

# Submission on Climate Change: Land use - Agriculture and forestry

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**The Secretariat,  
Garnaut Review,**

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re Issues Paper 1.

## **Pre-emptive strikes and collateral damage**

Australian national policy for the amelioration of bushfires prescribes mitigation for its primary focus, virtually unopposed save for the occasional ad hoc objection by an individual or a conservation group.

Our tendency to the dichotomy of Mitigation versus Suppression has seen the firestick approach dominant in recent millennia, with scant regard for the accompanying emissions from “good bushfires”. In consequence Australia avoids the use of fixed-wing firebombing aircraft for fire suppression, with the exception of the smallest category, that being comprised of single-engine agricultural aircraft adapted to the purpose. No medium or heavy category aircraft are ever utilized here, in contrast to everywhere else in both the developed and in the developing world. The CSIRO’s Phil Cheney declared “*large water scooping air tankers are attractive to some politicians, but the main conclusion of many reviews after is that mitigation of risk is an essential facet of bushfire management*”.

The rationale of pre-burning disparate tracts of landscape to interrupt bushfires hasn’t prevented the occurrence of recent so-called mega-fires. Victorian bushfire expert Kevin Tolhurst advocates “*more regular use of (deliberate) fire on a much larger scale.*”

*“The Americans, French, Greeks, Portuguese and Italians, and Canadian have all tried the ‘Suppression’ approach. One percent of fires do all the damage regardless of how many dollars you put into aircraft. It does not work on its own.*

*Look at Western Australia - with good planning, commitment and financial support - result: fire management works” (\*1).* The euphemism ‘fuel reduction’ ironically illuminates undisclosed emissions necessarily involved, threatening the efficacy of policies contrived to mitigate global warming.

If recent bushfires “*can release as much carbon as the annual **emissions** from the entire transportation or energy sector of an individual state (\*2)*”, any expensive initiatives we devise for reducing emissions could be rendered incidental to outcomes. Inevitable reforms by industry, transport and by individuals will amplify the proportional damage attributable to bushfires. Unless we address our failure with current suppression efforts, any other reforms to mitigate global warming could be futile.

It was estimated that 130 million tonnes of greenhouse gases were emitted during the 2003 bushfires in southeast Australia... The 2003 'State of the Environment Report' for the Australian Capital Territory lists that nearly 6.4 million tonnes of carbon dioxide were emitted into the atmosphere during the January 2003 Canberra wildfires: equivalent to 1.6 million new cars on the road for a whole year (\*3).

Factoring emissions from prescribed burning and bushfires is essential because Australia's contribution is disproportionately large globally. Last summer's Victorian fires consumed a territorial area greater than that occupied by Greece, or half the size of Italy.

### **Good and Evil Bushfires**

*"...there are good, as well as bad, bushfires. Good bushfires help to meet land management and fire mitigation objectives without adverse impacts on people, property or the environment; bad bushfires threaten lives, property or environmental assets and do so in ways that are difficult to control."* (\*4) **COAG Bushfire Inquiry**

Successive governments and fire authorities have declared medium and large firebombing aircraft inappropriate to Australian circumstances. Numerous bushfire inquiries have recommended evaluating medium and large firebombers, specifically Bombardier appliances. Neither the Bushfire CRC nor the National Aerial Fire Fighting Strategy has ever countenanced using specialized medium or large firefighting aircraft. Nor have they evaluated them, or asked their counterparts in other countries why they continue deploying them in increasing numbers.

### **National Aerial Fire Fighting Strategy**

On May 27, 2003 a media release by Victorian Police and Emergency Services Minister Andre Haermeyer asserted *"the Commonwealth Government's failure to live up to its National Aerial Fire Fighting Strategy worsened this summer's bushfires."* *"On January 8, 2003, more than 100 fires were lit by lightning strikes. Within 24 hours, intensive aerial response had reduced those fires to eight. The fire services have indicated to me that those last remaining fires could well have been knocked over by the additional aircraft recommended in the National Aerial Fire Fighting Strategy."*

Haermeyer's argument for extra aircraft invoked DSE Chief Fire Officer Gary Morgan's opinion that they *"should have assisted in bringing about earlier control of the fire situation"*.

