Dear Stephen,

With respect to the question on notice, following is a brief survey of relevant literature on the environmental effects of tax and spending policies.

1) Clive Hamilton, Richard Denniss, Hal Turton, 2002, "*Taxes and Charges for Environmental Protection",* The Australia Institute Discussion Paper Number 46. Only the Table of Contents and a brief summary are available online: http://www.tai.org.au/ under "Publications".

2) Clive Hamilton, Kai Schlegelmilch, Andrew Hoerner, Janet Milne, 2000, *Environmental Tax Reform: Using the tax system to protect the environment and promote employment,* ACF Tela Paper Number 4. Full text available: http://www.acfonline.org.au/uploads/res_tp004.pdf

3) Chris Riedy, 2003, *Subsidies that Encourage Fossil Fuel Use in Australia,* Institute for Sustainable Futures working paper CR2003/01. Here is a link to the full text of the paper: http://www.isf.uts.edu.au/publications/CR_2003_paper.pdf. Chris' work focuses on assessing the overall magnitude of subsidies that encourage fossil fuel use, but does not seek to quantify environmental impacts of the various subsidies discussed, although various policies are roughly described as "greenhouse negative" or not, etc.

4) National Institute of Economic and Industry Research (NIEIR), 1996, *Subsidies to the Use of Natural Resources.* A very thorough, if now somewhat dated, review for the Commonwealth Government of financial and environmental subsidies for the use of a wide range of resources, including water, energy, forestry and fisheries resources, waste disposal, etc. Good analyses of externalties of economic utilisation of resources that society as a whole bears, either explicitly or implicitly.

5) André de Moor, Peter Calamai, 1997, *Subsidizing Unsustainable Development: Undermining the Earth with public funds.* Full text available: http://www.ecouncil.ac.cr/econ/sud/subsidizing_unsd.pdf. Good theoretical overview and survey of international practice.

6) In the US, an organization called "Green Scissors" was formed in 1994 to identify and lobby against environmentally and economically perverse public expenditures. They remain active today and have had some notable successes. The website with a range of state-specific and issue-specific reports is at www.greenscissors.org.

7) ACF has sought to introduce a similar initiative to identify and measure environmental impacts of tax and spending policies, entitled Green Shears. While progress with this initiative has been hampered by resource constraints, the first report concerning aviation fuel subsidies is substantively complete. A copy is attached. Charles Berger, Alison Godbehear, 2005, *Green Shears Paper No. 1: Aviation Fuel Subsidies [draft].*

8) Some of the members of the Committee expressed an interest in particular in depreciation rules and how they may indirectly discourage sustainable corporate investments. While I addressed this briefly in my comments before the Committee, a somewhat fuller discussion is set out in the submission of the Australian Energy Performance Contracting Association to the Productivity Commission Inquiry into Energy Efficiency, Nov 2004, especially p. 22. Submission available at http://www.aepca.asn.au/ under "Policies".

Finally, while the above sources together make a compelling case for full integration of environmental considerations into government tax and spending decisions, and provide a good top-level survey of some of the key issues, there remain vast gaps in the literature in this area. There is a pressing need for more detailed and rigorous modelling of specific policy options to put the principles of environmental taxation & spending into practice.

Please let me know if I can assist the Committee any further, and many thanks for the opportunity to provide this additional information.

Yours sincerely,

Charles Berger

Charles Berger
Legal Adviser
Australian Conservation Foundation

NO. 1

AVIATION FUEL SUBSIDIES

GREEN SHEARS

Tax breaks for frequent flyers help keep greenhouse pollution sky high.

1 The Commonwealth imposes excise taxes on most petroleum-based fuels, but not all fuels are created equal in this respect. While unleaded petrol is taxed at around 38 cents per litre, aviation turbine fuel and aviation gasoline are taxed at just over 3 cents per litre. To put it another way, airlines pay about **92% lower excise tax** at the pump than car drivers do.

2 This lower tax rate on aviation fuels amounts to an annual **$745 million subsidy** for the air travel industry. That's the third largest industry-specific federal tax subsidy, for an industry that represents only 0.74% of Australia's GDP. But while this is good for the industry, it's not so great for the environment.

