



Invitation to Participate

Australian Sustainable Aviation Fuel Road Map Study

an initiative of the

Sustainable Aviation Fuel Users Group



in collaboration with



Australian Government
Department of Defence
Defence Science and
Technology Organisation

STRATEGIC CONTEXT

Aviation is fundamental to the Australian way of life. Aviation safely and affordably connects our citizens and our businesses to each other and to the world. We are reliant on air transport to support business including the tourism industry which creates jobs for half a million Australians and contribute billions of dollars to our economy. Aviation is critical to regional development and prosperity.

While the benefits of aviation are clear, as producers of greenhouse gases, the aviation industry has an important role to play in reducing greenhouse emissions. The Sustainable Aviation Fuel Users Group (SAFUG)¹, made up of Air New Zealand, Boeing, Qantas and Virgin Blue are working together with the Defence Science and Technology Organisation (DSTO), and the Commonwealth Scientific Industrial Research Organisation (CSIRO) on the development and commercialisation of sustainable aviation fuel challenges specific to this region. The utilisation of low carbon fuels will assist in decoupling sector growth from its emissions allowing the industry to successfully operate in a low carbon economy.

New technology aircraft, fuel conservation and improved airspace management offer the most immediate way to reduce aviation's environmental impact, however, sustainable aviation fuels offer the largest single opportunity for reducing aviation greenhouse gas emissions.

Proven technology has been developed that converts bio-derived oils into synthetic kerosene. Recent test flights indicate that bio-derived fuels meet or exceed traditional JET-A1:

- Meets technical specifications, for example low freeze point
- Improved fuel burn of approximately 1% which equates to tens of millions of dollars per annum savings in fuel and reduced carbon emissions if used at scale
- Carbon emission reductions over the 'life cycle' of 65 to 80% (to be scientifically verified)

The major challenges now are around scale, commercial viability and environmental sustainability.

SAFUG members have committed to using biomass based jet fuel only if the appropriate sustainability framework is in place to ensure that fuel production methodologies do not compete for food, water or arable land or pose bio-security risks. To do otherwise would risk significant negative consequences.

Under planned emissions trading schemes, 'biofuels' are 'zero-rated' with nil carbon liability for the fuel user, increasing incentives to develop 'drop-in' sustainable aviation fuel solutions that generate lower carbon emissions over the 'life cycle'. However, this alone is not enough to accelerate the development of a local sustainable aviation fuel industry.

¹ SAFUG is a grouping of leading international airlines, who have pledged to implement sustainability criteria in their business models and are focused on accelerating the development and commercialisation of sustainable aviation fuels. More details on SAFUG can be found at www.safug.org

Because of the aviation fuel supply chain's unique market characteristics, creation of a sustainable aviation fuel supply chain will require government support and incentives. Specific challenges are:

- Aviation is small relative to the total liquid fuels market
- The sustainable fuel supply chain is likely to suffer from a lack of vertical integration and price signals
- There is no current industry or company for whom development and production of a biomass derived aviation fuel is core business
- Energy from biomass will be in demand from several sectors including electricity generation
- Potential bio-energy investors face new territory in considering agricultural outputs for the energy and fuel markets.

SUSTAINABLE AVIATION FUEL ROADMAP STUDY

The Australasian grouping of the Sustainable Aviation Fuel Users Group (SAFUG) is convening an Australian Sustainable Aviation Road Map study. We are seeking your interest in participating in this study.

The Australia Sustainable Aviation Fuels Road Map study will bring a diverse set of stakeholders together to build a high level road map building on international knowledge but focussed on the unique challenges of implementing a sustainable aviation fuels industry in the region. The road map will seek to identify alternative paths and required actions that could be pursued by different stakeholders. It will also identify the level of environmental sustainability and other impacts that may be expected to be achieved over different timeframes. It is expected to identify key barriers and produce a fact based outcome to assist stakeholders in providing input to business and policy decision making.

The Australian aviation industry will be inviting a diverse set of stakeholders to take part including airlines, conventional fuel producers, potential alternative fuel suppliers, biomass experts, environment and community groups, government and international aviation airframe and engine manufacturers.

