



Biofuels Association
of Australia

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3 July 2015
Project Manager
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Dear Sir/Madam,

Re: Towards a clean energy economy: achieving a biofuel mandate for Queensland – Discussion Paper

On behalf of its members, the Biofuels Association of Australia (BAA) welcomes the opportunity to contribute to the discussion of how Queensland can move 'Towards a clean energy economy' through the implementation of a biofuel mandate.

As background, The Biofuels Association of Australia ('BAA') is the peak industry body representing biofuel producers, marketers, retailers and others with the purpose of providing leadership and facilitating the building of a sustainable and economically viable Australian biofuels industry, consistent with national and community interests and environmental standards. Formed in 2006, the BAA is proud to have major Australian industry participants as members, providing valuable input and insight across the supply chain.

The BAA works closely with its members and broader stakeholders to identify opportunities to advance the uptake of biofuels in Australia's liquid fuel market, and to lead the way in helping to educate consumers about biofuels, their use and benefits.

The BAA supports the objective of requiring a minimum ethanol and biodiesel content in relation to the total volume of regular unleaded petrol (RULP) and diesel sold in Queensland. The BAA believes that the adoption of a mandated biofuel volume in fuel will assist the state to achieve the following:

- Leverage Queensland's agricultural base to create value adding options for farmers
- Reduce greenhouse gas emissions
- Improve air quality
- Take some important first steps in improving Queensland's fuel security by developing alternative fuels in the wake of the announcements of oil refining closures
- Position Queensland as a global player at the forefront of an emerging advanced biofuel industry
- Take a leadership position in advocating for clean energy

An Australian biofuels industry has broad societal benefits in the areas of economic development, health, environment, innovation and energy security and a brief summary of these benefits is attached in Appendix 1 for your reference.

BAA Comments on the "Towards a clean energy economy: achieving a biofuel mandate for Queensland" Discussion Paper June 2015

Below are specific responses to the questions raised in the discussion paper. The BAA would be happy to provide more detailed feedback on any of the feedback provided at the government's request.

The policy environment

1. Will the changes to excise arrangements proposed by the Federal Government have an effect on the use of biofuels by consumers?

2. What measures can be taken to offset any possible negative impacts by the proposed changes to excise arrangements by the Federal Government?

The federal changes to excise arrangements for Ethanol and Biodiesel have recently gained royal assent and have now passed into law.

The changes passed remove the former grant scheme that off-set the fuel excise levied on ethanol fuel. From July 1 2015 excise will be increased annually, starting a zero in the first year, by 6.554% of the petrol excise rate until the rate achieves a final schedule rate of 32.77%.

Concurrent to this change in policy was also the introduction by the government of a decision to index fuel excise rates on all fuels. Consequently, this means that although the effective base price for ethanol will increase slightly over the next 5 years, but in the long term the gap between the effective ethanol price and petrol price will grow.

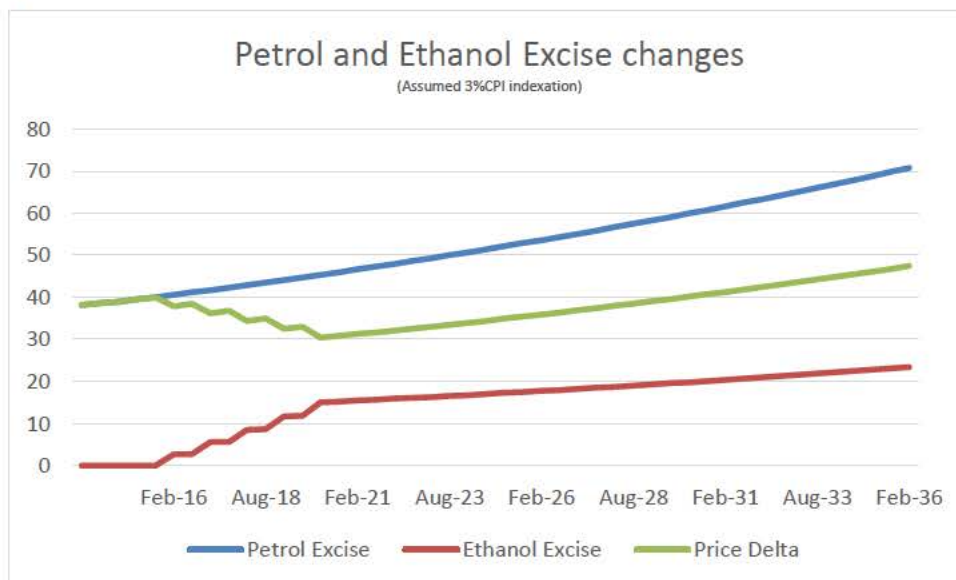


Figure 1: Petrol and Ethanol Forecast Excise rates

As shown in the Figure 1, assuming that CPI averages 2.7% over the next 20 years (as it has over the last 20 years in Qld¹) then the drop in differential petrol and ethanol excise reduces from 38.9cpl today to 30.4cpl in 2020 in inflation-adjusted terms. For E10 this represents less than a cent per litre (0.85cpl) reduction in the E10 price differential at the peak. From 2020 the pricing differential then starts to widen once again due to fuel indexation.

This differential as a result of the federal policy is only one aspect of pricing however, currently producers are providing discounts to petrol wholesalers which exceed the excise value, as it is the desire for the biofuel industry to pass through this saving to the consumer. Interestingly as the discount to the wholesaler has increased, the discount at the pump has reduced from 4cpl to 2cpl².

The ethanol percentage

3. Is a two per cent ethanol mandate appropriate?

The BAA believes that it is very important that the industry grows in a sustainable manner and the targets set be achievable. To this end the BAA are in agreement with the RACQ that the level for a mandate in Queensland be set initially at 3% of the RULP volume in 2016 (which is equivalent to 2% of the entire motor spirit volume).

Queensland has currently sufficient capacity to supply a 3% mandate demand and if supply was the only determinant of a starting position the BAA would advocate for a 5% starting mandate to send a signal for new demand and generate investment in the sector. This is not the only determinant however, it is important that the Queensland public be educated to support the fuel and recognise the benefits that can flow to the Queensland economy and jobs.

