

# Towards a clean energy economy: achieving a biofuel mandate for Queensland

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I attended the public forum in Dalby on June 11<sup>th</sup> and have some comments to make on the subject of a biofuel mandate. I work as an agricultural consultant in Dalby, but for a year in 2006, held the position of Commodities Manager at the Dalby Biorefinery, where I was involved in the sale of ethanol and byproduct and the purchase of sorghum.

### **Farmer versus feedlot**

Much of the discussion at the Dalby meeting was irrelevant. Farmers expect that ethanol production from sorghum will boost their price, and the feedlots fear they will consequently pay more.

At least four years in five, sorghum prices are determined by export parity and there is no effect of local demand. Even in a drought year, like 2014-15, the price is being set by exporters and farmers in Central Queensland are receiving the same, or a little more, than their counterparts in southern Queensland.

The other part of the story is that feedlots buy very little sorghum in most years, with wheat and barley the preferred grain, because of lower processing costs and higher digestibility.

One year in five (on average) there is a shortfall of feed grain and feedlots turn to sorghum. If available, it will be trucked in from Central Queensland and northern New South Wales. As the shortage becomes more severe, barley may be shipped to Brisbane from South Australia or wheat freighted from Western Australia. The high prices in these drought years are determined by the price of wheat and barley at port in these states plus the cost of shipping and freight from the port of Brisbane to the consumer. Use of sorghum for ethanol would have very little effect on this price.

### **Overcoming drought issues**

A considerable amount of grain is in storage on farms and in storage dumps managed by the likes of Graincorp at any point in time. With harvest of wheat and barley in November and sorghum from February through to July, there is a significant buffer available to the supply of grain in Queensland, which gets depleted in drought, but increases in good production years.

Feedlots very rarely store grain to buffer supplies. The Dalby Biorefinery built a large grain storage pad with a view to storing some of the grain needs for times of shortage or high price. They have not made much use of it.

Farmers have improved their production techniques over the years and can still produce a reasonable crop of sorghum in dry years. For example, it has just been a dry summer, but the Australian sorghum crop is likely to be around 1.9 million tonnes, which is close to average production and where 3 million tonnes is a good crop. A lot of this sorghum has been produced on moisture stored in the soil from a good fall of rain back at the end of March 2014. Sorghum production is likely to increase greatly in the next few years if prices remain strong.

Over one million tonnes of sorghum is expected to be exported to China this year and so, even in a dry summer, there is an exportable surplus and local demand from biofuels, even if it was in the vicinity of 200,000 tonnes, would have no impact on price.

## **The need for a mandate**

The feedlotter and pig, dairy and poultry producers have what appears to be a reasonable argument in that they should have a level playing field which is not affected by government policy.

However, agriculture in general and the beef industry in particular, has had a helping hand from government over the years and continues to receive R & D support, expenditure on biosecurity and drought aid. Biofuels has not received much support and the mandate is not intended to provide much in the way of handouts.

The first Dalby Biorefinery business went broke as a result of greed and disinterest on the part of fuel companies. One of the major fuel companies was purchasing most of its ethanol for \$0.65 per litre and selling it (excise free at the time) for around \$1.30 per litre. There was no interest in paying a reasonable amount for ethanol. The decline in sales of ethanol in recent years is a result of the lack of interest on the part of fuel companies.

This is understandable if there is no big profit in it for them and it may in fact reduce their profits, particularly on the sale of premium fuels. The big companies control the supply of fuel and a mandate is needed to force them to be involved in biofuels.

## **What can change demand?**

With free choice to remain at the bowser, it is a reasonable question – asked at the Dalby forum - how the demand for E10 fuel can be increased. There are a number of ways in which this can be done:

- Access to E10 fuel needs to be increased
- Misconceptions about E10 need to be reduced. In particular, the misconception that all engines will perform with less fuel economy needs to be debunked. Ethanol improves the fuel burn and in cars with good engine management systems there is often no loss in performance. With widespread use of ethanol in places like USA, many cars are designed to run efficiently on E10. More local trials may be needed to provide evidence of this!
- Cars which meet Euro 4 emission standards (most Japanese and European cars) generally have higher compression engines which require premium unleaded of 95 octane. These engines are well suited to ethanol blends and likely to have little or no loss in fuel economy. Adding ethanol boosts 91 to around 94.6, which is suitable for these cars at a much cheaper price. However, the fuel companies have not certified their fuel at this octane rating and sometimes use ethanol to boost inferior quality fuel to 91 octane. There may be other certification issues like sulfur content. If fuel companies wanted to they can resolve these issues and offer E10 as a premium fuel suited to these cars for a much lower price. Without a mandate there would be no incentive to do so because it is likely there is more profit for them in selling premium fuel for a high price.
- The health benefits of E10 fuel in big cities needs to be promoted. Advertising clean and green fuel at the petrol station is important.
- The benefits of producing some of our fuel, creating jobs and reducing imports can be promoted.

## **Mandate and Penalties**

The 2% mandate appears low in relation to current ethanol production capacity and until it was lifted would not provide any incentive for expansion – such as a relatively inexpensive 50% increase in production of the Dalby biofuel plant. 3% was mooted at the Dalby meeting. Even 2.5% would be a signal to producers and fuel retailers that significant changes are needed to boost consumer interest and demand.

The penalties indicated in the discussion paper appear far too low for a fuel company where promotion of ethanol blends instead of premium fuels might cost them millions of dollars a year.

## The bigger picture

Most people at Dalby were wanting to further or protect their interests and ignored the bigger picture. Sorghum is not likely to be a major feedstock for biofuel. Nor is sunflower for biodiesel, because the Narangba plant closed due to the high cost of feedstock and this is not likely to change with conventional oilseed production.

Sugar cane is likely to be a lower cost feedstock for ethanol and a biofuels industry could underpin expansion of sugar production in the Burdekin catchment and the Gulf Country. Other feedstocks like cassava and corn may be viable under irrigation in northern Queensland, but sugar cane has proven resilience under intense weather conditions, such as cyclones.

Other opportunities may arise. There are several commercial size plantings of Pongamia – at Mareeba, Mackay and Spring Gully north of Roma – which over the next few years will prove the commercial viability of the Pongamia tree as a source of oil for biodiesel. It has low costs of production because it is a tree and does not have to be planted each year. It is also a legume which does not need nitrogen fertilizer and this, together with no cultivation and planting costs, improves the energy balance of biofuel production.

There is a lot of history of Pongamia oil being used as a fuel in India, where this tree originates. CSIRO did a major review of Pongamia in 2013. This drought resistant tree may well be suited to large areas of coastal lands around Gladstone and Rockhampton which has good rainfall but is too dry for growing rain fed sugarcane. Alternatively it might be irrigated as it is at Mareeba, but this increases the cost. Around Rockhampton, it would use land cleared for pasture, but the by product used as a food for beef cattle may well increase beef production in Queensland, rather than reduce beef output. Government R&D contributions could help this industry.

By products from biofuel lend themselves to other industrial uses, such as plastic. DAFF Qld is researching the potential uses of sorghum for human food, as it has a number of advantages. The by-product of ethanol production from sorghum could find a high value use to produce breakfast bars or muslei bars, possibly combined with some other fruit. This product would be high in fibre and protein, low in carbohydrate and gluten free, which sounds enough for a health food sales pitch.

In progressing a mandate, the Queensland Government needs to promote thinking about the big picture.