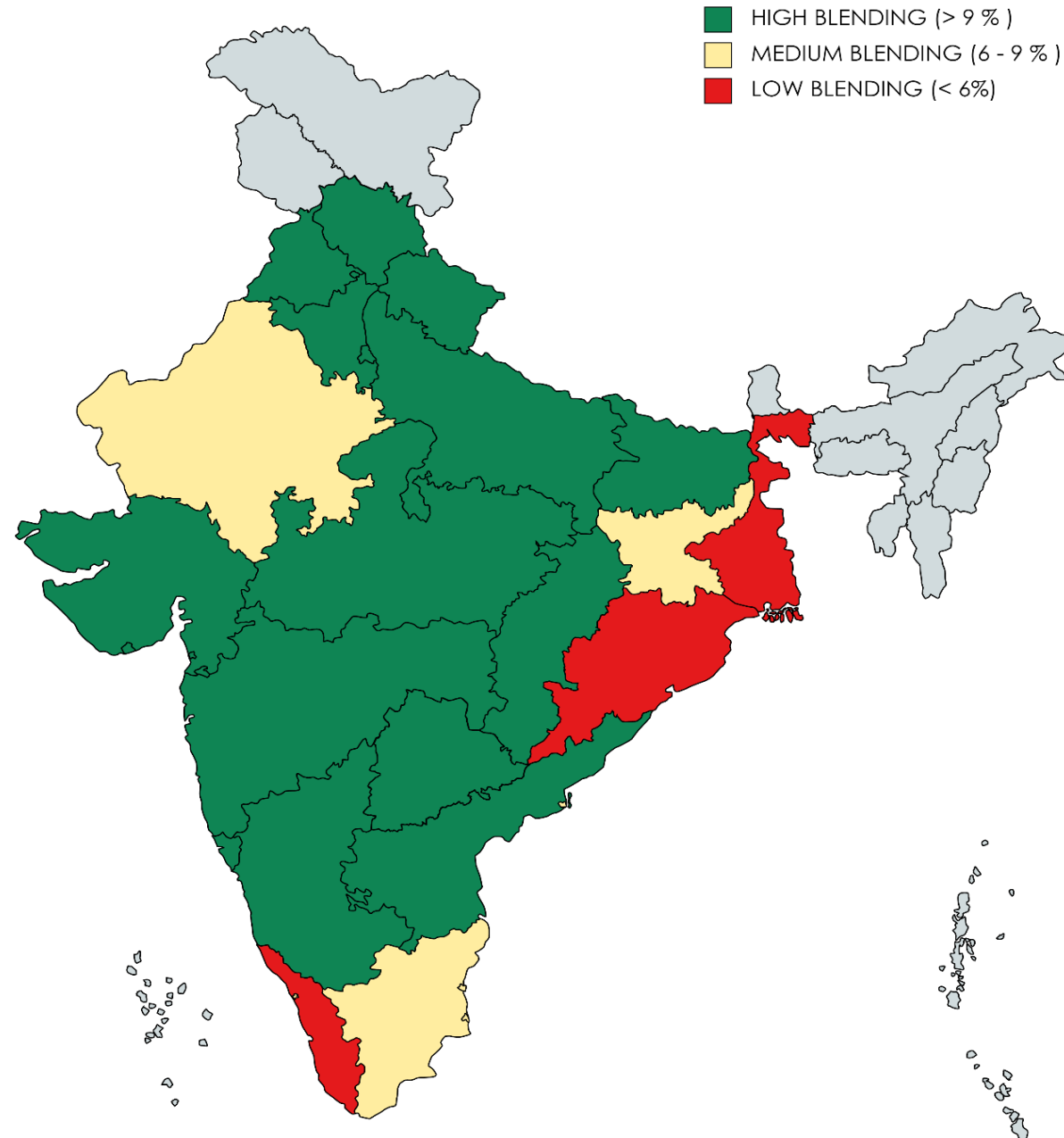
NEW INVESTMENTS & JOB CREATION

- New industries in rural areas
 - Job creation in villages
 - Less migration

“ATMANIRBHAR” BHARAT: REDUCES OIL IMPORT BILL

- Replaces Petrol with domestically produced ethanol
- Saves foreign exchange

State-wise blending levels currently



Required capacity for 20% blending by 2025

Quantity requirement vis-à-vis Ethanol production capacities	Requirement of ethanol	Installed capacity Requirement	Current installed capacity (in 2021)	(In billion litres)
Total	10.50	12.00	6.00	
From sugarcane and molasses	6 to 6.50	6.50 to 7	5.25	
From grain and corn	4 to 4.50	5 to 5.50	0.75	

