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Committee Secretary
Senate Rural and Regional Affairs and Transport Committee
Department of the Senate
Parliament House
Canberra ACT 2600
Australia

Emailed (rrat.sen@aph.gov.au)

Dear Secretary

Submission: Australia's Future Oil Supply and Alternative Transport Fuels

Bioenergy Australia is a nation-wide government-industry alliance of some 50 organisations, established to foster biomass as a source of sustainable energy and for value-added bio-products such as biofuels. Its broad objectives are to:

- Promote an awareness and understanding of the economic, social and environmental attributes of sustainable energy and chemicals from biomass.
- Broaden the market for biomass by enhancing opportunities, and by helping to reduce financial, regulatory, fuel supply, technical and institutional barriers to enable widespread adoption of biomass energy.
- Facilitate the development and deployment of biomass energy business opportunities and projects.

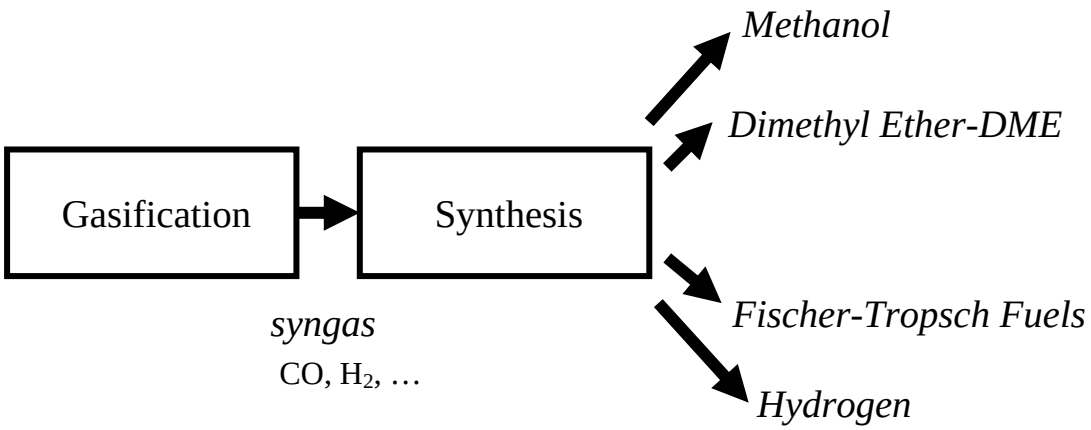
Bioenergy Australia is the vehicle for Australia's participation in the International Energy Agency's Bioenergy program, an international collaborative RD&D agreement involving some 21 countries plus the European Commission. Bioenergy Australia acts as a forum for general and authoritative information dissemination on bioenergy, including drawing on international best practice experiences through its IEA Bioenergy participation. In addition, the Bioenergy Australia Manager, Dr Stephen Schuck represents the alternative and renewable fuels industry on the Fuel Standards Consultative Committee. Please note that this submission may not necessarily reflect the view of individual member organisations.

The purpose of this submission is to alert the Committee to various developments and to the significant role biofuels could make to future transport fuel supplies, given appropriate support:

o The Committee's attention is drawn to the European Union's targets for renewable fuels, essentially biofuels. The EU has had a target of 2 percent of total transport fuel being provided from renewable sources by 2005, rising to 5.75% in 2010 and 8 percent by 2020. Sweden reached 3 percent for 2005 (many EU countries failed to meet the 2005 target). Sweden has in place many supported measures for biofuels, with many of their buses running on biogas and ethanol. Sweden recently

commissioned a biogas train (which was the subject of an article on *Landline* on ABC TV on 19 February). Sweden permits ethanol blends up to 85 percent (E85), with a SAAB Biopower model on the market (Australia has set a limit of 10 percent i.e. E10). The EU is striving to limit dependence on imported fuels, by growing a dynamic biofuels industry and market. Australia could learn from this and similar overseas measures for addressing fuel security and also climate change.

- The present generation of biofuels are largely based on ethanol and biodiesel, with Australia having a national target of 350 ML/a biofuels production by 2010. New technologies for producing biofuels are being developed world wide, based on gasification of biomass and synthesis to form fuels such as methanol, DME and Hydrogen. The advantage of this route is that yields of biofuel would be approximately twice that of current biodiesel and ethanol production on a per hectare basis (Ref. VW presentation at Synbios conference noted below), i.e. 3,100 litres diesel equivalent per hectare. These processes are shown diagrammatically below.



Volkswagen in Germany is trialling a fuel called Sundiesel™, which is produced via the gasification of biomass, and synthesis to a synthetic diesel via Fischer Tropsch technology. This concept is not too dissimilar to the very large oil-from-coal industry, long established in South Africa, but importantly based on renewable biomass feedstocks. Similarly, Volvo in Sweden is developing Dimethly Ether (DME) as a transport fuel. DME is similarly derived from biomass gasification, having properties not too dissimilar to LPG. The photo below shows a Volve DME truck being displayed at the May 2005 Synbios conference. The conference papers from the Synbios conference are freely available on the Web at www.ecotraffic.se/synbios.

- In his recent State of the Union address, President Bush indicated added support for the development of ethanol produced from cellulosic feedstocks (such as wood and agriculture resides). Ethanol produced from such feedstocks promises to be of lower cost, and more widely implementable than ethanol from feedstocks such as molasses and wheat starch wastes, as is currently produced in Australia.

Producing alcohol fuels from wood has been the subject of a Joint Venture Agroforestry study (*Wood for Alcohol Fuels – using farm forestry for bioenergy*), available from the Rural Industries Research and Development Corporation as Project No. EPL-2A, Publication No. 03/018. This report examined the wide scale planting of mainly oil mallee eucalypts for salinity control, and using the coppiced biomass for methanol and ethanol production, either via the gasification route of via the hydrolysis of the biomass and fermentation of the cellulose and hemicellulose derived sugars.

- The CSIRO (Barney Foran et al) produced several reports over a long period, examining future fuel scenarios. They concentrated on methanol and ethanol fuel futures. It is suggested, that the Committee re-examine these studies, to gauge the opportunties for large scale deployment of such technologies to meet our future fuel supplies.
- One emerging technology that could help address our fuel future is to cultivate high lipid content algae (a form of biomass), by possibly growing the algae in carbon dioxide rich environments (supplied from the stacks of coal fired power stations), and extracting the oil for a biodiesel feedstock and using the residues biomass from the algae as a biomass fuel (possibly co-fired with coal in the power stations). It is believed at least two organisations have been developing this technology in Australia, and RIRDC funded a study in growth parameters of a type of algae. It is suggested that such innovative pathways for meeting future energy needs be encouraged and supported.
- Bioenergy Australia is the vehicle for Australia's participation in the International Energy Agency's Bioenergy Program (www.ieabioenergy.com). It currently participates in five Tasks. However, limited support and funding has precluded Australia's participation in IEA Bioenergy Task 39 *Liquid Biofuels*. With added government support (most noteably from the Industry portfolio) it would be possible to participate in Task 39, which includes bioethanol and biodiesel. Such partipation would expose Australia to the latest developments in liquid biofuels, and contribute to the development of alternatives to fossil fuels.
- Energy crops could provide the feedstocks for substantial biofuel industries (noting the above developments). Such industries, besides contributing to our future fuel mix, would stimulate rural economies and provide permanent jobs through the production of the biomass and the supply logistics.

Thank you for the opportunity of providing this brief submission. I would be most pleased to assist with follow-up information on the above.

Yours Sincerely

Dr Stephen Schuck
Bioenergy Australia Manager