

# New Directions Statement

## Background

### 1. The contribution of the automotive sector to the Australian economy

#### 1.1 Contribution to R&D and innovation

The Australian automotive industry has been a driver of R&D and innovation across Australian manufacturing since the first Holden rolled off the production line in 1948. ABS figures show that the automotive vehicle and parts manufacturing sector accounts for 20.9 per cent of manufacturing R&D, and 8.5 per cent of all Australian business expenditure on R&D (BERD).<sup>1</sup>

There is broad agreement that investment in R&D and innovation in the automotive sector results in significant spillovers to other areas of manufacturing, and indeed industrial organisation:

“The automotive manufacturing industry is a central player accessing a vast range of low, medium and high technology suppliers from high performance computing and communications, design engineering, robotics, advanced materials, electronics, through to relatively low technology componentry such as fasteners. But what is not understood is that the automotive industry is supported by product suppliers which also support other industries e.g. electronics, metal manufacturing, plastics and materials etc. ... And then there are the service providers in the entire manufacturing supply chain.”<sup>2</sup>

It could therefore be argued that ABS figures under-estimate the industry’s contribution to Australia’s BERD effort.

It should also be noted that, while the ABS figures relate largely to experimental development of new products, in the broader context of innovation:

“The automotive sector has always been at the forefront of new industrialisation processes, including management and organisational techniques.”<sup>3</sup>

This has led to significant improvements in productivity and quality in the industry over the past 15 years, including a 50 per cent increase in the number of vehicles assembled per employee in the decade to 2002 and growing international recognition of the “high quality of Australia’s tooling and automotive design services”.<sup>4</sup>

#### 1.2 Contribution to exports and the economy

The automotive sector is Australia’s largest source of elaborately transformed manufacturing exports, with vehicle and component exports worth over \$5 billion in 2005-06. Automotive exports are the only elaborately transformed manufacturing goods in Australia’s top ten principal merchandise exports.<sup>5</sup>

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<sup>1</sup> ABS, *Research and Experimental Development, Businesses*, Cat No. 8104.0, 28 August 2006

<sup>2</sup> AEEMA, Supplementary to Submission 19, House of Representatives Standing Committee on Economics, Finance and Public Administration, *Inquiry into Australia’s Manufacturing Industry Now and Beyond the Resources Boom*, August 2006

<sup>3</sup> House of Representatives Standing Committee on Employment, Workplace Relations and Workforce Participation, *Shifting Gears: Employment in the Automotive Components Manufacturing Industry*, December 2006

<sup>4</sup> Productivity Commission, *Review of Automotive Assistance*, 30 August 2002

<sup>5</sup> ABS and DFAT trade figures

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For South Australia and Victoria, where automotive manufacturing is concentrated, the sector represents a significant part of the State economy:

“Automotive manufacturing is a significant part of the State’s manufacturing sector, contributing 2.4 per cent of Gross State Product, generating exports worth almost \$1.2 billion in the year to November 2005 and providing direct employment for around 14,800 people.”<sup>6</sup>

The clear implication is that a major contraction of the sector would result in significant adjustment costs for the region – and potentially for the economy as a whole.

### 2. Supporting innovation in the car industry to deal with climate change

It is broadly acknowledged that the Australian automotive industry is currently facing acute challenges. Like all manufacturing in developed countries, it is facing increased competition from production in China, where “the speed of learning is almost unbelievable”.<sup>7</sup>

Added to this, the strength of the Australian dollar against both the US dollar and the Yen has substantially undermined the competitiveness of Australian vehicles. For example, a vehicle which would have cost \$20,000 to import with the Australian dollar at ¥60, costs only \$13,793 with the dollar at ¥87.

While the automotive sector already has a strong commitment to R&D, there is clearly a requirement to maintain and build on this strength if Australia is to remain an attractive location for global automotive investment.

