

# **Australia's Report to the Convention on Biological Diversity on the Development and Application of tools relevant to the Sustainable Production and Use of Biofuels**

## **CBD Notification 2008-100**

The Australian Government is conscious of the need to ensure that biofuels used in Australia are produced sustainably and considering policy approaches for managing biofuels specifically. Australia recognises that there are significant gaps in knowledge of the lifecycle impacts of biofuels on biodiversity, including in comparison to other fuels, as well as the best ways to address these impacts. Like many other nations, whilst recognising the potential benefits from biofuels, Australia considers it is also appropriate to take stock of the impact and potential unintended consequences of our biofuel support policies. Australia is of the view that second generation biofuel technologies provide opportunities to supplement existing fuel supplies in a more sustainable manner by deriving biofuels from low cost, non-food materials.

Australia maintains that countries should have the flexibility to respond to sustainability issues in accordance with their national circumstances.

### **Australian Government Biofuels Policy**

The Department of Resources, Energy and Tourism and the Department of Agriculture, Fisheries and Forestry have undertaken an internal review of government biofuels policies, examining the outlook for the industry, which will inform future policy decisions. The review is currently under consideration by the Government. The outcomes of a number of other government policy reviews and initiatives could have implications for the government's future policy directions for alternative fuels, including biofuels.

As is the case in almost all biofuel countries, the viability of the Australian biofuels industry is currently dependent on government support and incentives. Government support for the production and distribution of biofuels in 2007–08 was around AU\$90 million, provided through programs such as:

- Ethanol Production Grants – a grant available for the domestic production of ethanol, effectively making domestically produced ethanol excise-free. Imported ethanol attracts customs duty equal to the rate of excise until 1 July 2011. From 1 July 2011, support for ethanol will be brought into line with biodiesel under the Energy Grants (Cleaner Fuels) Scheme, which is due to end on 1 July 2015.
- Energy Grants (Cleaner Fuels) Scheme – for the manufacture or import of biodiesel, effectively making biodiesel produced or imported into Australia excise-free. Under current policy settings effective excise will be phased in from 1 July 2011 to 1 July 2015 under different bands based on energy content. Under the existing policy framework, the effective excise applying to biofuels after this time will be 50 per cent of that applying to fossil-fuel based fuels with the same energy content; however this approach is not yet legislated. Fuel excise arrangements, including those for biofuels, are being considered as part of the review of Australia's Future Tax System, which is due to report by the end of 2009.
- Ethanol Distribution Program – grants available to retailers to reduce the cost of installing new pumps or converting existing pumps to accommodate E10 blends and encourage sales of E10 (ending 2009); and
- Second Generation Research and Development Program Grants Program (Gen 2) – grants supporting the research, development and demonstration of new biofuel technologies which address the sustainable development of the biofuels industry in Australia (applications closed January 2009).

Environmental powers are not specifically dealt with in the Australian Constitution and are not the sole province of any one sphere of government. The Australian States hold plenary powers to legislate on issues to the extent that an instrument will not be inconsistent with Commonwealth law. Where the Commonwealth is silent on policies or legislation for biofuels, the States and Territories possess powers to legislate.

The New South Wales Government has legislated for minimum mandates for biofuels use within that State. The Queensland Government has established a mandate for minimum ethanol use, and the Victorian and Western Australian Governments are investigating the possibility of establishing minimum biofuel targets, with the possibility of implementing mandated minimum biofuel levels.

## **Biodiversity Conservation and Environmental Impact**

Australia currently has no specific policy, rules or regulations relating to biofuel production with regard to protection of biodiversity or environmental sustainability. As with any land use in Australia, growing feedstock for biofuels or using residual resources from agricultural crops or wood production must meet legislation and regulations governing land use, water use and environmental impacts more broadly.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) limits potential feedstock expansion into areas where a significant impact on matters of National Environmental Significance, such as listed Wetlands of International Importance or threatened species and communities, are likely to occur.

In addition, proposals to import exotic species into Australia for use in biofuel production, *inter alia*, are subject to an assessment of their biosecurity risk, including the potential for weediness.

A taskforce is considering Commonwealth Biodiversity Policy broadly to identify the potential future trends impacting biodiversity and ecosystem services from crop proliferation. For example, to ensure that biofuels production does not have a detrimental impact on biodiversity by causing increased land clearing, intensification of chemicals or water use, or impacting ecosystem services.

The current Australian supply base of forest-based lignocellulosic biomass for bioenergy production comes from farm forestry crops (such as oil mallee and short-rotation coppicing trees), wood harvested from native forests and plantations (approved wood waste including thinnings), and industry and urban wood waste. In the future, supply could be expanded by increasing the area planted to oil-bearing trees and dedicated bioenergy forest and farm forestry plantations. Lignocellulosic biomass could substitute for a large part of the country's fossil fuel requirements. Genetically modified trees may help boost production, although regulatory approval and science-based risk assessment is necessary. The availability of sufficient forest-based feedstock for current and future biofuels production will be constrained by the cost and viability of sustainably producing biomass from forest crops.