Queensland's car fleet currently consists of just over 2.5 million vehicles of which the BAA estimate approximately 95% are now compatible with ethanol fuels. By setting the level at 3% and growing the level

¹ ABS Consumer Price Index Australia Mar 2015: CPI All Groups Data Brisbane

² ACCC Monitoring of the Australian petroleum industry – various annual reports



over the next few years, Queenslanders will retain choice at the pump. In the past 3 years, since the government indicated that it would not follow through on implementing a mandate, ethanol availability has reduced in Queensland with the blend percentage falling from 2.8% in December 2010 to approximately 1.2% today, removing the choice for consumers of a cleaner fuel that supports the state's farming sector.

According to ACAPMA more than 200 service stations have removed the E10 choice from their forecourts³. In December 2010 Queensland was hit by statewide floods which caused a short interruption to ethanol supply in the state. Even though more capacity was offered shortly after this interruption, major oil companies took this opportunity, in many cases to reconfigure their petrol station forecourts and remove ethanol blended fuels, as they saw the commitment from the then government waning with respect to implementing a mandate.

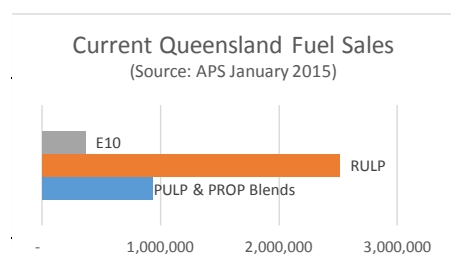
As the flow of fuel to the consumer is controlled in the main by the major oil companies, the market cannot be considered as a free market. As the Major oil companies are not involved in the manufacture of biofuels, they have no commercial incentive to offer cleaner biofuels products to the market as they do not derive profits from the whole value chain, as they do when selling petroleum. Asking oil companies to sell Biofuels is akin to asking a tobacconist to sell a *Nicabate* or *Nicorette* type product. The more successful they are in selling the alternative the less profitable the entity becomes as a whole.

In recognition of the above reality and coupled with the benefits to regional economies and the lessening of the negative externalities associated with the burning of fossil fuels, countries all over the globe have resorted to implementing mandates as the central policy for promoting the development of cleaner fuels (refer appendix 2).

4. Should the percentage increase, and if so, over what time period should any increases occur?

The BAA believe that should the introduction of an Ethanol mandate be introduced in a positive manner, supported by an extensive education campaign as to the benefits for Queenslanders as a result of adopting ethanol blended fuels, then the percentage of the ethanol mandate could be quickly ramped up to a level which sends a strong signal to investors for new ethanol investments.

Starting at a 3% mandate level and telegraphing the future potential for the state, the BAA believe is vital in any messaging regarding a new ethanol mandate. Ramping up to a 5% mandate would match the current installed ethanol capacity in Queensland and also maintain choice for the consumer.



Mandate %	PULP + Prop			Ratio E10/ULP	Sales Leakage to PULP	Total Petrol	Ethanol Volume
	Blends	ULP	E10				
3.0%	935,000	2,012,500	862,500	30%	0%	3,810,000	86,250
4.0%	935,000	1,725,000	1,150,000	40%	0%	3,810,000	115,000
5.0%	935,000	1,437,500	1,437,500	50%	0%	3,810,000	143,750
6.0%	992,500	1,127,000	1,690,500	60%	2%	3,810,000	169,050
8.0%	1,021,250	557,750	2,231,000	80%	3%	3,810,000	223,100
10.0%	1,078,750	-	2,731,250	100%	5%	3,810,000	273,125

Note: All volumes are expressed in megalitres (KL) and volumes are taken from the Petroleum statistics published - Jan 2015

Figure 2: Queensland Motor Spirit Volumes

Equally important is an unequivocal statement as to the longevity of the policy preferably with vocal bipartisan support. This is important as it allows the whole supply chain to adjust and start making investment decisions that are aligned with a clean energy biofuel future. Service stations need to be provided time to enable transition of sites not currently capable of selling alcohol based fuels so as to ensure costs incurred do not translate to higher fuel costs at the pump.

As a result of ethanol blended fuels (EBF) becoming mainstream globally, with the Brazil using an average EBF of close to E50, the US moving to E15 and Europe aiming to move to E20 by 2025, most of the world's car manufacturers are now making cars compliant with these higher EBF fuels. By the time we reach 2020, it is likely that 98% of the Queensland car fleet that currently would use RULP will be E10 capable allowing for a full transition to E10 as a base grade.

³ Source: Mark McKenzie ACAPMA



5. What is an appropriate mandated percentage for biodiesel?

Currently Queensland consumes approximately 6.3 billion litres of diesel per annum. For the 12 months to December 2014, Queensland imported about 100ML of biodiesel whilst local production lay idle due to the fact subsidised imports made use of the Cleaner Fuel Scheme, attracting additional financial support from the federal government.

Since the passage of the new excise legislation and the repeal of the Cleaner Fuels Grant imports are unlikely to be as prolific, but the benefits still remain for local production. Local manufactured product will see excise gradually phased in in 3.33% increments over the next 15 years and the Fuel tax credits for gazetted blends like B20 and B5 treated as though they are diesel, adding incentives for operators to use biodiesel blends.

Current local production capacity in Queensland is approximately 30ML (Eco-tech Narangba) and as demonstrated by 2014 sales the market is significantly larger. Setting a biodiesel mandate at 0.5% would consume local production and setting the mandate at 1% would send a positive signal to the investment community.

6. What timeframe would stakeholders need to prepare for and meet this requirement?

Biodiesel when blended at a 5% level is considered diesel and therefore would require no special investment at a service station to offer the product. Investment in blending facilities at the wholesale or terminal level would be required for volumes in excess of 1%.

In-line blending is the preferred mechanism and would require some terminal investment for increased volumes.

As a 5% blend biodiesel can be sold as diesel without labelling, the BAA recommend that the liable entity for the biodiesel mandate be applied at the wholesale level. The BAA believes this would provide the simplest basis for liability acquittal of the mandate obligation.

7. When do you think that a mandate will no longer be necessary?

Mandates act as a mechanism for granting market access and assisting in the development of an industry are long term policy frameworks. If the solar industry is to be used for comparison in terms of the duration of price support to assist in developing industry, then a minimum 30 year timeframe is likely. The solar industry had its origins in the 1970s and has enjoyed strong preferential support since the 1990s. With the recent RET legislation this support is set to continue well into the future.

Liable parties

8. Is the class of retailer appropriate? Should the definition be expanded to include those with less retail sites?

9. Is there an alternative method of defining the retailer? For example, should all sites that sell three or more petrol blends be included under the definition? Or should all sites that trade over a certain volume of fuel be included?

