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How green is the Green Car Innovation Fund?

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Introduction

The establishment of a \$500 million Green Car Innovation Fund (GCIF) was one of a number of climate change policies announced by the then Opposition as part of its 2007 federal election campaign.¹ The GCIF was envisaged to operate for five years from 2011 and would kick-start the production of low-emission and fuel-efficient vehicles in Australia. Climate change was seen as core business for manufacturing and the car industry was the touchstone of Australian manufacturing. The policy imperative for establishing the GCIF did not differentiate between automotive technologies. The Rudd Government welcomed the contest of technologies and embraced innovation in tackling global warming. The industry's integration in the global supply chain was also an export priority:

We are agnostic about the technology – hybrid, hydrogen combustion, hydrogen fuel cell, flexible fuel (petrol-ethanol), clean diesel, LPG – they are all on the table. So are technologies to make vehicles lighter and more aerodynamic. Technologies to make vehicles operate more efficiently – such as cylinder deactivation, dual-clutch transmissions, common axles and drive-chain improvements. Even technologies to help vehicles get through traffic more smoothly, such as intelligent transport systems and telematics.

Any idea with a serious chance of reducing the carbon and other environmental impacts of Australia's vehicle fleet will get a hearing. I've already made it clear that we will not be putting the entire fund into one vehicle, company or technology. We welcome the contest of ideas and we are ready to support a variety of solutions. We are especially keen to develop solutions that will find markets overseas. This is an international industry and Australia needs to become an integral link in the global supply chain.²

Funding for the \$500 million GCIF was announced in the 2008–09 Budget and the budget papers revealed that the Government had decided to provide \$100 million in the first year 2011–12.³ It was expected that the funding model (where the industry would match the Government's contribution on a one-to-three dollar basis) would generate \$2 billion in new investment and accelerate production of locally made hybrid cars. The GCIF would catapult

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1. Australian Labor Party, *National platform 2007 – chapter 3: building a 21st century economy*, viewed 14 May 2010, http://www.alp.org.au/sites/default/files/downloads/chapter_3.pdf. See also K Rudd, K Carr and P Garrett, *Federal Labor's \$2 billion green car partnership – action on climate change and green cars*, joint statement, 15 March 2007, viewed 14 May 2010, http://parlinfo.aph.gov.au/parlInfo/download/media/pressrel/84IM6/upload_binary/84im61.pdf;fileType=application%2Fpdf#search=%22media/pressrel/84IM6%22
 2. K Carr (Minister for Innovation, Industry, Science and Research), 'Greening the supply chain', speech delivered on 2 April 2008, media release, viewed 12 May 2010, <http://minister.innovation.gov.au/Carr/Pages/GREENINGTHESUPPLYCHAIN.aspx>
 3. Australian Government, *Expense measures: budget paper no. 2, part 2: 2008–09*, Commonwealth of Australia, Canberra, 2008, p. 114, viewed 12 May 2010, <http://www.aph.gov.au/budget/2008-09/content/bp2/html/expense-06a.htm>

Australia into a leading position in the global development and application of green car technology.⁴

The Bracks Review

In February 2008, the Government appointed Steve Bracks, the former Premier of Victoria to conduct a review of the car industry and make recommendations on the delivery of the GCIF. The report of the Bracks Review was released in August 2008. It recommended doubling the GCIF to \$1 billion and bringing forward the start date to 2009 in preparation for an emissions trading scheme (ETS). The report noted that:

For the Australian automotive industry, a carefully targeted Fund would complement the introduction of an emissions trading scheme. The Australian automotive industry, with its innovative design and engineering base, is well positioned to respond to global demand for low-emissions, fuel-efficient cars in every vehicle class, including the large passenger cars produced in Australia.

There will also be strong opportunities for a wide range of niche low-emissions automotive technologies. The commercial benefits are likely to go to the early developers of these technologies, so it is important that the Australian industry moves quickly to exploit these opportunities. The Fund will therefore be important in re-structuring the industry to an economically and environmentally sustainable future.

