

*Main Streaming Bio Energy in India –
Challenges & opportunities
Towards creating a Bio Energy Economy*

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What drives Bio fuels in India

- The growth of bio fuels/energy globally is spurred by **Energy Security and Environmental reasons**
- India also wants to use it as a tool to bring much needed **stability into agriculture and rural development**
- Indian approach is solely non-food feedstock to be raised on degraded, waste and marginal lands and ensure **food and energy security**
- Bio fuel policy adopted in 2009
- National target to do **20% blending by 2017** on both bio diesel and bio ethanol.
- 5% ethanol (E5) (from Sugar Molasses) blending in Petrol is implemented in 22 States. 5 states is blending up to 10% Ethanol (E10)
- Bio diesel blending started in Aug 2015

Bio Ethanol – Where do we stand?

- We are **close to achieving 5%** Ethanol blending at Pan India by end of 2016 from 1.7% in Dec 2014

Ethanol demand supply (Figures in Billion litres)

Sugar Year (Nov-Oct)	OMC requirement	Ordered quantity	Prorated quantity (as on 01 Oct 2016)	Actual procurement
2012-13	1.03	0.32	0.32	0.154
2013-14	1.15	0.704	70.4	38.0
2014-15	1.28	0.865	0.865	0.674
2015-16	2.66 (for 10% blending)	1.36	0.80	0.94

Bio Ethanol – Challenges of supply

- India wants to go beyond 5% and 10% EBP
- **Do we have adequate supply** base for achieving 10% pan India
- Through the current molasses route we end up with **big deficit**

Parameter	Present quantity (billion litre)	Quantity by 2022 (billion litres)
MS Consumption	29.00	44.00
Ethanol for 10% blending	2.90	4.40
Ethanol available through Molasses route	1.30	1.80
Ethanol Deficit	1.60	2.60

2nd generation Ethanol is an option

- We generate nearly a **Billion tonnes of agriculture residues** every year. We **burn nearly 200-300 million tonnes of surplus** bio mass – an environment hazard and criminal waste of National resource. Another 300-500 million tonnes of MSW generated
- **2G Technology fairly well developed** – both home grown and global
- Demonstration of commercial viability will attract heavy investments into the sector. Potential to set up 300+ commercial units across the country
- Major challenge is to create a **viable and robust bio mass supply chain**
- Bio mass **aggregation, densification, processing, storage infrastructure** needs to be put in place

Initiatives - creating the 2G Eco system

- Have evaluated **multiple technologies** including **two home grown technologies**
- A Pan India **Bio Mass availability study** taken up.
- Ready to scale up production of high bio mass Sweet sorghum, Pearl millet crops (Indo US S&T forum)
- Encouraging **3 OMC's and 2 refineries under public sector to take the lead to set up 12 commercial 2G Ethanol plants and 3 in private sector** with total installed capacity of **700 million litres per annum**
- These plants expected to become operational in 2 Years
- Viability gap funding (**VGF**) to an extent of **40%**. 15% grant upfront and 25% equity as soft loan
- Extend tax incentives applicable to priority Industry
- 15-20 year off take guarantee
- Special packages for creating biomass supply chain

2G Ethanol pilot plant at Kashipur with DBT/ICT Technology



Bio Diesel blending program

- Biodiesel blending (B5) and **retailing pilot started on 10th Aug 2015 in 5 cities and 12 outlets** in the country
- Within 1 year the B5 retailing has been extended to 6 states **and 2900 retail outlets**. Will extend to 12 states and **15,000 retail outlets by August 2017**
- Indian Railways, State road transport organisations and private fleet owners encouraged to **buy B100 and do their own blending**
- Total **installed capacity in India is around 1.2 million tonnes**. Most of the feed stock is imported palm sterene and palm sludge
- After 15 years of research ready to role out a massive pan India **multi feed stock non edible oil seed production** programme involving communities

Bio Gas and other initiatives

- MSW and Food waste to compressed bio gas plants are being set up
- Bio gas as replacement to LPG, CBG as transport fuel to replace CNG, to be injected into piped natural gas across the country
- Production of Methanol/DME through methanation and gasification of MSW and Biomass
- Methanol to be blended with Gasoline and DME with Diesel and LPG
- Methanol as an energy carrier and for use as fuel in Direct Methanol fuel cell for distributed Power generation
- MSW, Biomass to Drop in fuels through IH₂ technology of Shell ready for deployment. Demo unit will be commissioned by 2nd quarter 2017.

Food Waste to compressed bio gas plant – 300 tonnes per day capacity



Thank you