Assistant Chief Fire Officer with Victoria's Department of Sustainability and Environment Liam Fogarty was pleased after last summer's (2006) fires:

*"...when you look at the fact that the fire's over one million one hundred hectares, and in a day it has over 2,000 kilometres of perimeter, it's an amazing, it's a great event for us"* he declared.

Acting Emergency Services Commissioner, Dale Sullivan, attributed the overall success to a style of fire fighting which has adapted to match the effects of climate change and drought on fire behaviour. Backburning over 100,000 hectares to halt a million hectare fire seems a strange gauge of *"success"*.

### **Bushfire Capital of the World reacts**

The Bushfire CRC undertook 5 programs, none of which surveyed the use of specialized or dedicated firebombing aircraft. France, Spain, Portugal, Italy, Canada, Croatia, Greece and Russia are some of the countries using these aircraft. Many have ordered additional examples already this year. Evidently they don't consider them 'glamorous wonders' of public deceptions, as our authorities apparently do. Instead they regard 'Suppression' essential and dedicated firebombers the "*greatest technological advancement in firefighting*", according to Spain. Greece just ordered 14 Beriev B200s to complement their fleet of Bombardiers. (\*5). If such a rocky, hot and dry country finds them useful and affordable, Australia would also likely benefit, if only we utilized them.

As custodians of a whole continent, the only nation with such an onerous responsibility, it behoves us to think in national terms with respect to large scale geographic disasters which intersect and encompass subordinate interests. Portugal resembles Tasmania from the political perspective of continental EU Europe, yet they use both Berievs and Bombardiers.

I apologize for the disjointed, rushed and polemical presentation I've furnished. If I can supply additional information or assist in any way I would be delighted to do so. I'm alarmed at our trajectory with respect to emissions and respectfully suggest our current paradigm with respect to bushfires warrants a re-evaluation. Inadequate suppression efforts to date have been predicated on the alleged ineffectiveness of larger machines which now proliferate elsewhere. Supposedly ineffective firebombers form the basis of EU intervention, with member states despatching them as needed.

### **Imagine the Inertia**

Consider just one Beriev deployed to Canberra in 2003 could have placed with precision over 300,000 litres of retardant firebreak for the suburb of Duffy. It could then have defended that barrier, refilling from Burley Griffin in less than two minutes, at 12 tonne a load. A Beriev from Melbourne could have intervened on the Eyre Peninsula in an hour, refilling from the adjacent sea. One such aircraft could respond to King Island or Western Australia, from anywhere in one day. On the available evidence such sorties would be entirely feasible, and yet no trial of Bombardier or Beriev aircraft has ever occurred in Australia, nor has any evaluation of their performance been conducted. (\*6)

Yours sincerely,

Len Walsh.

### **References and selected texts:**

(\*1) -

**Tolhurst** quotes in response to public questions. **ABC Four Corners Forum**  
12 Mar 2007

**Topic - Kevin Tolhurst - is fire too complex to sell?**

*"I believe there is a lot we can learn from aboriginal fire use... If regular low intensity fires are used more widely across the landscape, then the opportunity for fires to become so large is reduced and when they do occur, their impact is significantly less."*

*"...regardless of the global warming severity, we need to make sure that our natural environment is as vibrant, tolerant and resilient as possible. That means that we need to be implementing fire regimes that maintain the vital ecological processes. I believe the scientific evidence all points then to more extensive, low intensity fire to maintain the environment in its most resilient state."*

*"I have seen mammals go extinct in some areas under the fire suppression (exclusion) policy. No one even notices. However, if an individual animal is harmed by a prescribed fire, there is hell to pay. We need to wake up before it is too late."*