3 Air travel is a major contributor to climate change, accounting for **7.4% of Australia's greenhouse pollution from transport**. Greenhouse pollution from short-haul air travel is higher than passenger car transport, and up to 12 times higher than bus or rail transport, per passenger-km. Furthermore, air transport enhances the greenhouse effect in other ways, such as by the formation of **contrails** and the emission of **water vapour** and **soot**. None of these effects are paid for by consumers or providers of air travel.

4 The lower tax rates for aviation fuel are also an example of regressive taxation. Since air travel is generally more expensive than car, bus or rail travel, the tax breaks for aviation fuel **disproportionately benefits the affluent**, leaving those who rely on road transport or don't have the means to travel frequently to carry the tax burden.

5 Aviation fuel should be taxed at the same rate as petrol. Doing so would reduce greenhouse pollution by an estimated **100,000 to 200,000 tonnes CO_2-e** per year, reduce harmful contrail formation by 7%, and add significantly to federal revenues.

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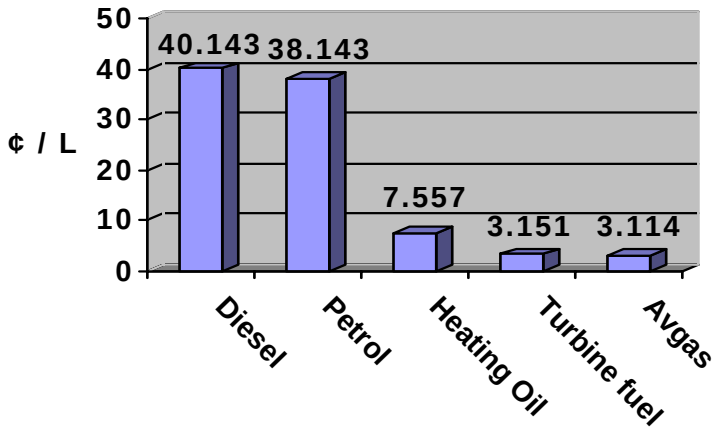
1 How it Works.

As shown by the Table 1, aviation fuels are taxed at a far lower rate than other petroleum-based fuels. This table does not take into account rebates and other exemptions – for example, the Diesel Fuel Rebate Scheme reduces or eliminates the effective tax on diesel for off-road uses. However, the table is an accurate basis to compare aviation and most on-road fuel uses.

Turbine fuel is the primary aviation fuel for commercial uses; aviation gasoline (avgas) represents a small and relatively static market. Aviation fuel is taxed only if intended to be used for domestic aviation; there is no excise on fuel intended for international flights.

Table 1: Excise rates for fuels



As a proportion of total fuel costs, excise is about 35% of the total price of petrol, but only about 3.5% of the total price of aviation fuels.[1]

According to the Commonwealth 2004 Tax Expenditure Statement, the aviation fuel excise is intended only to provide funding for the Civil Aviation Safety Authority and Airservices Australia.[2] But the aviation fuel excise should not have such a narrow objective, given the environmental effects of aviation fuel consumption are comparable to other petroleum-based fuels.

2 What it Costs the Government.

The Commonwealth 2004 Tax Expenditures Statement indicates that the value of the concessional rate for aviation fuels is $745 million.[3] This amount, the third largest industry-specific tax expenditure listed,[4] represents the difference between the 38.143¢/L benchmark and the concessional aviation fuel rates.

The actual amount the Commonwealth would collect in revenue if the aviation fuel tax rates were raised to the benchmark would likely be somewhat less. In the short term, increased prices could lead to a decrease in demand for aviation fuels of around 6.8% (see point 5 below), leading to aviation fuel excise receipts of around $694 million. On the other hand, some of the decrease in air travel will be balanced by increases in other forms of travel, with commensurately higher tax receipts for petrol and diesel.

A conservative estimate of revenue foregone by the aviation fuel concessions is $700 million per year – more than 3 times the total federal expenditure on all federal climate change programs in 2004-05.