The BAA contend that with respect to ethanol, liability should be levied at the retailer level. As a principle, the BAA believe that all service stations should initially be deemed liable and a minimum annual return should be lodged by each service station providing the following data:

- Number of products offered on the forecourt
- Volume of petrol and diesel fuels sold by grade

By placing the onus on the retailer, this would then provide incentive for all retailers to provide ethanol blended fuels rather than engage in anti-ethanol marketing strategies by some sites like the ones seen historically in NSW which had the effect of destabilizing the consumers trust in the product.

Reporting requirements

10. Is this level of detail appropriate for liable entities?

11. Is there any other data or information that should be requested in the quarterly reports?



12. Can this information and data be used in other ways to support industry?

The BAA believes that a quarterly reporting framework would be sufficient for compliance purposes. Data collection should be in a simple format to ensure that the process does not form an unnecessary burden on business.

Liability businesses should report basic volume data for each grade of fuel supplied. However, all retailers should complete an annual return that states the number of grades on offer, the number of hoses for each grade and the volume of petrol and diesel products sold.

Much of the data requested is already collected by the retailer and supplied to various government agencies (i.e. excise returns). Consideration should be given to opportunities to gain permission to use data already collected by other agencies where possible. DRET has recently reviewed their mandatory reporting requirements for fuels which may offer some opportunities.

Exemptions

13. To ensure the exemption framework is effective, what would be a reasonable timeframe for response to a request for exemption?

14. How can Government ensure that an exemption framework is not used as a way for liability parties to negate their responsibilities?

As outlined earlier (Liability Parties), the BAA believe as a principle that all service stations should initially be deemed liable.

A sensible exemptions framework should then be applied so as not to induce unnecessary cost to the industry. Such a framework should consider the following:

- Can the service station offer 4 grades of fuel? If so, one should be E10.
- Minimum threshold volume for compliance. Does the service station sell more than a specified volume of petrol (all grades) per annum (suggest 750 kL)
- Are the underground storage tanks (USTs) suitable for ethanol or alcohol based fuels? If not why? Also, if not, what is the forecast date for these tanks to be replaced in the normal course of operations?
- Can E10 fuel be economically supplied to the service station? Whilst the infrastructure for blending is being established there may be some areas where E10 is not economic to provide to the consumer. (i.e. cannot be supplied at parity to RULP)

Where each of these considerations can be answered positively then no exemption should be offered to the retailer and an obligation be applied.

Obligations must however also be levied on wholesaler/distributors to offer Ethanol blended products. Otherwise there would be the potential for wholesalers to limit supply and confound the liability retailer's ability to meet their obligation. The definition of what constitutes a retailer should read, *a seller of petroleum products to a consumer*. This would then capture wholesalers/distributors that sell directly to corporate consumers in liability framework. Ensuring that all retailers have to lodge (at a minimum) an annual return would ensure new liability parties would be captured as market conditions change.

Consideration should also be given to the establishment of a simplified trading system. The administration of such a system could be set up quite simply, where every litre of E10 sold to an end consumer, would also carry a blender credit. Retailers would then be required to remit credits equivalent to at least 3% of RULP petrol sales each period. This type of system equally spreads the responsibility of a mandate across the sector. Those retailers who choose not to offer E10 fuel would still be required to purchase credits off those retailers who have accumulated excess credits in a simple trading system to offset their shortfall.

In the event that the mandate position was not met in a period, then additional credits could be purchased from the state government with the revenues used to fund consumer education and marketing campaigns designed to increase consumption in the next period.

The BAA would be happy to work with both government and industry to design and implement a process that



is cost effective and is not administratively complex, but rather leverages existing reporting systems that are already in place.

Penalties

15. *Are these penalties appropriate?*

16. *Do they incentivise liable parties to meet their obligation?*

17. *If the mandate increases should the penalties change?*

The BAA supports the penalty framework suggested and believe that the penalties are significant enough to encourage compliance. The BAA would encourage that if any penalties were imposed that these funds be applied to education and promotion of biofuels in the state.

Expert Panel/Implementation Board

18. *Should Queensland have an expert panel or implementation board? If so, which sectors should be represented?*

19. *How can the panel discharge their responsibilities appropriately and facilitate the required mandate being met?*

The BAA believes that there is value in constituting a reference panel to assist the government in the implementation of the Queensland mandate in the first instance. This panel should be made up from equal representatives across the fuel and biofuel supply chain. The BAA envisage that the role of such an implementation board would be to:

- assist in design of the mandate to ensure compliance costs are minimised
- advise government on how to overcome issues that arise during implementation
- advise government on the design of an effective exemption and enforcement process

Following successful implementation of the Queensland mandate, an advisory board or expert panel should only be required to be constituted for either a review the level of the mandate in place or to revise guidelines with respect to either process, exemptions or penalties. This board or panel should be made up equal representatives from fuel and biofuel supply chain.

Protecting the environment

20. *Are these sustainability principles appropriate?*

21. *Should more stringent environmental measures be applied to the biofuel sector?*

22. *What other environmental risks must be considered in relation to an expanded biofuels industry?*

23. *How should they be enforced?*

The environmental benefits of biofuel use have been widely documented as is the potential for biofuels to impact positively on reducing GHG (Green House Gas) emissions. While there have been concerns due to the use of food crops as feedstock in some countries, in Australia producers are using environmentally sustainable feedstock from waste streams such as used cooking oils, tallow, wheat starch, and molasses. These feedstocks do not impact the affordability or availability of food within Australia.

Australia also produces ethanol from Sorghum grain – a grain not used in Australia for human consumption. Sorghum however has recently been given Advanced Biofuel status in the US as a result of it being assessed as being able to reduce GHG emissions by over 50%⁴.

Whilst the notion of first and second generation fuels once was central to the debate, 'Advanced Biofuels' has finally become the centre of attention, requiring fuels to be defined by their potential for lifecycle GHG

⁴EPA Makes Sorghum an Advanced Biofuel Feedstock; Debra Fiakas CFA;

http://www.altenergystocks.com/archives/2012/12/epa_makes_sorghum_an_advanced_biofuel_feedstock_1.html



abatement and their conformance to a set of sustainability criteria. Indeed, the issue of sustainability is of paramount concern to the Australian industry, and the BAA is the lead participant in Australia’s involvement in the development of an ISO Sustainability Criteria for Bioenergy.