The Australian Greenhouse Office and the CSIRO predict diminished snowmelt and more frequent bushfires, while the High Country Fuels and Ecosystems Functions warn post-fire eucalypt regrowth further erodes water supply to rivers. Professor Mark Adams alerts us about half a million hectares of alpine bushland being at risk: ***"Bushfires create large scale forest regeneration that uses more water than the mature forests they replaced."*** His research suggests such a **fire could reduce water supplies for 30 years by up to 20%.**

The CSIRO told the Herald Sun online **Bushfires' colossal effect** monster bushfires have generated the power of more than 100 atomic bombs and pumped out millions of tonnes of pollution, greenhouse gas and toxic cloud. Victoria produced about 7.6 million tonnes of carbon dioxide in the past month from burning coal, petrol and gas; while bushfires raging in the same time pumped out 10.3 million tonnes of carbon dioxide.

***"The emissions from bushfires including savannah fires, wildfires and fuel reduction burns account for about 3-4 per cent of Australia's total greenhouse gas emissions,"*** Dr Meyer said the Victorian fires have burned enough fuel to provide the entire state's electricity needs for two-and-a-half years, burned almost 1.7 million acres of state forest and private land. The total area burned in Victoria is over 2.9 million acres

(\*2) –

Christine Wiedinmyer of the National Centre for Atmospheric Research and Jason Neff of the University of Colorado used satellite imaging data to determine the extent of fires over the period 2002-2006. They estimated the output of carbon dioxide, CO<sub>2</sub>, based on the degree of forest cover in a particular area.

Typical annual **emissions** from fires are around five percent of the human-caused total for the United States. But during major fires in the western and southeastern United States, the proportion of fire contributions to CO<sub>2</sub> **emissions** can increase.

*"A striking implication of very large wildfires is that a severe fire season lasting only one or two months can release as much carbon as the annual **emissions** from the entire transportation or energy sector of an individual state,"* the authors write.

<http://www.ens-newswire.com/ens/nov2007/2007-11-01-092.asp>

It was estimated that 130 million tonnes of greenhouse gases were emitted during the 2003 bushfires in southeast Australia... The 2003 'State of the Environment Report' for the Australian Capital Territory lists that nearly 6.4 million tonnes of carbon

dioxide were emitted into the atmosphere during the January 2003 Canberra wildfires: equivalent to 1.6 million new cars on the road for a year.

Of the million-plus hectares of forest that burnt in last summer's fires, DSE's Chief Fire Officer, Ewan Waller, admitted they lit up 100,000 ha of that area in back burns.

(\*3) -

Recent peak CO<sub>2</sub> growth rates observed in 1997–1998 were attributed to wildfires, particularly in Indonesia. The 1994–1995 peaks were also consistent with wildfire. The quantities of CO<sub>2</sub> required were far in excess of previous estimates of a wildfire contribution, about one-third of the annual emissions from fossil fuels.

[http://www.publish.csiro.au/view/journals/dsp\\_journal\\_fulltext.cfm?nid=188&f=EN05013](http://www.publish.csiro.au/view/journals/dsp_journal_fulltext.cfm?nid=188&f=EN05013)

**Recent Record Growth in Atmospheric CO<sub>2</sub> Levels** by Roger J. Francey  
CSIRO Atmospheric Research 10 February 2005

In Boreal forests with increasing time since fire, litter decomposition rates were suppressed sooner than was ecosystem productivity. This contributes to greater carbon storage with increasing time since fire; for every century without a major fire, an additional 0.5 kilograms per square meter of carbon becomes stored in the humus. *Science*. 2003 May 9;300(5621):972-5.

**Ecology of Australia: the effects of nutrient-poor soils and intense fires.** Orians GH, Milewski AV. Department of Biology, Box 351800, University of Washington, Seattle, Washington 98195, USA. [blackbrd@serv.net](mailto:blackbrd@serv.net)

Australia, the flattest, driest, and geologically oldest vegetated continent, has a uniquely high proportion of nutrient-poor soils. We develop a "Nutrient-Poverty/Intense-Fire Theory," which postulates that most anomalous features of organisms and ecosystems of Australia are the evolutionary consequences of adaptations to nutrient poverty, compounded by intense fire that tends to occur as a result of nutrient poverty.

