

Seize the ethanol moment



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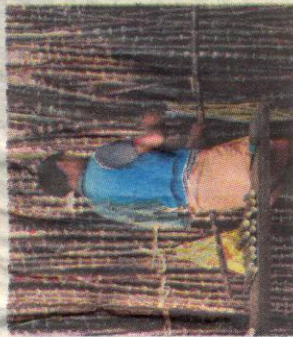
Last week's steep hike in petrol prices by oil marketing companies (OMC) – amid a falling rupee and the Indian crude basket still reigning well over \$100 a barrel – may be just the right moment for renewable fuels.

This article focuses on ethanol from sugarcane, the country's most viable renewable energy option that has unfortunately got short shrift from our policymakers.

The OMCs currently pay a fixed Rs 27 for every litre of ethanol they buy from sugar mills to blend five per cent with petrol. This is below the Rs 42.6 a litre they would be realising from petrol at the refinery gate, after the latest hike.

At these rates, the OMCs can afford to blend much more than five per cent ethanol in their petrol. Far from having to be subsidised – as was the case till recently – it is the mills that are actually now subsidising OMCs, by supplying ethanol at below the ex-refinery price of petrol.

This is, indeed, the time for the Government to implement a plan to exploit the true potential of a crop, beyond making sugar. And if it in-



volves no subsidies either, can there be a better deal?

FLEXIBLE FERMENTATION

The cane that Indian mills crush normally has a total fermentable sugars (TFS) content of around 12 per cent. Much of it – sucrose plus reducing sugars like glucose and fructose – goes for crystallising into sugar. It is only the residual TFS in the juice from which sugar cannot be economically recovered – what is called the 'C' molasses stream – that is used to make alcohol, including fuel-grade ethanol.

An average mill produces 95 kg of sugar and 45 kg of 'C' molasses from a tonne of cane, at respective recoveries of 9.5 and 4.5 per cent. 'C' molasses further contains 40 per cent TFS, with 100 kg of TFS giving 60 litres of ethanol. The conventional process, thus, yields some 95 kg of sugar and 10.8 litres of ethanol.

The ethanol yields can be raised, if mills are allowed to do more with

Route	Sugar (kg)	Ethanol (litres)	Revenue (Rs)*	Ethanol** Price (Rs)
'C' Molasses (Normal Route)	95	10.80	3141.60	2700
'B' Molasses	83	19.50	3016.50	3342
'A' Molasses	60	3705	2800.35	3621
100 per cent Diverted Juice	0	72.00	1944.00	4363

*Assuming sugar at Rs 30/kg and ethanol at Rs 27/litre. Mills also realise roughly Rs 250 from selling 60-70 units of surplus power for every tonne of cane at Rs 4/unit.
**Equivalent price for grossing Rs 3141.60 revenue through normal 'C' molasses route.

the juice that they extract from cane. There is no need for the cane juice to be crystallised right till the point where only the final 'C' molasses remain. The molasses can, instead, be diverted even at the earlier 'B' and 'A' stages of sugar crystal formation. In the event, less sugar, but more ethanol, gets produced.

The accompanying table gives four different scenarios – the existing route of making ethanol from only 'C' molasses, doing it from the earlier 'B' and 'A' stages, and the extreme case where the entire 12 per cent TFS is fermented into alcohol. These, in turn, correspond to different sugar-ethanol output combinations. But granting mills the flexibility to make alcohol from other than just 'C' molasses is not enough. At Rs 27-a-litre that the OMCs are offering, it is unviable to produce ethanol from even 'B' or 'A' molasses, leave alone the 100 per cent cane juice diversion route.

For that, ethanol has to be priced

First, it must double the mandatory blending ratio from five per cent. This can be done straightforwardly, as there is no evidence of 10 per cent ethanol-blended petrol causing any reduction in vehicle mileage. On the contrary, ethanol contains oxygen and that helps the petrol to burn more completely, bringing down carbon monoxide emissions from the tailpipe.

Two, there should be an automatic formula linking ethanol and petrol prices, which must be enforced on the OMCs. Ethanol has about 65 per cent of the calorific value of petrol, though at 10 per cent blending levels, this is more than offset through higher combustion efficiency. So, up to 10 per cent blending, the price linkage could be made one-on-one.

Three, mills may be permitted to make alcohol from 'A' and 'B' molasses or even directly from cane juice. Apart from increasing ethanol production, it would ensure adequate supplies for potable liquor and alcohol-based chemical units.

But what would happen to sugar if more cane is diverted for alcohol?

The answer is simple. Less sugar means higher prices that will induce mills to allocate more juice for crystallisation than for fermentation. That would restore 'normalcy', while also guaranteeing the viability of mills and cane growers – without which we wouldn't get our sugar in the first place.

It is probably better to support them than the rich oil monarchies!

FIX THE PRICING

But that again cannot happen unless ethanol prices are linked to petrol, as is done in Brazil. There, ethanol is used for either 25 per cent blending with petrol or as 100 per cent hydrocarbon spirit to power flexible-fuel vehicles. Here, not only has the Government failed to properly implement five per cent blending, but sugar mills are being made to subsidise OMCs for their ethanol purchases!

What should the Government do, now that a weak rupee and continuing volatility in global crude prices reinforces the case for renewable fuels? Well, three things.