Criteria for sustainable development that should be considered in an expanded biofuels industry should include:

- Potential for GHG abatement compared to fossil fuels
- Impacts on soil, air and water quality
- Impacts on food security

Maintaining consumer choice

24. What are the issues that need to be addressed if consumer choice is maintained?

25. Will choice of fuel increase costs to retailers or consumers?

A 3% RULP mandate will provide consumers with genuine choice as the product will need to be available at many more retail service stations in Queensland. In 2010, 467⁵ sites were reported as offering E10 and a 2.8% ethanol sales volume was achieved. Today 265⁶ service stations are offering E10 and the volume penetration has reduced to 1.2%. Restoring the 203 sites that previously offered E10 should be able to be done at minimal costs.

Beyond these levels, estimates vary widely as to the cost for retailers to comply. Changes that retailers may incur include the following:

Low	Medium	High
Price Board modifications Tank cleaning Pump/console reconfiguration	Pump addition Supplementary tankage Minor civil works	Full tank replacement ahead of scheduled replacement

It does not necessarily follow that this will cause an increase in cost to the consumer as the marketplace is very competitive and this will keep downward pressure on prices.

Where tank replacement is required due to the current tank having high levels of corrosion, these costs should not be attributed to Ethanol per se, but rather normal maintenance business capital to avoid environmental contamination as a result of leaking fuel into the soil.

It should be noted that the Queensland government provided funding through QECI (Queensland Ethanol Conversion Initiative) to assist in the transition for service stations and wholesalers to provide ethanol to the market. The impact of the \$4.3M already invested in this sector should provide a solid baseline for Queensland to quickly regain the 500+ sites that were offering E10 in 2009 at little cost to the industry.

26. Would a targeted education campaign on the actual benefits and disadvantages of biofuels/E10 contribute to informed consumer choice?

27. What are the key messages that must be included in any education campaign for biofuels? Who is the primary audience and what is the most appropriate mechanism to target them?

⁵ Source: ACAPMA

⁶ Source: ACAPMA



In introducing a mandated level for ethanol, the BAA believes that it is imperative that a public education process be undertaken for both the motoring public and in particular, car salespeople and motor mechanics.

Consumers are often confused as to what fuel they should or can put in their vehicle. For example often consumers are choosing premium octane fuel for their vehicle, unaware that they cannot gain the benefits from the higher octane fuel flow without a high compression engine or modern engine with variable tuning. Similarly with Ethanol, people are often confused as to whether the fuel is compatible for their vehicle and avoid the fuel as a result the benefits to the community from using oxygenated fuels are not realised.

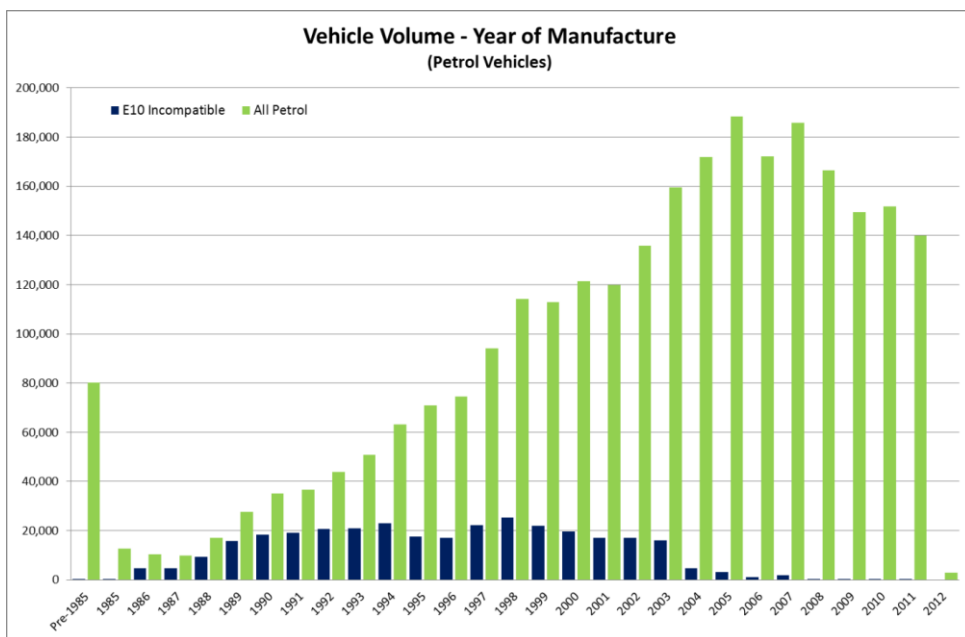


Figure 3: Compatibility of vehicles produced to 2012

While retaining choice is currently important, as can be seen in the chart below, nearly all of the cars sold today are compatible with ethanol blended fuels, meaning that over time the amount of incompatible vehicles on the road will drop further.

Vehicle manufacturers worldwide have responded to the characteristics of ethanol blended fuels. Utilising adaptive engine management control units to adjust engine timing and fuel air ratios, modern vehicles are delivering improved fuel economies and lower emissions. Because most countries have adopted policies like the one currently under consideration by the Queensland parliament, vehicle manufacturers have responded.

A critical consideration in any education campaign is to target the individual, professions and organisations that consumers seek out for advice. Motoring Associations, Mechanics and motor car traders are key influencing bodies but do not necessarily have quality information regarding biofuels. Ensuring that these groups are equipped with the facts about ethanol will assist consumers when this sector is looked to for advice. The Institute of Automotive Engineers have developed an ethanol training program for its members which may indeed be a useful base a broader education campaign for the aforementioned target groups.

Biodiesel has been in wide use for some years as an import with no issue. Biodiesel in a 5% blend is actual considered to be diesel by the Australian fuel standards. These facts need to be well communicated to commercial as well as retail consumers in promoting biodiesel as a quality fuel.

The key benefits of using biofuels are outlined in Appendix 1 and provide the basis for the key messages for use in an E10 education campaign.

Ensuring consumer protection

28. What options could we employ to protect consumers?

Consumers do not need “protection” as E10 is a quality product that offers greater benefits than RULP. Information about vehicle compatibility will ensure the correct choice of fuel for the relatively few older vehicles that were not warranted to use E10. Therefore the notion of protecting the consumer seems superfluous.

29. How can we ensure that fuel companies pass the benefits of ethanol through to consumers?

30. What is an appropriate method for estimating a 'reasonable' ethanol price?

Currently producers are providing discounts to petrol wholesalers which exceed the excise value, as it is the desire for the biofuel industry to pass through this saving to the consumer providing a purchase incentive. Interestingly as the discount to the wholesaler has increased over time, the discount to the consumer has decreased at the pump 4cpl to 2cpl⁷.