Intense fire exacerbates nutrient poverty by volatilizing certain micronutrients critical for animals.

(\*4)

- <http://www.coagbushfireenquiry.gov.au/report/docs/chapter1.doc>.

Part One

Background

### **1 Bushfire in Australia**

*We have to get over the perpetual characterisation of wild fire in Australia as a terrifying aberration, an ineluctable, unpredictable Act of God, and start to see it and manage it as an inherently Australian phenomenon that goes with the territory. Fire is a crucial shaper of many of our landscapes and a valuable resource management tool. Rather than demonising fire with the language of warfare, disaster, destruction and terror, we should have explicit programs that are about learning to live with fire ...*

—Andrew Campbell<sup>1</sup>

### **Introduction**

Bushfires have been part of Australia's environment for millions of years. Just as we now appreciate that Australia cannot be 'drought-proofed', so it is that the land cannot

and should not be 'fire-proofed'. Rather, we must continue to learn to live with bushfire, as we have been doing since the first Australians arrived on this fire-prone continent. Indigenous Australians developed a sophisticated understanding and purposeful use of fire for land management...

Planned fire to achieve specific objectives (ecological, fuel reduction and traditional burning) has been and remains a fundamentally important land management tool for Australia's landowners and managers and for firefighters.

### **On Good and Evil Bushfires**

...there are good, as well as bad, bushfires. Good bushfires help to meet land management and fire mitigation objectives without adverse impacts on people, property or the environment; bad bushfires threaten lives, property or environmental assets and do so in ways that are difficult to control.

### **Impact**

...media interest during the 2002–03 fire season focused on fires that affected about 3 million hectares in south-eastern Australia. These fires had the most severe impacts on life and property and dramatic impacts on the natural environment. In the same fire season, however, around 38 million hectares was affected by fire in northern and central Australia. Although some of these extensive fires had considerable impacts on biodiversity, greenhouse gas emissions and soil erosion, they had much less impact on life and property.

[http://www.marketwire.com/mw/release\\_html\\_b1?release\\_id=192009](http://www.marketwire.com/mw/release_html_b1?release_id=192009)

Spain awards Bombardier the Asociacion para la Promocion de Actividades Socioculturales (APAS) for "***Greatest technological advancement in firefighting***". "*This (CL-415) is **the most efficient tool** for the aerial combat of forest fires, key to the organization of firefighting in a large number of countries. The continuous improvements to meet the needs of forest firefighting have made **these aircraft** the aerial means **most in demand over more than 30 years.***"

Gould's Bushfire CRC opinion - "*A Senate Committee recommended that the Commonwealth government in conjunction with State **Governments trial at least four CL-215 water bombing aircraft** (Anon. 1994a)\*, despite the view of the Australian Fire Authorities Council that this was **not the most cost-effective alternative.***"

*"Media reports on the role of airtankers have given rise to unrealistic community and political expectations on the effectiveness of aerial operations and have resulted in the perception that aerial fire fighting is a **"glamorous and hi-tech"** way to fight bushfire. Not surprisingly aerial fire fighting is often perceived as the superior fire fighting tool. Unfortunately operations involving **"wonders"** of technology have not been examined in terms of their appropriateness; usefulness and effectiveness of aircraft are for fighting bushfires."* [http://www.environment.sa.gov.au/biodiversity/pdfs/bushfire/gould\\_jim1.pdf](http://www.environment.sa.gov.au/biodiversity/pdfs/bushfire/gould_jim1.pdf)

**No trial of Bombardier or Beriev aircraft has ever occurred in Australia, nor has any evaluation of their performance been conducted.**

## **The Inquiry into the 2002–2003 Victorian Bushfires**

### ***Initial response to the fires***

17.51 That an appropriately resourced, **national aerial firefighting strategy is urgently required**, and that the Victorian Government make representations to the Commonwealth to support the Australasian Fire Authorities Council recommendation

22.60 That the joint agencies introduce a system of performance measures for reporting the effectiveness of **aircraft** in firefighting operations.