To maximise the potential benefits of the Fund, the Government will need to consider a range of issues in designing its structure and eligibility criteria, including the organisations, technologies and activities that would be eligible to receive funding.

Structure of the Fund

Automotive industry investment decisions are made in the context of long product development cycles. The full benefits of initiatives supported by the Green Car Innovation Fund may not be evidenced for some years after the support is provided. The structure, eligibility criteria and application processes for the Fund should therefore be established as a matter of priority and its introduction brought forward to 2009. In addition, if the Fund proves successful in the first two years of operation, it should be extended beyond its initial five years.⁵

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4. K Carr (Minister for Innovation, Industry, Science and Research), *Green Car Innovation Fund to address climate change challenge*, media release, 13 May 2008, viewed 12 May 2010, <http://minister.innovation.gov.au/Carr/Pages/GREENCARINNOVATIONFUNDTOADDRESSCLIMATECHANGECHALLENGE.aspx>
 5. Australian Government, *Review of Australia's automotive industry*, Final Report (report prepared for the Minister for Innovation, Industry, Science and Research by the Hon Steve Bracks), Commonwealth of Australia, 2008, p. 67, viewed 14 May 2010, http://www.innovation.gov.au/automotivereview/Documents/aug08%20final%20report_secure.pdf

Importantly, the Bracks Review did not believe funding eligibility should be restricted to any particular range of automotive technologies in keeping with the policy objectives behind the GCIF. It recognised that far-reaching innovation, well beyond the current state-of-the-art technologies, would be needed to achieve significant reductions in greenhouse gas emissions. The GCIF in combination with a nationwide ETS was seen as the driver of innovation in the industry and in achieving better environmental outcomes and higher export growth. Both imperatives were underlined by the Minister for Innovation, Industry, Science and Research:

Cars integrate almost every advanced technology we use today. Mr Bracks finds that the industry needs to continue embracing global competition, but also acknowledges the challenges it faces, not least climate change. A range of new technologies is being developed to meet demand for low-emission, fuel-efficient vehicles, and no-one can say which technologies will succeed. This can be seen as a threat to the Australian industry – or as an opportunity to carve out a new niche in the international production system and secure critical export sales. Seizing the opportunity will require a new policy approach and that's what the Rudd Labor Government will provide.⁶

A New Car Plan for a Greener Future

The Bracks Review laid the blueprint for the Government's *A New Car Plan for a Greener Future*, announced in November 2008.⁷ The \$6.2 billion, 13-year long commitment to make the industry more environmentally sustainable was expected to generate \$16 billion in new investment. It included an expanded GCIF running over ten years, with up to \$1.3 billion in funding to 'provide Australian car companies with an opportunity to receive Government funding to design and sell environmentally friendly cars'.⁸ The expected \$16 billion in investment in new plant and technology (or around \$1.2 billion annually) generated by *A New Car Plan for a Greener Future* was equivalent to 17 per cent of industry gross value added. With one quarter of the cost of new investment in green cars underwritten by GCIF funding, the car industry was positioned to play a key role in responding to global warming.

In its 2009–10 Budget, the Government provided details of funding in the forward estimates through to 2013–14. The budget papers revealed that the bulk of GCIF funding (60 per cent) was earmarked for the first four years of the program commencing from 2009–10, as shown in Table 1 below.

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6. K Carr (Minister for Innovation, Industry, Science and Research), *Bracks' report maps auto future*, media release, 15 August 2008, viewed 12 May 2010, <http://minister.innovation.gov.au/Carr/Pages/BRACKSREPORTMAPSAUTOFUTURE.aspx>
 7. K Carr (Minister for Innovation, Industry, Science and Research) and K Rudd (Prime Minister), *A new car plan for a greener future*, media release, 10 November 2008, viewed 12 May 2010, <http://minister.innovation.gov.au/Carr/Pages/ANEWCARPLANFORAGREENERFUTURE.aspx>
 8. Ibid.