## **Water Use Regulation**

Australia faces major challenges in ensuring a sustainable water supply with increasing pressure between a drying climate and rising demand. Australia currently has no specific policy, rules or regulations relating to biofuels and the regulation of water use. The Australian Government recognises the intensification of biofuels crops has the potential to increase water use, and the need for long term planning of water availability against the increasing competition between uses.

The impacts on water use from biofuels may be significant, particularly if production of feedstocks results in an increase in the area under irrigation. The Australian Government views the decision to grow these or any other crop as a business decision to be undertaken by individual farmers. Water allocations against entitlements are determined by state governments, dependent on the amount of water available in the system. Market forces will ensure that water goes to its highest-value use, and it is unclear how biofuel feedstock production will compete with other agricultural uses in Australia. There is a potential for biofuels to use feedstocks generated as by-products of other agricultural activities already in production. While crops planted only for biofuel use may increase competition between agricultural users, coordinating the secondary uses of these by-products for use as feedstocks will facilitate more water efficient production of biofuels.

States have developed frameworks for water management, which biofuel producers, as consumers of water, are subject to. 'Water for the Future' is the Australian Government's framework for national water reform, and is built on four key priorities: taking action on climate change, using water wisely, securing water supplies and supporting healthy rivers. These priorities will be delivered through a ten year, \$12.9 billion investment in strategic programs, improved water management arrangements in rural and urban areas, and a renewed commitment to water reform nationally.

Efficient and more productive water use has become increasingly important to the continued stability of Australia's rural sector with national reforms being undertaken for irrigated agriculture, including under the \$5.8 billion 'Sustainable Rural Water Use and Infrastructure' program. The focus of this program is on efficiency improvements in irrigation, and involves: modernising irrigation infrastructure, the development of water meter specifications, meter installation standards, and standards for ancillary data systems. This is a major step toward sustaining irrigated activity in the face of reduced future water supplies.

## Land-use Change

Land-use change, for biofuel production and for other purposes, is a topic of significant discussion in United Nations Framework Convention on Climate Change (UNFCCC) negotiations under the banner of reducing emissions from deforestation and forest degradation (REDD) in developing countries.

Australia advocates the use of market-based incentives for REDD, and was one of the first countries to commit funds for REDD capacity building and readiness activities. Through the *International Forest Carbon Initiative* (AU\$200 million), Australia has committed:

- AU\$10 million for the *World Bank's Forest Investment Program*;
- AU\$40 million to the *Indonesia – Australia Forest Carbon Partnership*, including AU\$30 million for the *Kalimantan Forests and Climate Partnership* as a demonstration activity;
- up to AU\$3 million for the *Papua New Guinea – Australia Forest Carbon Partnership*;
- AU\$11.7 million to the *World Bank's Forest Carbon Partnership Facility*;
- AU\$14.8 million for the *Asia Pacific Forestry Skills and Capacity Building Program*; and
- up to AU\$1.5 million for developing concept models by international non-government organisations for demonstration activities.

Australia's partnerships with Indonesia and Papua New Guinea on practical REDD activities directly responds to the UNFCCC Bali Action Plan toward negotiating a post-2012 international climate change agreement. These initiatives will go some way toward addressing deforestation for biofuel production.

Australian land is zoned according to relevant Commonwealth, state/territory and local land use planning regulations. However, Australian governments do not discriminate how land is used within these zones. Applications to change the classification zone of a particular area need to be considered alongside environmental impact assessments and other planning regulations.

## Greenhouse Gas Emissions

Australia is interested in the climate change mitigation potential of biofuels. However, Australia recognises that there are significant gaps in knowledge needing research in order to better understand the potential impacts of biofuels, as well as the best way to address these impacts.

Most biofuels presently available in Australia are alternative transport fuels derived from renewable sources. The two main biofuels available in the Australian market are ethanol and biodiesel, which are used mainly as extenders for petrol and diesel.

Under current international carbon accounting rules for energy, carbon dioxide (CO<sub>2</sub>) emissions from combustion of biofuels are not included in national totals (they are 'zero rated') but reported for information purposes because these emissions are considered equivalent to the carbon sequestered through growth of feedstocks.