The price of ethanol is set as a discount to petroleum, and the discounts afforded should allow for E10 to enjoy a 4cpl discount to be offered by the wholesaler to the retailer. Unfortunately much of this margin is now absorbed by the wholesaler and provides no opportunity for the retailer to offer this level of discount.

Wholesalers currently claim that there is a high cost to deliver E10 to the market and that they need to garner a return on the blending investments that have been made. Most of these investments are now approaching 10 years of age and it could be safely assumed that the capital costs has long been paid.

31. What is an appropriate balance between costs to consumers and the creation of regional jobs?

The BAA have long maintained that the benefits of using ethanol are far greater than a simple evaluation of the energy content of the fuel. The BAA believes that the adoption of a mandated ethanol volume in fuel will assist the state to achieve the following:

- Leverage Queensland's agricultural base to create value adding options and provide a diversified income for farmers
- Reduced GHG emissions
- Improve air quality as a result using oxygenated fuels resulting in more complete combustion lowering state health cost expenditure
- Take some important first steps in improving Queensland's fuel security by developing alternative fuels in the wake of the announcements of oil refining closures
- Position Queensland as a global player at the forefront of an emerging advanced biofuel industry and position it to take advantage of the 1.2billion prize outlined by Deloitte
- Take a leadership position in advocating for clean energy and avoid what appears to be an ever growing generational climate change bill

Securing food supplies

32. Will an effective 'floor' in grain prices, as a result of a mandate, signal to grain growers an opportunity to increase production and investment on-farm?

33. What mechanisms, if any, should be put in place to avoid distorting the drought feeding market next time drought conditions persist in Queensland?

Ethanol manufacture in Queensland does not impinge on human food production. Where farmers have the opportunity and conditions to grow crops for human food they generally do as the returns from this market are generally superior to that of crops used for fuel.

Australia does not set the world price for grains, but rather participates in a global market where supply and demand drive the headline price and location (basis) to short markets offers opportunity for some suppliers. The sorghum market is a case in point where pricing over the past few years has seen some large swings.

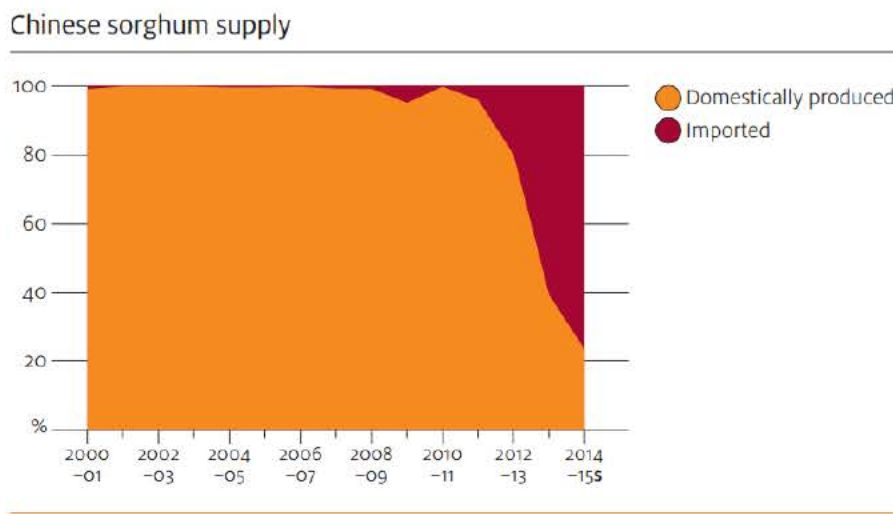
⁷ ACCC Monitoring of the Australian petroleum industry – various annual reports





Figure 4: Sorghum Production and Price 2005-2013 (Source: DAFF)
 Note: Domestic Price is quoted ex-Sydney

As can be seen in figure 4, the drought years of the early 2000's actually saw lower achieved sorghum prices than the non-drought period from 2008-2010⁸. Sorghum prices in recent times have seen strong support due to strong demand from China. In 2014–15 sorghum imports into China are estimated to have been a record 9 million tonnes, and accounted for an estimated 77 per cent of total sorghum supply. In comparison, sorghum imports in 2011–12 were 84 000 tonnes and accounted for 4 per cent of total supply. Continued growth in import volume is expected if sorghum continues to trade at a significant discount compared with domestic corn. The United States and Australia accounted for nearly all sorghum imports into China over the past five years, with the United States accounting for the largest share at around 80 per cent.



s ABARES estimate.

Figure 5: Chinese Sorghum Supply (Source: DAFF)

It should also be noted that from 2008 the Dalby Biorefinery has been in operation. In that period we have seen sorghum prices fall through to 2012 and it has only been since the Chinese demand has emerged that prices have lifted, further confirming that the Australian market is a price taker.

Queensland also has been a net exporter of sorghum, even in drought years. Given this data it is unlikely that a mechanism would need to be established, other than the drought assistance already provided to those farmers in need.

⁸ Agricultural Commodities June Quarter 2015 ABARE

Similarly in the case of molasses, Queensland has been a net exporter of molasses even in drought years as evidenced by the data shown below.

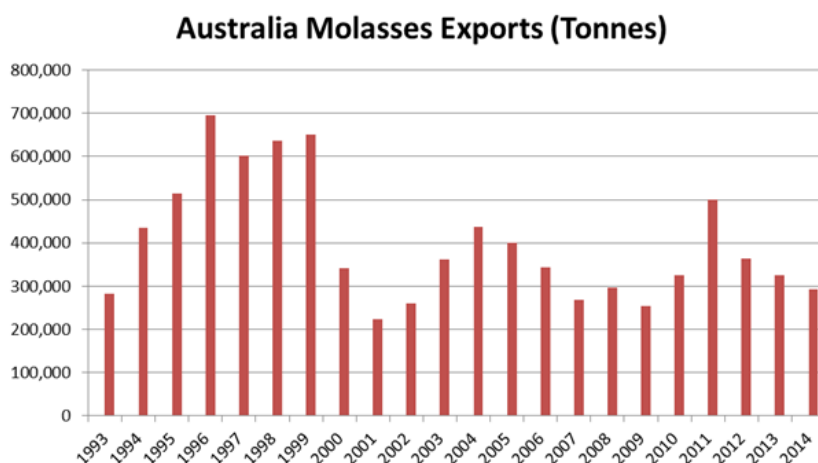


Figure 6: Molasses Exports 1993-2014 (Source: Wilmar)

Bio-manufacturing – a new approach

34. *What is the role of the Government in attracting a new bio-manufacturing industry in Queensland? Are there specific policy mechanisms or actions that will attract investment and development?*

Advanced biofuel and bio-based industry investment is only occurring currently in those jurisdictions that have strong support for biofuels currently. Without a vibrant and healthy biofuels industry, it is difficult for investors to commit as there is no alternative fungible base market for them to access, should their higher risk investment fail to live up to expectations.