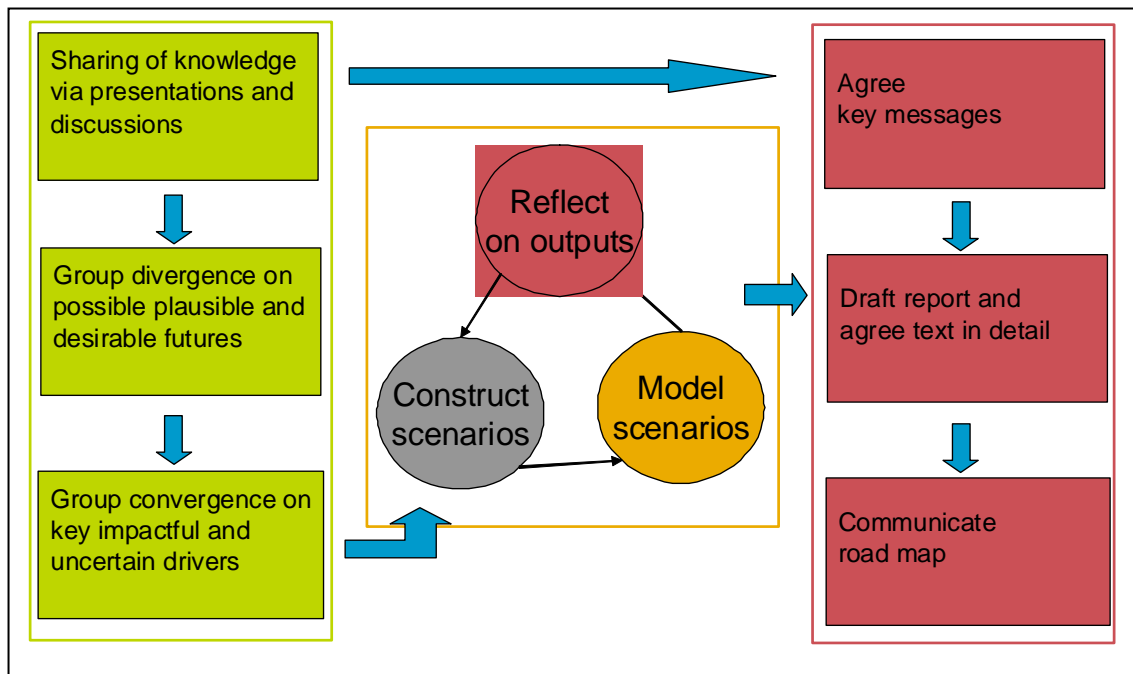
CSIRO will project manage the road map study on behalf of SAFUG using a variety of internal and external expertise. The study will commence in March 2010, and will deliver a public report in September 2010.

ROAD MAP STUDY ACTIVITIES

The Sustainable Aviation Fuels Road Map activities will include:

- Broad stakeholder collaboration on an issue of national importance
- Advising on a set of scenarios that can be used to explore alternative road map paths
- Interpreting and drawing implications from techno-economic modelling and other analysis
- Providing insights and expertise in drafting a public report

An overview of the process is shown in diagrammatical form below.



WHY PARTICIPATE?

The aviation industry is committed to addressing its greenhouse gas emissions and has publicly pledged to stabilise and reduce absolute emissions. It is clear that our industry's dependence on fossil fuels is not sustainable and with innovation, future generations of fuels for aviation can and will be developed in an environmentally, economically and socially sustainable manner.

The bottom line is that industry is seeking a reliable, sustainable and significant supply of fuel that they can utilise in their current and future fleets with the assurance that the fuel meets the required certification standard at a reasonable price.

Sustainable aviation fuels, especially biomass based, may fulfil this criteria and address fuel security concerns as supplies of petroleum based fuels decline.

At this embryonic stage of development clarity is lacking on how a sustainable aviation fuel industry will develop in our region including the best supply chain options and what stimuli and drivers are required.

The Road Map will be a valuable tool in advancing the debate on the regions fuel needs and the role of low carbon alternatives by providing strategic input to decision makers in industry and government on what options will need their careful consideration and further research.