## **Inquiry into the Operational Response to the January 2003 Bushfires in the ACT**

Aerial bombing should remain a capability used in the ACT during bushfires, with particular emphasis on using the **aircraft** for **water bombing as an immediate response**—as soon as fires are detected. This should be backed up by the use of ground crews

(\*5) –

**Stop Press:** <http://www.flightglobal.com/articles/2008/01/04/220563/general-aviation-briefs.html> Greece has signed a contract for up to **14 Beriev Be-200** firefighting amphibians

**Stop Press:** <http://www.flightglobal.com/articles/2008/01/04/220620/spain-bolsters-water-bomber-fleet.html> **04/01/08**

The Spanish government has placed a firm order for two Bombardier 415s, to take its fleet of the amphibious firefighting aircraft to 22. Delivery will begin this year. Spain currently operates one Bombardier 415, 14 CL-215T and five CL-215 aircraft

## **Recent orders of specialized firebombers -**

Montréal, February 09, 2004

**Italy** has purchased and taken delivery of three Bombardier 415.

Italian Department of Civil Protection increases its fleet to 16 aircraft.

Montréal, Quebec, March 31, 2004

**Greece's** Hellenic Air Force (HAF) has taken delivery of the first of two Bombardier 415 MP in Search and Rescue (SAR) configuration. This variant incorporates numerous modifications to perform surveillance missions, with the additional benefit of direct interventions at sea. Typical missions include search and rescue, maritime patrol, law enforcement and environmental control. It retains the capability to carry, drop and scoop over 6,100 litres (1,600 US gallons) of water and is fitted with sophisticated sensors to locate and identify vessels, people in distress, and pollutants. It quickly deploy a specialized jet boat that can carry a rapid intervention teams of five persons at over 80 km/h. The design of the mission equipment allows reconfiguration of the aircraft to transport cargo, personnel, casualties on stretchers, paratroops or underwater divers, in less than two hours.

Montréal, May 19, 2005

**Italian** Government has purchased one Bombardier 415 amphibious aircraft for its firefighting operations

"Our fleet of 16 Bombardier **415 aircraft remains the backbone of our firefighting operations**. The Bombardier 415 have been **the most important contributors to the improvement of our firefighting efforts**, helping us reach our goal to reduce the average areas burned by fire. During the first four months of 2005, two of the Italian Bombardier 415 aircraft flew a total of 178 relief missions to those areas of Sri Lanka affected by the tsunami of December

26th, 2004, delivering over 250,000 kg of aid supplies," said Dr. Vincenzo Spaziante, Vice-director, Civil Protection Department of Italy.

Montréal, January 17, 2006

**France's** Sécurité Civile has placed a firm order for another Bombardier 415 amphibious aircraft. This order brings the French fleet to eleven Bombardier 415 aircraft.

Montréal, December 22, 2006

**France's** Sécurité Civile has placed a firm order for another Bombardier 415 amphibious aircraft. This order brings the French fleet to twelve Bombardier 415 aircraft.

Montréal, Canada, July 27, 2006

**Spain** has placed a firm order for one Bombardier 415 amphibious aircraft. Spain is increasing its fleet to 20 Bombardier amphibious aircraft. It is already operating 14 CL-215T and 5 CL-215 aircraft

Montréal, November 15, 2007 -

Tiny **Croatia** has placed a firm order for another two Bombardier 415 amphibious aircraft. With this order, the Croatian government is increasing its fleet to six Bombardier 415 aircraft, because, despite their high cost to a little country, they fucken work. The contract is valued at approximately \$62 million US, and includes spare parts, pilot training and multi-purpose equipment that will allow this aircraft to perform medical evacuations and emergency relief. That's about what we spent on the Airbus for Antarctic Expediency.

Montréal, November 26, 2007 -

Today, Bombardier Aerospace announced the sale of four Bombardier 415 amphibious aircraft to an undisclosed customer. In addition to purchasing the four firefighting aircraft, the customer also purchased additional special mission equipment items to enhance the aircraft's capabilities.