Generally companies investing in this space have already significant investments in conventional biofuels and see the development of advanced biotechnologies as a sensible value add to their businesses. By establishing a strong biofuel market in Queensland the government will lay the platform for other bio-based investment.

35. *What additional actions can the Queensland Government take to increase the likelihood of project opportunities becoming operational projects?*

36. *Development of the biofuel industry, specifically ethanol, has struggled from a lack of long-term certainty and a problematic history. How do stakeholders including the Government provide the long-term certainty necessary for the development of, and investment in, bio-manufacturing?*

The BAA have long called for policy certainty in the area of biofuels. Investment in the ethanol and advanced biofuel sector is significant and requires long investment horizons to allow investors a return on capital. The advance biofuel and bio-based manufacturing sector requires even greater long term policy certainty due to the risks associated with these emerging technologies.

Bi-partisan endorsement of policies is also crucial as these investments look beyond electoral cycles to build a firm platform for high value Queensland jobs into the future.

Summary

The BAA supports the implementation of a Queensland mandate to require minimum ethanol content of 3% in relation to the total volume of RULP sold in Queensland and 0.5% in relation to the total volume of Biodiesel sold. The BAA believes that the adoption of a mandated ethanol and biodiesel volume in fuel will assist the state to achieve the following:

- Leverage Queensland's agricultural base to create value adding options and provide a diversified income for farmers
- Reduced GHG emissions
- Improve air quality as a result using oxygenated fuels resulting in more complete combustion lowering state health cost expenditure
- Take some important first steps in improving Queensland's fuel security by developing alternative fuels in the wake of the announcements of oil refining closures
- Position Queensland as a global player at the forefront of an emerging advanced biofuel industry and position it to take advantage of the 1.2billion prize outlined by Deloitte
- Take a leadership position in advocating for clean energy and avoid what appears to be an ever growing generational climate change bill

The BAA would appreciate the opportunity to discuss the matters raised in further detail with you, and we hope that this may be possible in the coming weeks.

Yours sincerely,



Gavin Hughes
CEO
Biofuels Association of Australia

Garry Mulvay
Chairman
Biofuels Association of Australia



Appendix 1: Benefits of an Australian Biofuel Industry



Economic Development

Today more than 98 percent of the energy used in Australia's transportation industry still derives from fossil fuels. With Australia facing significant change in terms of the make-up of industries that once drove our economy, the burgeoning biofuels industry is a relatively new player, which if fostered can contribute future investment and jobs.

The BAA recently commissioned Deloitte Access Economics to undertake a study on the economic contribution of the Australian Biofuels Industry. The interim results of this report show that, net of the Cleaner Fuel Grants and Ethanol Producer Grants paid, the industry generated an economic contribution of approximately \$427 Million and provided for about 3,180 FTE jobs as a result of the industry's activities and that this could grow to \$554 Million and 4,002 FTE jobs should the industry utilise its installed capacity. Given that the biofuels industry represents just 1% of fuel sales, we believe this demonstrates the significant economic potential that this industry has to contribute to Australia's future.

Australian biofuel production supports investment and jobs in regional Australia in communities including: Dalby, Sarina, Narangba, Barnawartha, Largs Bay, Picton, Nowra, Maitland, Cressy and Tom Price. A number of projects are under consideration for the future and Australia's biofuels demand and policy settings will be key factors influencing their commercialisation. Additionally, the BAA believes that there is an opportunity for a domestic biofuels industry to provide an alternative revenue stream for the agri-sector, allowing it to strengthen its resilience to ever changing environmental and economic conditions.

Export

Globally, biofuels is a growth industry with making up about 10% of the global supply. Today, Australia exports biofuels to destinations including the US and Asia, and we are increasingly being considered by overseas investors interested in establishing facilities for future export. This activity underlines the industry's international competitiveness when markets are not distorted. The potential future trade growth is not restricted to the fuels alone – there will also be opportunities for Australia to export its significant scientific and research skills, technology developments and human talent.

Health benefits

Ethanol and biodiesel blends can have a beneficial impact to air quality, and as a result human health due to the reduced pollutant gas emissions relative to fossil fuels. Air quality, particularly in and around our major cities, ports, tunnels and airports could be improved and there is opportunity for increasing uptake of biofuels to have a positive impact on health outcomes and reduce national and state health budget costs. The Australian Medical Association noted in its submission to the 2013 Senate Inquiry into the "Impacts on Health of Air Quality in Australia" that the costs associated with motor vehicle emissions alone are estimated to be between \$600 million and \$1.5 billion per annum.

In particular, a significant risk to human health is posed by vehicle particulate emissions, especially fine particles known as PM2.5. Many economies have taken direct action in setting their fuel standards to limit particulates through requiring biofuels to be part of the standard fuel blends.

A CSIRO and Orbital study in 2008, "Evaluating the Health Impacts of Ethanol blend Petrol", concluded that there would be a "health benefit to Sydney and the Urban Australian population (taken as Sydney, Melbourne, Brisbane and Perth) arising from a move from neat ULP to ethanol blends in spark-ignition



vehicles”, noting that the “overall quantified health benefit of using ethanol blends is overwhelmingly dominated by reductions in particulate matter”.

Biodiesel use in underground mines could also be a significant opportunity for improved OH&S outcomes. In a CSIRO paper titled, “Biofuel: potential use in the mining industry for the reduction of greenhouse gas and particulate matter emissions”, it was noted that “the occupational exposure to particulate matter from diesel exhaust can be significantly higher among underground mine workers than it is for their above-ground counterparts.” While a number of strategies are available to reduce exposure to vehicle exhaust or equipment emissions, not all may be suitable. As a result, the use of biodiesel as a “drop-in” replacement for diesel use in underground mining operations provides a viable option for companies to reduce the exposure of their people to harmful particulates and other toxic emissions.