Not only will the wider aviation industry benefit from this but also the fuel supply chain and in particular the regional communities that rely on aviation and are best placed to produce and deliver the required feedstocks.

PARTICIPANTS AND FEES

SAFUG is seeking to gather a set of Australian aviation fuel stakeholders that represent a balanced group of interests from the aviation industry, fuel supply chain, government and the community to participate in the road map study. SAFUG intends to commit substantial funds to deliver this project. However, as all participants will benefit from the project, financial support is requested to recover essential costs.

For community and environmental groups the fee will be waived.

The total cash costs of the project have been estimated at \$240,000. Contributed fees will be allocated to:

- Contracting external economic modelling/analysis
- Project management
- Contracting professional facilitation, writing, communication and media skills
- Professional design and publishing of the final report to the standards

Roadmap meetings will be held around the country to tap into expertise in key States. All participants will be expected to pay their own flight and accommodation.

ROAD MAP STUDY OUTPUTS

The road map study will deliver:

- A forum for high level discussion between aviation industry stakeholders,

- A public report setting out the major barriers, opportunities and options for achieving a the development and commercialisation of sustainable aviation fuels in Australia, incorporating
- Quantitative analysis of the outcomes of pursuing alternative pathways using a variety of economic and environmental indicators.

The roadmap modelling will examine the issue of whether biomass energy sources are best utilised in aviation or in other sectors.

Another major goal of the quantitative analysis is to demonstrate the trade-offs between various outcomes since there is no single measure of sustainability but rather the challenge is to be able to achieve an appropriate balance between economic, social and environmental outcomes.

PROJECT TIMELINE

Overall there will be six workshops of typically one day in length with a project secretariat coordinating and carrying out tasks between meetings in collaboration with the participants. The table below sets out the main activities and their timing.

Milestone/activity	Date
Workshop 1 (2 days) <ul style="list-style-type: none"> • Sharing of knowledge via presentations and discussions • Group divergence on plausible and desirable futures • Group convergence on key impactful and uncertain drivers • Scenarios designed 	March 2010
Conduct preliminary modelling	March 2010
Workshop 2 (1 day) Present and review modelling results Re-design scenarios	April 2010
Workshop 3 (1 day) Present and review modelling results Develop key messages	May 2010
Conduct revised modelling Draft expanded key messages	May-June 2010
Workshop 4 (1 day) Expand further on key messages	June 2010
Write draft report Data charts to design consultant	June 2010
Workshop 5 (1 day) Group agree detail of final report	July 2010
Workshop 6 (1 day) Final sign-off received on report	August 2010
Report to designers Government and other stakeholders briefed Report launched by agreed key speakers	July-August-September 2010

LEGAL FRAMEWORK

The success of the road map study will be based largely on the goodwill of the broad stakeholder group participating in the study. However, it will be necessary to have a minimal legal framework supporting the study.

Each participant organisation will be required to sign an agreement which sets out the roles of each of the parties and their rights and obligations. The key elements of the participant agreement are:

- The fee
- Confidentiality arrangements
- Arrangements for release of project intellectual property to the report publisher (CSIRO)

CSIRO will supply the participant agreement and also create subcontracts with facilitators, designers and others as agreed under the project plan and throughout the course of the study.

QUANTITATIVE ANALYSIS FRAMEWORK

CSIRO will coordinate a modelling team that will be capable of examining each of the road map pathways of interest to the study via the following quantitative outputs:

- Greenhouse Gas Emissions
- Aviation demand by segment (e.g. international, domestic)
- Aviation travel cost
- Fuel consumption by fuel/feedstock/region
- Land use change
- Bio-energy demand in other parts of the energy sector
- GDP and industry impacts
- Domestic fuel supply share

To deliver these outputs will require a combination of sectoral biophysical and partial equilibrium economic models coupled with national general equilibrium models. CSIRO will partner with external parties to deliver some of these capabilities, particularly the national economy modelling.

The framework will deliver many of the outputs as projections. Where possible, land use changes will be mapped.

CONTACT DETAILS

To discuss your organisation's participation please contact:

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