## **Imagine the Inertia**

(\*6)

The SA parliament asked to assess the CL415 in 1994

<http://www.parliament.sa.gov.au/NR/rdonlyres/4111385B-B763-4B81-9F6D-B19168C9E80E/2058/canadairreport.pdf>

On 21 April, 1994 the House of Assembly adopted a resolution requesting this Committee to immediately examine the benefits of the Canadair CL-415 and similar firefighting aircraft and to examine ways of financing and effectively sharing the costs associated with their purchase.

Much of the evidence received by the Committee was delivered from entrenched positions in the heat of bitter debate. The Committee comments below on some of the reasons for this heated debate and the difficulties it created for an objective assessment of the merits of the CL-415. The Committee continually found itself having to choose between the extreme views of one set of experts pitted against the equally extreme views of another set of opposing experts. The prejudices displayed both by opponents and by supporters of Canadair contributed to the generally poor quality of the evidence presented to the Committee and made its task of assessing the merits of the aircraft extremely difficult.

Opponents of the use of Canadair aircraft in Australia have long pointed to the 1986 CSIRO scientific and economic study of aerial bushfire suppression, known as Project Aquarius, as conclusive proof of the unsuitability of the aircraft for use in this country. Supporters of the aircraft have therefore expended a great deal of

effort on criticising Project Aquarius — both for its methodology and its conclusions.

After examining this debate the Committee is convinced that the Project Aquarius economic study's conclusions are no longer valid and that they should not continue to act as the major barrier to further objective consideration of the use of Canadair aircraft in Australia. The Committee has come to this conclusion mainly because the potential losses which may be caused by fire in this country — both in rural areas and in urban fringe zones — are now much greater than in the early 1980s when the original study was carried out and because there have been great improvements since that time in the productivity of firefighting aircraft and in aerial firefighting techniques.

**The Committee calls upon firefighting authorities and other policy makers to re-examine the benefits of Canadair and similar aircraft with open minds**

**After carrying out that examination the Committee found that the CL-415 has the potential to make a significant contribution to firefighting in South Australia. It emphasises, however, that no aircraft, including the CL-415, can stand alone as the sole aerial fire control measure required by any community. A range of aircraft should be available to provide flexibility in fire control. It is part of the challenge of policy makers and governments to make available to fire authorities the best possible combination of aircraft to provide the best possible response to fire emergencies.**

The best way for the aircraft's benefits to be proved and for the competing claims of opposing and supporting experts to be tested is for trials of the aircraft to be held in Australia. But proof of the CL-415's *operational* effectiveness will leave unanswered the other major question of whether it is *cost-effective*. A new cost-benefit analysis of Canadair aircraft (and of other aircraft which may be just as effective as firefighters) is therefore required. The new study should take into account criticisms of the 1986 Project Aquarius study and incorporate data about the aircraft's effectiveness under Australian conditions obtained in the course of practical trials in this country.

**The Committee therefore recommends that the potential benefits of the CL-415 should be fully demonstrated and evaluated by a trial in Australian conditions as part of a new cost-benefit study of aerial bushfire suppression**

**The Committee recommends that the Be-200 be given serious consideration as a possible future firefighting aircraft for Australia. With the CL-415, it should be objectively evaluated as part of the proposed new cost-benefit study of aerial bushfire suppression**

**Unattributed or unverified anecdotes:** A single CL-415 in Croatia performed 225 water bombing runs in a 24-hour period, delivering over a million litres of water. F-18 Super Hornets reputedly will cost us \$6.7 billion, or \$280 million each, to plug a two year Defence capability gap. Purchasing just two less, 22 in lieu of 24, would fund twenty firebombers, say 10 Berievs plus 10 Bombardiers.

In April '07 the Victorian State Government's Ministerial Bushfire Recovery Taskforce was obliged to announce a **\$138 million** recovery package.

Ron McLeod's '03 report listed 7 recommendations about 'fuel reduction' and mere passing reference to aerial support.

*"My Government announced funding of \$16.5 million over three years in the 2004-05 Budget for the National Aerial Fire Fighting Centre."*