- With several incentives (by Government of India, and now several States), huge interest being shown by Investors to set up ethanol production capacities
- Around 800 projects have registered with the Government
- Some sugar companies also setting up dual feed ethanol plants, where corn and grains can be used in addition to sugarcane and molasses
- **Therefore, by 2025, enough capacities expected to produce & supply 10 billion litres of ethanol**

Adequacy of feedstock for the 20% blending by 2025

- **6 to 6.5 billion litres of ethanol supplies from sugarcane and molasses:**
 - Current supplies of 3 billion litres includes diversion of 2 million tons of sugar to ethanol
 - Diversion of another 5 million tons of the surplus sugar produced each year will give another around 3 billion litres
 - One can expect better cane yields and improved sugar recoveries in next 4 years
 - Enough feedstock to get around 6 to 6.5 billion litres from molasses & sugarcane by 2025
- **4 to 4.5 billion litres corn and grains**
 - Will require around 16-17 million tons from corn and grains
 - Current yield of 3 tons per hectare gives around 28 million tons of corn (world average = 5 tons)
 - Increasing yields to the world average, India will produce another 18.5 million tons of corn
 - Government agencies overburdened with much more grains than above requirement

The demand side

- Vehicles to take 20% ethanol blended petrol/gasoline (E-20 fuel)
- Flex fuel vehicles
- Existing vehicles designed to take E12 fuel
- Storage capacity at depots of Oil Marketing Companies (OMCs)
- Transportation ease of the ethanol across the country
- Infrastructure at the retail level, including dispensing facilities

E20 vehicles and production of FFVs

- Government of India has announced that from April 2023
 - All new vehicles will be E20 compliant
- There is also news that Government will order for FFV production soon
 - If that is so, a significant part of the fleet of vehicles will run on 85% ethanol
- Plus, Government has fixed standards for E12 and E15
 - Which we expect to be rolled out over next 2-3 years
- **Hence, by 2025, India will have a fleet of vehicles**
 - **E12-15 compliant, E20 compliant and FFVs**

How India can replace 20% petrol with ethanol by 2025

Considering that by 2025:

1. All vehicles (2 wheelers and 4 wheelers) are E10 compliant or can even take E12 or E15
2. If every year, new vehicles replace 8% of total vehicular population
 - Then by 2025-26, around 25% of vehicles will be E20 compliant
3. If FFVs contribute for 15-20% of fleet by 2025-26, which take 4 times more ethanol than E20 vehicles

**There is reason to believe India should be able to achieve the 80% - 20%
petrol – ethanol consumption in the country**

Tankage capacities with the Oil Companies

- As per Niti Aayog, (the think-tank for Government of India):
 - To handle 10 billion litres of ethanol annually, by 2025,
 - **The tankage capacity with OMCs should be 450 million litres**
- OMCs are continuously increasing its tankage/storage capacities
 - From 54 million litres in Nov. 2017, increased to 170 million litres in Dec. 2020
 - **Capacity increase to 270 million litres has already been planned (and is 'work in progress')**

Therefore, industry is hopeful that by 2025, the increase to 450 million litres will be achieved

Transportation challenges and high costs of transportation

- 80% of sugarcane and molasses based ethanol produced is from 3 States only
 - Hence the need to transport ethanol over long distances
- Government's encouragement to grain/corn based ethanol
 - Will help produce ethanol in non-sugarcane based States/regions
 - That in turn reduces need to move ethanol over longer distances
- Decision soon to increase blend levels to E12 and E15 till India reaches E20 by 2025
 - In addition to increasing demand, will reduce need to move ethanol over long distances
- Railways will soon need to step in
 - As also how pipelines can be used to move ethanol

Infrastructure at the retail level

- By 2025, it is expected that there will be petrol/gas stations with:
 - E10 as the base fuel (pure petrol may no longer be sold)
 - E20 dispenser for the E20 complaint vehicles
 - In most of the States, dispensers to give out e12 and E15 fuel (with mixers at the retail pumps)
 - Pure ethanol for the FFVs
- Policy from the Government and OMCs to have differential prices for different blend levels
 - To account for the efficiency levels for higher blends
 - Give incentives to consumers for the use of FFVs and E20 vehicles

Concluding

- The production and supply side of ethanol seems to be moving well
- On demand and consumption side, following challenges need to be addressed
 - Production of Flex Fuel Vehicles
 - Tankage capacity of depots of OMCs
- A mid-way target of E12 and E15 by 2023 and 2024
- Dual dispensers at retail petrol pumps/ outlets from 2023
 - E10 and E20 fuel, incl. E100 dispensers as also mixers to give out E12 and E15 from 2022
 - Differential pricing of different fuel blends for difference in efficiencies
- Incentives for E20 vehicles and FFVs
- Educating consumers on benefits of ethanol, E10 and E20 fuel

THANK YOU