Table 1: Budgetary funding for the GCIF, 2009–10 to 2013–14

Administered expenses ('000)

	2008–09 Revised budget	2009–10 Budget	2010–11 Forward year 1	2011–12 Forward year 2	2012–13 Forward year 3
Green Car Innovation Fund	788	168,306	104,035	240,544	251,880

Source: *Portfolio budget statements 2009–10: budget related paper no. 1.14: Innovation, Industry, Science and Research Portfolio*, p. 41

Based on the funding model, total outlays in the forward estimates would generate \$3 billion in new capital and technology investment.

The first instalment under the GCIF was a \$35 million deal with the Japanese car maker Toyota announced by the Australian Prime Minister in Tokyo on 10 June 2008.⁹ With funding directed to new production facilities within the existing Camry line at its Altona plant in Melbourne, Toyota committed to building 10 000 Camry Hybrid vehicles a year for the next five years. Toyota's production commitment represented less than 10 per cent of its production volume at Altona.¹⁰ The deal effectively subsidised the Camry Hybrid's uncertain entry into the Australian market and fuelled industry scepticism about a hybrid car future.¹¹ Some science commentators claimed that Australia had a home-grown hybrid capability with the CSIRO and Holden designed ECOMmodore, but failed to capitalise on that advantage.¹²

Eligibility under the GCIF

The stated policy objective of the GCIF is 'to enhance research and development and the commercialisation of Australian technologies that significantly reduce fuel consumption

9. K Carr (Minister for Innovation, Industry, Science and Research), *Press Conference with the Prime Minister, Minister Carr and Katsuaki Watanabe*, media release, 10 June 2008, viewed 12 May 2010, <http://minister.innovation.gov.au/Carr/Pages/PRESSCONFERENCE.aspx>
10. Production volume of non-hybrid Camrys at Toyota's Altona plant varies between 100 000 and 115 000 units per year and most (70 per cent) are destined for export markets. Local sales of the Camry fluctuate from year to year. In 2008, local sales were 23 067. The Victorian Government matched the funding and committed to buying 2 000 units per year. Sales of the Camry Hybrid in the United States were 22 887 units in 2009: <http://www.hybridcars.com/hybrid-sales-dashboard/december-2009-dashboard.html>
11. B Park, 'Is the hybrid Camry just a photo opportunity?' Drive blog website, 17 December 2009, viewed 13 May 2010, http://blogs.drive.com.au/2009/12/is_the_hybrid_camry_just_a_pho.html
12. R Beeby, 'Green car – a coodabeen champion', *canberratimes.com.au*, 11 June 2008, viewed 13 May 2010, <http://www.canberratimes.com.au/news/local/news/general/green-car-a-coodabeen-champion/786670.aspx>

and/or greenhouse gas emissions of passenger motor vehicles'.¹³ Funding under the GCIF is subject to the *Green Car Innovation Fund* Guidelines and Ministerial Directions (*Green Car Innovation Fund Directions* No. 1 of 2009). The GCIF is open to all Australian companies and to individuals, and consortia or groups undertaking collaborative projects. There are two funding streams: Stream A and Stream B.

Stream A

Stream A is open only to car makers registered under the Automotive Competitiveness and Investment Scheme (ACIS) or the new Automotive Transformation Scheme. The target group of local car makers (Toyota, Holden and Ford) are automatically eligible to apply for funding. The nominal funding pool is \$900 million, with the cumulative total of grants to each car maker not exceeding \$300 million. Car makers must demonstrate they can fund the cost of the proposed project, which is additional to the GCIF funding sought, and have access to, or beneficial use of, any intellectual property necessary to carry out the project. The Guidelines provide scope to vary the GCIF: industry contribution ratio (1:3) depending on risk profiles and other factors.