Overall, the BAA believes that the net public health benefit of using blended fuels is positive and should be a significant consideration when analysing future policy settings to advance the uptake of biofuels in Australia.

Environment

The environmental benefits of biofuel use have been widely documented as is the potential for biofuels to impact positively on reducing GHG emissions. While there have been concerns due to the use of food crops as feedstocks in some countries, in Australia producers are using environmentally sustainable feedstocks from waste streams such as used cooking oils, tallow, wheat starch, molasses and sorghum. These feedstocks do not impact the affordability or availability of food within Australia.

Whilst the notion of first and second generation fuels once was central to the debate, ‘Advanced Biofuels’ has finally become the centre of attention, requiring fuels to be defined by their potential for lifecycle GHG abatement and their conformance to a set of sustainability criteria. Indeed, the issue of sustainability is of paramount concern to the Australian industry, and the BAA is the lead participant in Australia’s involvement in the development of an ISO Sustainability Criteria for Bioenergy.

Technology and Innovation

The biofuels industry is an incubator for innovation and is the basis on which to foster new technology and R&D. Our local producers are constantly looking for ways to improve the efficiencies within their processes, via research into new enzymes or treatments to improve the yields and quality of the biofuel they produce.

Looking to the future of advanced biofuels, several Australian Universities and CSIRO have active research programs and many are at the forefront of research into new feedstocks, such as algae, cyanobacteria, sorghum, lignocellulose, pongamia and mallee. Importantly, the issue of how to manage biomass aggregation to allow cost effective processing of these feedstocks into fuel is also a critical area of required study. Leveraging Australian industries that already aggregate biomass of course is a short pathway to piloting these new technologies.

The development of a sufficient supply of renewable feedstocks is of particular interest to the aviation industry, both in Australia and globally. The key challenges remain the cost and availability of feedstocks and refining capability. The global industry is keen to find ways of producing sustainable quantities of renewable jet fuel, at an acceptable cost. This is an area where there is strong customer demand for the product, and globally, many countries are urgently looking at ways that they can take advantage of what could become a significant industry in future. Australia is well positioned to take a lead in the development of pathways to renewable jet fuel and this is evidenced by investment in local initiatives such as the Australian Initiative for Sustainable Aviation Fuel (AISAF) and Queensland Sustainable Aviation Fuel Initiative (QSAFI), along with partnerships between companies such as Qantas and Shell, and Virgin Australia, Brisbane



Airport Corporation and SkyNRG (Brisbane Bio port).

For Australian biofuel production, increased investment in the development of advanced, renewable economically viable feedstocks is critical to the growth of the industry.

Energy Security

An established industry can contribute to energy security as blending extends Australia's fuel reserves. Indeed, energy security concerns have driven many countries to introduce policies to actively encourage the development of their biofuels industry. Biofuels capability in Australia is also an area being closely watched by Defence personnel, particularly as our US allies are moving to significantly increase the use of renewable fuels in Navy vessels. Interoperability is a key factor to consider for the Australian Navy, as often shared supply chains are used for fuel.

Given the recent announcements of oil companies to cease producing petroleum in a number of capital cities, supporting biofuel production is one way Australia can ensure that it continues to have some indigenous fuel production capability. Biofuels and in particular the prospect of advanced biofuels from biomass offer a genuine opportunity for scale production into the future and a pathway to a secure supply of lower cost fuel for all Australians.



Appendix 2 – World Ethanol Mandates



REASONS MANDATES HAVE BEEN ADOPTED TO DRIVE BIOFUEL UPTAKE

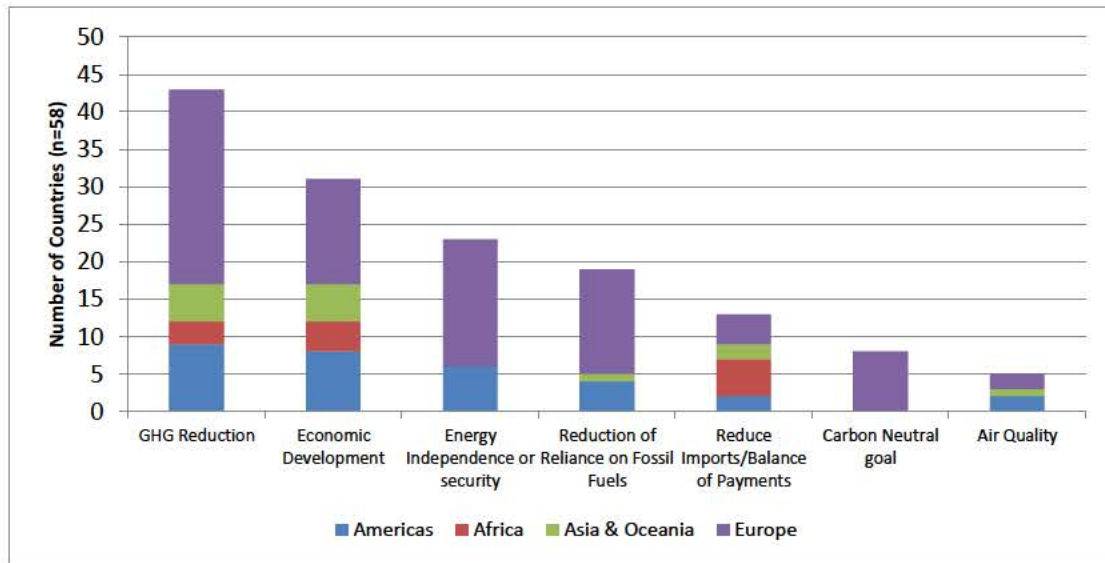


Figure 7: Stated Reasons by Countries for adopting biofuel mandate policies

Canada	<p>Policy: Mandate</p> <p>Federally, Canada mandates for the renewable content in gasoline and the distillate pool to be 5% and 2% respectively. Some provinces have set even higher blend rates, increasing the percentage of fuel that must be renewable content. Canada's renewable fuels industry domestically produces almost 1.8 billion litres of ethanol and more than 400 million litres of biodiesel annually.</p>
America	<p>Policy: Mandate & Target</p> <p>America recently revised the targets for the Renewable Fuels Standard to be 65bn by 2016 and at least 136bn by 2020. The volume break down for 2016 is set at 52.5bn litres of conventional ethanol and 6bn litres of Advanced biofuels (such as cane ethanol & cellulosic ethanol) and 6.8bl litres of biodiesel.</p>
Argentina	<p>Policy: Mandate</p> <p>Biodiesel 10% Content, Ethanol 5% content by volume</p>
Brazil	<p>Policy: Mandate</p> <p>Ethanol Content in ULP 27%, Biodiesel – 7% cent, from July 2014.</p>
Chile	<p>Policy: Target</p> <p>E5 Ethanol and B2 Biodiesel</p>
Columbia	<p>Policy: Mandate</p> <p>Ethanol content 10%.</p> <p>Higher Blends of both Biodiesel and Ethanol (>10%) promoted from 2013.</p>
Costa Rica	<p>Policy: Mandate</p> <p>Ethanol Content 7% by volume and B20 Biodiesel</p>