There are a number of climate change policy initiatives in Australia that encourage the sustainable production and use of biofuels:

- Australia's *National Greenhouse and Energy Reporting Act 2007* (NGER Act) rates both removals from crop growth, and direct (Scope 1) and indirect (Scope 2) CO<sub>2</sub> emissions from biofuel combustion, as 'zero', but includes non-CO<sub>2</sub> greenhouse gas emissions. The NGER Act does not require the collection of Scope 3 emissions data, which is emissions outside the boundary of a facility as a result of activities at a facility and are not Scope 2 emissions.
- Under Australia's proposed carbon emissions trading scheme, the Carbon Pollution Reduction Scheme, obligations will not apply to emissions from combustion of biofuels for energy. These fuels will receive a 'zero rating' under the Scheme.
- The Australian Government is supporting the deployment of renewable energy, including bioenergy, in Australia's electricity supply through the Mandatory Renewable Energy Target (MRET) scheme. The MRET scheme guarantees a market for additional renewable energy generation, using a mechanism of tradeable renewable energy certificates (RECs), back by a legislative obligation. A range of biomass sources are eligible under the MRET scheme and will continue to be eligible under the expanded scheme. These include biomass-based components of municipal solid waste, plantation wood, a range of food, agricultural and wood processing wastes, landfill gas and sewage gas and some native forest harvesting wastes. To

reflect concerns surrounding the utilisation of natural resources for electricity generation, eligibility criteria were put in place in relation to the use of native forest biomass to generate electricity. These criteria reflect the commitment that only genuine wastes from sustainable forestry operations can be eligible to create RECs under the MRET scheme.

## Second Generation Biofuels Research

In response to the need for research and development of second generation biofuels, the Australian Government has established a \$15 million Second Generation Biofuels Research and Development Program (Gen 2). Gen 2 is a competitive grants program that supports the research, development and demonstration of new biofuel technologies which address the sustainable development of the biofuels industry in Australia. Applications under the Program are currently being assessed. Gen 2 will provide matching grants, ranging from AU\$1 million to AU\$5 million, for selected projects.

Two major agencies in Australia are focusing on second-generation biofuels development: the Queensland University of Technology (QUT) is collaborating with the Australian sugar industry on the feasibility of using the Australian sugar industry's waste biomass (bagasse); and the South Australian Research and Development Institute (SARDI) is building micro-algae pilot production facilities in Adelaide and Waikerie Island, South Australia. They have received funding through the Government's National Collaborative Research Infrastructure Strategy (NCRIS). Through NCRIS, the Government is providing AU\$542 million over 2005-2011 to provide researchers with major research facilities, supporting infrastructure and networks necessary for world-class research.

There are also a number of privately-funded algae initiatives, such as the recently announced Queensland Government partnership with James Cook University and MBD Biodiesel to build an algae-biodiesel demonstration pilot plant in Townsville, as well as work being undertaken at the Biomax (owned by the Victor Smorgon Group) facility in Laverton, Victoria on the production of biodiesel from algae. CSIRO is undertaking a set of projects investigating algae to biodiesel, and enzymatic and thermochemical conversion of lignocellulose. It is also studying Australia's existing and future biomass resources as the basis for assessing the prospects for second-generation biofuels.

The University of Queensland is also investigating the suitability of the *Pongamia pinnata* tree in Queensland as a biofuel feedstock within its' ARC Centre of Excellence for Integrative Legume Research (CILR) through an AU\$1 million research contract with Pacific Renewable Energy (PRE). PRE is set to partner CILR and invest another AU\$1 million as part of a Queensland Government SmartState fund.

The Rural Industries Research and Development Corporation (RIRDC) is one of a number of Research and Development Corporations established by the Government to work closely with Australian agricultural and rural industries to support their Research and Development (R&D) needs. RIRDC manages and funds R&D for established rural industries, key generic issues confronting the rural sector and on new and emerging industries as a means of diversification of rural enterprises in Australia. RIRDC has recognised a number of gaps in Australian biofuels R&D and has identified the following R&D priority areas and activities:

- *biomass availability and potential new crops* - a full assessment of available volumes and sustainable production rates, along with environmental and societal impacts;
- *improvement in biomass crops* - an assessment of what can realistically be achieved through genetic modification of crops for enhanced production of lignocellulose;
- *pre-treatment and processing technologies* - development of efficient, cost-effective, low energy conversion processes tailored to Australian biomass and conditions;
- *new transport fuels* - assessments of the feasibility of adoption of new transport fuel(s) produced from lignocellulosics with a focus on Australian infrastructure and conditions;
- *life cycle analysis/techno-economic modelling* - development of models to predict fuel costs, greenhouse gas emissions and the impact of lignocellulosic biofuels production on local economies; and
- *integrated biorefineries* - identification of product streams that can be developed in parallel to add value to second generation biofuels production systems.

The Primary Industries Ministerial Council (PIMC), involving both state and federal Ministers, is responsible for Australia's Primary Industries. The PIMC is developing a National Primary Industries Research, Development and Extension Framework. Biofuels research and development has been identified as one of the 14 industry sector and seven cross-sector industry strategies. The New South Wales Department of Primary Industries and RIRDC are the

lead agencies developing the biofuels strategy to implement a collaborative national approach to ensure research and resources achieve the best outcome for primary industries.