In 2008, Toyota received \$35 million from the GCIF. Both Holden and Ford have benefited from the GCIF, the former receiving funding for local production of the Holden Cruze small car (\$149 million)¹⁴ and the latter using its portion of the funds to develop the upcoming EcoBoost Falcon and diesel Territory (\$42 million).¹⁵ This brings total GCIF funding under Stream A to \$226 million (a major portion of which was earmarked under the (ACIS Stage 2) Motor Vehicle Producer R&D Scheme).¹⁶

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13. Department of Innovation, Industry, Science and Research, Green Car Innovation Fund, Direction No. 1 of 2009, (*Industry Research and Development Act 1986*), viewed 14 May 2010, [http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrument1.nsf/0/4627833A6B44A7C9CA2575A7002094CA/\\$file/GreenCarFundDirections.pdf](http://www.comlaw.gov.au/ComLaw/Legislation/LegislativeInstrument1.nsf/0/4627833A6B44A7C9CA2575A7002094CA/$file/GreenCarFundDirections.pdf)
 14. M Pettendy and J Mellor, 'New four-cylinder small car to be built alongside the Commodore within two years', *GoAuto.com.au*, 22 December 2008, viewed 17 May 2010, <http://www.goauto.com.au/mellor/mellor.nsf/story2/92924A2534FDC499CA257527000AE664>
The South Australian Government announced that it will contribute \$30 million to the project.
 15. State Government of Victoria, 'Ford Australia \$230 million green engine initiative', InvestVictoria website, 24 July 2009, viewed 14 May 2010, <http://www.invest.vic.gov.au/240709FordAustralia230mgreenengineinitiative>.
 16. The (ACIS) Stage 2 Motor Vehicle Producer R&D Scheme commenced on 1 January 2006 and provided up to \$150 million in R&D funding over the period 2006–10. The Scheme was intended to encourage local car makers to invest in new and emerging automotive technologies: <http://www.ausindustry.gov.au/Manufacturing/AutomotiveCompetitivenessandInvestmentSchemeACIS/Pages/AutomotiveCompetitivenessandInvestmentSchemeACISStage2MotorVehicleProducerResearchandDe.aspx>. All three car makers and Mitsubishi, which ceased local production in early 2008, were awarded funding for a total of 12 projects. Toyota received \$5.15 million to develop a TRD (Toyota Racing Development) version of the Aurion. Mitsubishi was awarded

Holden was earmarked \$48.5 million under the discontinued (ACIS Stage 2) Motor Vehicle Producer R&D Scheme to investigate power train and alternative fuels for its new models. Ford's share of the Scheme was \$47 million which would be put towards developing a diesel version of the Territory. Ford's decision to invest in fuel-efficient, locally produced cars followed its decision not to pursue previously announced plans to build the Ford Focus for the export market. Committed scheme funding totalled \$141.7 million but only \$49.5 million worth of assistance had been paid out to 30 June 2009.¹⁷ Funding instead will proceed by way of grants to Holden and Ford under the GCIF, rather than through the assistance provided by the Scheme in the form of import duty concessions.

Table 2 provides a comparison of the car makers' models receiving GCIF support with their reported characteristics.

Table 2: Comparison of model characteristics

Model	Technology	Price (A\$)	Engine capacity	Fuel Efficiency/CO ₂ reductions
Camry Hybrid	Hybrid (Electric-motor/petrol engine)	\$36,990	2.4 litre / four cylinder	25 per cent fuel reduction CO ₂ emissions of 142grams/kilometre
Holden Cruze	Technology under consideration - options include petrol/diesel, liquid petroleum gas (LPG), compressed natural gas (CNG) and ethanol (E85) power train technologies	na (release date 2011)	2.0 litre / four cylinder	20 per cent fuel reduction and 20 per cent reduction in CO ₂ emissions [#]
Ecoboost Falcon	Petrol direct-injection turbo engine	na (release date 2011)	2.0 litre / four cylinder	20 per cent fuel reduction and 15 per cent reduction in CO ₂ emissions
Ford Territory	Petrol/diesel	na (release date 2011)	2.7 turbo diesel / six cylinder	25 per cent reduction in CO ₂ emissions