3 What it Costs the Environment.

Air travel contributes substantially to global climate change. A 1999 study by the Intergovernmental Panel on Climate Change concluded that aircraft accounted for about 3.5% of current contributions to climate change.[5] There are three main ways in which this occurs:

- **CO_2 emissions.** CO_2 is a primary emission from aircraft engines and a significant greenhouse gas.

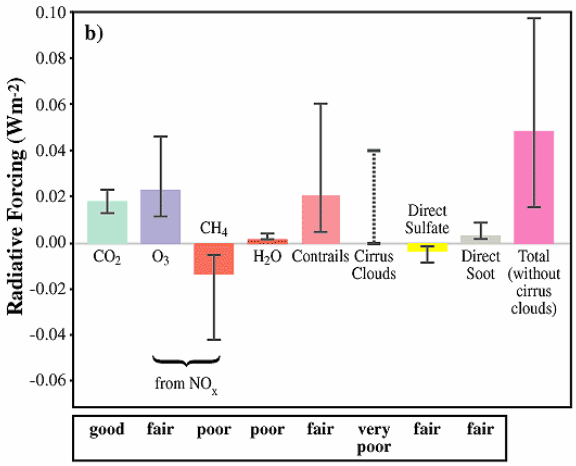
- **Ozone formation.** Aircraft emissions of NO_x into the upper troposphere and lower stratosphere increase the rate of formation of ozone [O_3]. At these levels, ozone acts as a greenhouse gas. This process is to some degree offset by the destruction of methane (CH_4) by NO_x.

- **Contrail formation.** Line-shaped aircraft contrails covered about 0.1% of the Earth's surface in 1992. These contrails, triggered by emission of vater vapour, act as thin high clouds, trapping heat and contributing to the greenhouse effect.

Other aircraft emissions, such as the direct effects of water vapour and soot, also contribute to a lesser degree to climate change. The contribution of aircraft to the formation of cirrus clouds is a further possible impact, although this relationship is poorly understood and requires further study.

Table 2 shows the best estimate and 67% confidence intervals for the contribution of various components of aircraft impacts on climate change. The box at the bottom indicates the level of scientific understanding of each component.

Table 2: Aircraft contributions to climate change[6]



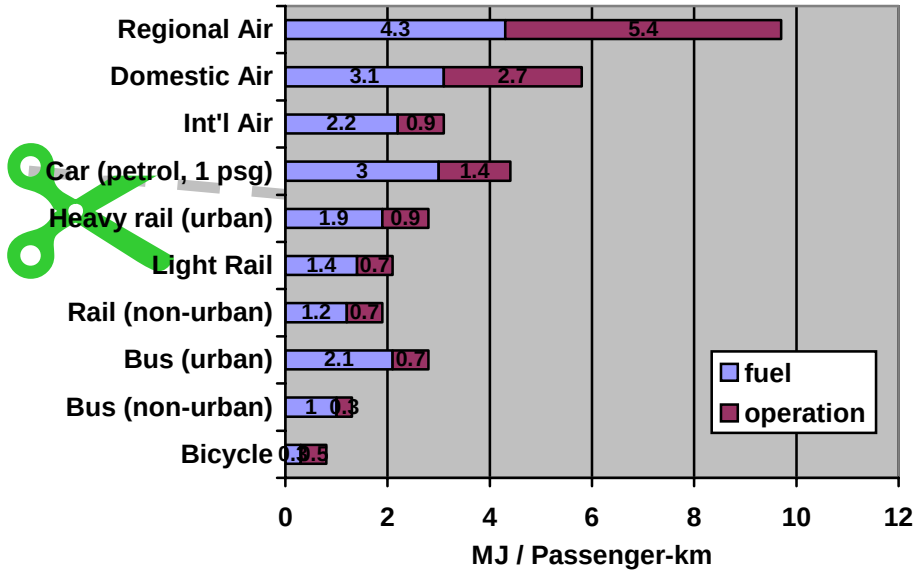
Significantly, the effect of impacts unique to the air transport sector, such as contrails and high altitude soot, are of roughly equal importance as the actual greenhouse emissions (CO_2 and NO_x). Thus, the true impact of air travel is not reflected in standard measurements of greenhouse gas emissions, such as the National Greenhouse Gas Inventory.