Jamaica	Policy: Mandate Ethanol content 12.5% by volume
Mexico	Policy: Mandate Ethanol content 2%
Panama	Policy: Mandate & Target Ethanol 2% Mandate with a 10% Target
Paraguay	Policy: Mandate Ethanol content 25% by volume and B5 Biodiesel
Peru	Policy: Mandate Ethanol content 8% by volume B2 Biodiesel. Expected to move to b5 biodiesel
Uruguay	Policy: Mandate & Target Biodiesel 2% planned to increase to B5% in 2015 and Ethanol 10% target
Angola	Policy: Mandate Ethanol 10% (vol)
Ethiopia	Policy: Mandate Ethanol 5% content.
Kenya	Policy: Mandate Ethanol 10% (Vol)
Malawi	Policy: Mandate Ethanol 10% (vol)
Mozambique	Policy: Mandate Ethanol 10%
Nigeria	Policy: Target Ethanol 10 % Biodiesel 20% (by 2020)
South Africa	Policy: Mandate Minimum concentration for biodiesel blending is 5% v/v. For bio-ethanol blending minimum level is 2% v/v and maximum is 10% v/v. (Oct 2015)
Sudan	Policy: Mandate Ethanol 5% (vol)



Zambia	Policy: Target Ethanol 10%, Biodiesel 5% (vol)
Zimbabwe	Policy: Mandate Ethanol 15% (vol) Mandate (Supply dependent)
ALL Europe	Policy: Mandate 5.75% current mandate. Mandate to move to 10% by 2020 (with a 6% cap for conventional biofuels) In September 2014, the European Parliament voted to cap first generation ethanol consumption at 6% of fuel demand by 2020 rather than the 10% originally mandated by the Renewable Energy Directive.
Austria	Policy: Mandate Total Biofuel Content 5.75% by energy content (3.4% for ethanol content)
Belgium	Policy: Mandate 10% for Ethanol (vol)
Bulgaria	Policy: Mandate As per EU directive
Cyprus	Policy: Mandate Total biofuel content 2.5% by energy content
Croatia	Policy: Mandate & Target Mandatory 2020 Goal is 8.85% Biofuel use. 2015 Targets 3% Biodiesel & 1% Bioethanol
Czech Republic	Policy: Mandate Total biofuels market share 5.75% based on energy content. Ethanol 4.1% by Volume. Biodiesel 6% by volume
Denmark	Policy: Mandate As per EU directive Target for 2015 6.4% BioDiesel & 4% Ethanol
Estonia	Policy: Mandate As per EU directive
Finland	Policy: Mandate Total biofuel content 6% by energy content (tem.fi, obligation to distribute biofuels)
France	Policy: Mandate 7% biofuels market share by energy content. 7% for ethanol (vol)



Germany	Policy: Mandate & Target As per EU Directive. 2015 Target is 4.1% Biodiesel & 2% Ethanol
Greece	Policy: Mandate & Target As per EU Directive Target for 2015 6.3% Biofuel
Hungary	Policy: Mandate & Target As per EU Directive. 2015 Target is 2.9% Biodiesel & 2.2% Ethanol
Italy	Policy: Mandate & Target As per EU Directive Target for 2015 6.3% Biofuel
Ireland	Policy: Mandate Total biofuel content 6% by energy content
Latvia	Policy: Mandate 5% mandate in place for both Biodiesel and Ethanol
Lithuania	Policy: Mandate & Target 2015 Target is 7% Biofuels
Luxembourg	Policy: Mandate Biofuel content 2% for both ethanol and biodiesel
Malta	Policy: Mandate Total biofuel content 1.25% by energy content
Netherlands	Policy: Mandate Minimum 3.5% for ethanol (vol
Norway	Policy: Mandate & Target As per EU Directive 2015 Biofuel Target is 7% Mandates are in place for 5% Biodiesel and Ethanol
Poland	Policy: Mandate Total biofuel content 8.4% by energy content



Portugal	Policy: Mandate Biodiesel 10% vol/vol, 5.5% for Ethanol (Vol)
Romania	Policy: Mandate As per the EU directive Mandates in place for 5% Biodiesel and Ethanol
Slovakia	Policy: Mandate 2015 Mandatory blends are 7.5% Biodiesel 4.5% Ethanol
Slovenia	Policy: Mandate 2015 Target 7.1% Biofuels
Spain	Policy: Mandate 2015 Target 9.3% Biofuels
Sweden	Policy: Mandate As per the EU Directive
Turkey	Policy: Mandate 2% Ethanol content by January 1, 2013. increasing to 3% in 2014
UK	Policy: Mandate & Target As per the EU Directive 2015 Target is 6.4% Biofuels
China	Policy: Mandate & Target 15% Biofuel content by 2020, 10% Ethanol content by 2020
India	Policy: Mandate & Target Ethanol mandate 5% content. Proposed Biofuel mandate of 20% by 2020
Indonesia	Policy: Mandate 3% Ethanol Mandate and 10% Biodiesel Mandate in place
Fiji	Policy: Mandate & Target 5% Biodiesel and 10% Ethanol Target in place
Vietnam	Policy: Mandate 5% Ethanol Mandate
Japan	Policy: Mandate & Target 3% Bioethanol mandate, currently reviewing option to increase to 10%



Malaysia	Policy: Mandate 5% Biodiesel Mandate
Philippines	Policy: Mandate Minimum ethanol content 10% total volume. B2 biodiesel (vol)
South Korea	Policy: Mandate 2.5% biodiesel mandate effective August 2015
Thailand	Policy: Mandate & Target Currently E10 mandated. Ethanol 20% compulsory in all ULP by 2016. Biodiesel 5% mandate and target 10% by 2012

Summary

63 Countries now have positive policies to mandate or encourage the use of biofuels