According to the Government's *Green Vehicle Guide*, the petrol-powered version will consume 8.8 litres of fuel per 100 kilometres and emit 208 grams of CO₂ per kilometre.

na: not available

Source: Prepared by the Parliamentary Library from media reports

\$1.1 million to further refine its 3.8 litre V6 petrol engine used in the Mitsubishi 380 large sedan: <http://www.drive.com.au/Editorial/ArticleDetail.aspx?ArticleID=27302>

17. Innovation Australia, *Annual report 2008–09*, Commonwealth of Australia, 2010, pp. 16 and 80.

It is estimated that 28 per cent of sales of the Camry Hybrid will go to private purchasers with the remaining units bought by government and fleet purchasers.¹⁸ Sales of the Camry Hybrid are approximately one-third of all Camry sales and it is possible that, in 2012, Toyota may begin production of the next generation Camry Hybrid for the Asian market.¹⁹

Stream B

Funding is open to all Australian companies or individuals other than the car makers eligible under Stream A.

The funding pool (nominally \$400 million) is less than half that available under Stream A and is intended to support R&D, proof-of-concept and early stage commercialisation carried out in Australia. To a large extent the activities funded are similar to those under the existing \$75 million Climate Ready Program and discontinued Commercial Ready program. Grants must be for at least \$100 000.

Expenditure Guidelines require that project activities must be undertaken in Australia and that funding is not available for infrastructure development, including development of road, rail or fuel delivery networks.²⁰ As at 30 June 2009, the Green Car Innovation Committee had considered two applications, but neither application was supported.²¹ An application for funding for the Australian-made Bolwell Nagari electric sports car was refused.²²

Mitsubishi is reported to have canvassed funding for its imported i-MiEV plug in electric car.²³ However, there has been no news about this proposal. Australian Design Rules would need to be modified to provide appropriate treatment of the i-MiEV and other electric cars. There have also been reports of a consortium led by Macquarie Bank for funding to build an

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18. M Pettendy, 'Toyota set for hybrid explosion', *GoAuto.com.au*, 7 July 2009, viewed 17 May 2010, <http://www.goauto.com.au/mellor/mellor.nsf/story2/1DE4FFC9EA8F8189CA2575EB0081064F>
 19. 'Toyota sales up 17.8 per cent in February', *Oz Toyota Forums*, viewed 14 May 2010, <http://www.oztoyota.com.au/content.php?170&nocache=1>
 20. AusIndustry, *Green Car Innovation Fund eligible expenditure guidelines*, Australian Government, April 2009, viewed 17 May 2010, <http://www.ausindustry.gov.au/Manufacturing/GreenCarInnovationFund/Documents/Eligible%20Expenditure%20Guidelines%20April%202009.pdf>
 21. Innovation Australia, *Annual report 2008–09*, op. cit., p. 103.
 22. 'Bolwell denied green car funds for electric sports car project', *The Motor Report.com.au*, 14 October 2009, viewed 17 May 2010, <http://www.themotorreport.com.au/44519/bolwell-denied-green-car-funds-for-electric-sports-car-project>
 23. A Heasley, 'i-MiEV: First 'practical' electric car', *drive.com.au*, 27 February 2009, viewed 17 May 2010, <http://www.drive.com.au/Editorial/ArticleDetail.aspx?ArticleId=61183>

Electric Vehicle Network (EVN).²⁴ Funding for a nationwide or state EVN would run into difficulties based on the Expenditure Guidelines.

Scaled down GCIF

The 2010–11 Budget announced a scaling back of the GCIF by \$200 million over three years in response to lower-than-expected demand, as shown in Table 3.

Table 3: Reduction in budgetary funding, 2011–12 to 2013–14

Expense (\$m)	2009–10	2010–11	2011–12	2012–13	2013–14
Department of Innovation, Industry, Science and Research	-	-	-50.0	-75.0	-75.0

Source: *Budget measures, budget paper no. 2: 2010–11*, p. 281

The budget papers also reveal a 20 per cent fall in expected expenditure in 2009–10 from \$168 306 million to \$133 306 million.