In 2002, domestic air travel accounted for 5.2 Mt of reported CO2-e pollution, or about 7.4% of total transport emissions and just under 1% of Australia's total emissions.[7] However, taking into account all effects, air travel's real contribution to climate change could be up to twice those figures.

We can expect these impacts on the environment to intensify over time. The Department of Transport and Regional Services estimates that Australians will fly more often and for longer distances, leading to a tripling of domestic seat-kilometres and a 150% increase in aviation fuel use from 2000 to 2020.[8]

How does air travel compare to the alternatives? Taking into account direct fuel consumption as well as energy embedded in the life cycle, Table 2 compares energy use of a range of transport alternatives.

Table 2: Energy required for transport alternatives[9]



As the table shows, domestic air travel entails roughly three times the total energy of inter-city rail, four and a half times that of inter-city bus travel, and five times that of a car with four passengers.

4 What it Costs our Society.

The aviation fuel tax concessions disproportionately benefit the affluent, since air travel is typically more expensive than other forms of transport.[10] Relatively wealthy individuals, it is reasonable to say, are more likely to use air transport when travelling, and travel more frequently and further, than those of more modest means.

The vast majority of air travel is either for business or leisure purposes. For business air travel, the concessional fuel rates operate as a corporate subsidy, with benefits ultimately to corporate shareholders. Leisure travel is fundamentally a luxury good, more likely to be consumed in greater quantities by the affluent.

The aviation fuel tax breaks do have some positive indirect effects, such as providing a modest stimulus for jobs in the airline and related sectors, such as tourism. There may also be some benefits for remote areas that of necessity depend on air travel. However, it is doubtful whether an indiscriminate subsidy for fuel consumption is the most targeted and efficient way of furthering jobs growth, regional development and tourism. The wisdom of devoting the third largest industry tax subsidy to the air transport sector, which accounts for only .74% of Australia's GDP, is dubious.[11]

5 How we can fix it.

It's time that the air transport industry did its part to bring greenhouse emissions back down to earth. The excise rates for aviation fuels should be increased to 38.143¢/L – the same rate as applies to petrol.

If this is done, we would see modest short-term benefits for the environment, as demand for aviation fuel is reduced, and long-term incentives to take the full costs of air travel into account in investment and consumer decision-making.

In the short term, the demand for aviation fuels is relatively inelastic. Even so, raising the excise rate to the benchmark level would result in a 6.9% reduction in aviation fuel demand.[12] The environmental benefits of this reduction in demand would include a 389,000 tonne reduction in annual greenhouse emissions from air travel, and reductions of similar magnitude in contrail formation and other pollution.[13]

To some degree, the reductions in greenhouse pollution will be offset by increases in other transport sectors. In this regard, the per-passenger direct fuel emissions for single-passenger car travel are comparable to those of a fully loaded domestic air jet. The extent of savings thus depends on the degree to which domestic air travel reductions are offset by (1) choices not to travel, or to travel closer to home; (2) bus and rail transport; and (3) multi-passenger car transport. It is reasonable to think that displaced leisure travel would be replaced at least by multi-passenger car transport, given than many people go on holiday with others.

While the emissions from such replacements have not been the subject of any detailed modelling, a net reduction in emissions of 100,000 to 200,000 tonnes per annum is not unreasonable.[14] Again, the reduction in harmful contrail formation and emissions of water vapour and soot, all of which also contribute to climate change, are on top of those direct reductions in greenhouse pollution.

The European Commission is investigating ways of taking greater account of the environmental effects of flights within the EU, including by taxing aviation kerosene, and will release a communication on the issue later this year.[15] Australia should show similar leadership by removing the environmentally perverse and socially harmful tax subsidy for aviation fuel.

AVIATION FUEL SUBSIDIES

NO. 1

GREEN SHEARS

The Details.