Table 4: Revised GCIF expenditure and budgetary funding, 2009–10 to 2013–14

Administered expenses ('000)	2009–10 Revised budget	2010–11 Budget	2011–12 Forward year 1	2012–13 Forward year 2	2013–14 Forward year 3
Green Car Innovation Fund	133,306	104,035	173,044	156,880	121,696

Source: *Portfolio budget statements 2010–11: budget related paper no.1.15: Innovation, Industry, Science and Research Portfolio*, p. 36

On current demand, a substantial portion of the \$1.3 billion committed to the GCIF, as much as \$450 million under Stream A and \$300 million under Stream B, will not be accessed.

Conclusions

The expanded GCIF recommended by the Bracks Review was designed to better support the Government's greenhouse emissions targets, accelerate the production of locally built hybrid cars and position the industry nearer the forefront of green car technology. Implementation of the GCIF has resulted in the three local car makers receiving targeted funding to support start-up production of hybrid and other fuel-efficient models. A major portion of this funding was earmarked under the (ACIS Stage 2) Motor Vehicle Producer R&D Scheme. It has also

24. Motoring Channel Staff, 'Electric Car Network: Green Motoring Moves Closer to Reality', *Web Wombat*, 24 October 2008, viewed 17 May 2010, http://www.webwombat.com.au/motoring/news_reports/electric-car-network-green-grid.htm

resulted in fewer than expected applications, reducing the likelihood of new technologies spreading through manufacturing. The Minister for Innovation, Industry, Science and Research said:

It's not our intention to run programs to support any particular form of technology. Over the next decade, the most rapid and cost-effective way of improving fuel economy and building more environmentally effective cars is to adapt technologies that are being deployed now.²⁵

The Garnaut Review and other studies identified transport as a major greenhouse gas emitter, contributing 14 per cent of Australia's net emissions in 2007. About half of this is due to cars and light commercial vehicles. Significant reductions in vehicle emissions will be required to meet the Government's 2020 and 2050 emissions targets. The current state-of-the art, oil-based technologies in production or soon to enter production (petrol-electric hybrid, clean diesel, direct-injection turbo) offer emissions reductions of 15-25 per cent. Even with future incremental technological improvements that will reduce emissions by at most 30 per cent, these reductions will not deliver the annual emissions reductions rate needed to achieve the Government's greenhouse goals.

The objectives of the GCIF are to establish Australia as a technology leader and create new business opportunities in niche manufacturing and component supply. Some commentators have argued that a third funding stream (Stream C) should be established and directed to support early-stage-innovation being pursued by small enterprises, innovators and emerging businesses, and to support a local-retrofit industry for green car technologies.²⁶ A lower grant threshold or increasing the GCIF contribution ratio to 1:1 would encourage a culture of local innovation. It could also be argued that a revised Stream B or new funding stream should support planning for hydrogen, plug in and electric vehicles in Australia. To date, the focus on support for an electric car industry is largely by state and territory Governments as part of their transport and car fleet strategies.

25. P Hawkins, 'It's back to the bowser in the race for the future', *theage.com.au*, 18 April 2010, viewed 17 May 2010, <http://theage.drive.com.au/motor-news/its-back-to-the-bowser-in-the-race-to-the-future-20100417-slhk.html>

26. A Simpson, *Green car innovation fund – feedback submission*, Curtin University Sustainability Policy (CUSP) Institute, 15 February 2009, viewed 17 May 2010, http://sustainability.curtin.edu.au/local/docs/Green_Car_Innovation_Fund_Submission.pdf.
An example of green car technology funding below the GCIF grant threshold of \$100 000 is the \$64 000 COMET grant to the Castlemaine-based company Blade Electric Technology (BET) to help commercialise its electric car technology. BET's battery management system allows smaller cars like the Toyota Yaris to be converted to run entirely on electric power.

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