[1] Based on Sydney petrol price 108.3 cents/L (www.shell.com.au/petrolpricing, checked 22/3/05) and Melbourne Tullamarine turbine fuel commercial price of 86.55 cents/L (http://www.shell.com/home/aviation-en/html/iwgen/app_profile/peoplepricesplaces.html, checked 22/3/05)

[2] Commonwealth of Australia, Tax Expenditures Statement 2004, available at http://www.treasury.gov.au/documents/950/PDF/TES_2004.pdf, p. 149.

[3] Id.

[4] Of the top twelve tax subsidies at the federal level, nine are not industry specific – these include superannuation concessions, capital gains tax discounts, and other concessions designed to benefit particular groups (families, seniors, low income earners). The three industry specific concessions, in order of magnitude, are the statutory formula for company car fringe benefits tax concessions, the alternative fuels exemption from excise, and the concessional rate for aviation fuels. See TES 2004, Table 2.2.

[5] Intergovernmental Panel on Climate Change, Aircraft and the Global Atmosphere, 1999, available at http://www.grida.no/climate/ipcc/aviation/index.htm.

[6] Id., Figure 6-14b.

[7] Australian Greenhouse Office, National Greenhouse Gas Inventory 2002, available at http://www.greenhouse.gov.au/inventory/2002/index.html.

[8] Bureau of Transport and Regional Economics, Report 107: Greenhouse Gas Emissions from Transport, 2002, available at http://www.btre.gov.au/docs/reports/r107/r107.aspx, pp 149-153. The lower expected rate of growth for fuel use, as compared to seat kilometres, is primarily attributable to expected longer flights and increased fuel efficiency.

[9] From Manfred Lenzen, "Total Requirements of Energy and Greenhouse Gases for Australian Transport," *Transportation Research D*, Vol. 4, No. 4, July 1999, pp. 265-290.

[10] A roundtrip from Melbourne to Sydney on Qantas may cost as low as $160 ("Red e-deal"), but a more typical fare ("Super Saver") is around $276. Greyhound Australia offers round-trip bus tickets for $120 ($108 concession). (Price quotes from www.qantas.com.au and www.greyhound.com.au, both checked 23/3/05)

[11] Australian Bureau of Statistics, Australian System of National Accounts, 2002-03 (5204.0)

[12] Based on domestic price elasticity of -0.18 for aviation fuel, taken from [cite].

[13] Emissions reductions based on reductions in demand of 6.887% on 2002-03 volume of 2023.59 ML turbine fuel and 6.176% on 2002-03 volume of 94.32 ML Avgas. (Volumes from Australian Taxation Office, Taxation Statistics 2001-02: A summary of taxation, superannuation and industry benchmark statistics 2001–02 and 2002–03, available at http://www.ato.gov.au/taxprofessionals/content.asp?doc=/content/45694.htm&page=28&H8). This yields reductions of 139.37 ML of turbine fuel and 5.82 ML of Avgas, which translate to 389,000 tonnes CO2-e emissions, using coefficients for those fuels from Australian Institute of Energy, "Energy Value and Greenhouse Emission Factor of Selected Fuels", viewed 23/3/2005, www.aie.org.au/melb/material/resource/fuels.htm.

[14] With respect to the reductions in domestic air travel, relatively conservative assumptions of15% replacement by a decision not to travel, 10% replacement by train or bus, 25% replacement by 2-passenger car travel, and 50% replacement by 1-passenger car travel yields about a 34% reduction in direct emissions, or a 132,000 tonne reduction in emissions.

[15] EurActiv, "Aircraft emissions to be debated under UK Presidency", 2/2/05, at http://www.euractiv.com/Article?tcmuri=tcm:29-134896-16&type=News.

Australian Conservation Foundation

Green Shears aims to make Australian government budgets more lean and green, by identifying and advocating against subsidies, tax breaks and other expenditures that harm the environment, society and the economy. Thanks to Friends of the Earth, Taxpayers for Common Sense and the U.S. Public Interest Research Group for showing the way (see www.greenscissors.org).

This report by Charles Berger, Legal Advisor and Alison Godbehear, Research Volunteer

www.acfonline.org.au