Furthermore, as global awareness of climate change grows, consumers are becoming more attuned to the environmental impact of their activities, including the vehicles they purchase. This trend is exacerbated by high and unpredictable fuel costs. Already in Australia, hybrid vehicles are becoming more popular, with sales doubling in 2006 to 3,200 vehicles.<sup>8</sup> This attitude is being reflected internationally, with hybrids identified as having the strongest growth outlook in Asia and North America, and “fuel efficiency” rising to the number one spot in consumer purchase criteria, according to KPMG’s recent survey of automotive industry executives.<sup>9</sup>

In this environment, it is essential that Australian automotive producers focus substantial effort on the development of fuel efficient vehicles for production in Australia. This was recognised by a recent bipartisan House of Representatives inquiry into employment in the automotive components industry:

“Clearly, the innovation of the future is going to focus on sustainable technologies, including hybrid and other technologies with the most potential for growth. Without greater investment in this area, Australia is at risk of falling behind global competitors.”<sup>10</sup>

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<sup>6</sup> Government of South Australia, Submission No. 5, House of Representatives Standing Committee on Employment, Workplace Relations and Workforce Participation, *Shifting Gears: Employment in the Automotive Components Manufacturing Industry*

<sup>7</sup> Gerard Ruizendaal, Head of Corporate Strategy at Philips, quoted in KPMG, *Globalization and Manufacturing*, global survey of senior executives of manufacturing companies. See also KPMG, *2007 Global Auto Executive Survey*, 2007 for commentary on China’s impact on the automotive industry

<sup>8</sup> FCAI, *Vehicle Sales*, December 2006

<sup>9</sup> KPMG, *2007 Global Auto Executive Survey*, 2007

<sup>10</sup> House of Representatives Standing Committee on Employment, Workplace Relations and Workforce Participation, *Shifting Gears: Employment in the Automotive Components Manufacturing Industry*, December 2006

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## 3. Low emission technologies<sup>11</sup>

Australia's road transport sector produced 76 million tonnes of carbon dioxide in 2004, and accounted for 13 per cent of total greenhouse gas emissions<sup>12</sup>. Emissions from transport have been growing at 2 per cent per annum over the past decade.

Low emission technologies are critical to reducing greenhouse gas emissions and ensuring the future of the automotive industry and jobs in the sector.

In 2006, 962,666 vehicles were sold in Australia, of which 201,623 were manufactured locally.<sup>13</sup> Standard vehicles manufactured in Australia produce around 250 grams of CO<sub>2</sub> per kilometre. This is around twice as much as some vehicles already being manufactured overseas, such as hybrid (106 g/km), flexible fuel (100 g/km), and diesel vehicles (120 g/km).<sup>14</sup>

### 3.1 Hybrids

Hybrid cars use an electric motor to supplement a petrol engine. This reduces CO<sub>2</sub> emissions by ensuring that the petrol engine is used at its most efficient – for cruising – while the motor kicks in for acceleration. The fact that Hybrids still require petrol means that they are sometimes seen as a bridge to solutions that reduce vehicle emissions even further, rather than the solution to reducing vehicle emissions.

### 3.2 Hydrogen combustion

Hydrogen combustion works essentially the same way as standard combustion – mixing hydrogen with oxygen to create a combustible gas. While engines require little modification to run on hydrogen, it has a number of significant downsides: first, hydrogen is currently sourced either through extraction from fossil fuels or by electrolysis from water, which requires electricity; second, storage tanks are large and heavy and there is little supporting infrastructure (ie service stations); and third, hydrogen produces significantly less power than petrol or diesel.

### 3.3 Hydrogen fuel cell

Many industry insiders are predicting that hydrogen fuel cells will be the way of the future. Essentially, they produce an electric car that produces its own electricity, rather than relying on batteries. They do so by creating a chemical reaction between hydrogen and oxygen. While this sounds ideal, a commercially viable product is still some years away, with storage tanks and the fuel cells themselves currently being large and heavy.

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<sup>11</sup> Information on specific technologies is largely sourced from EurActiv.com, The Community for Sustainable Energy Professionals, various articles, <http://www.euractiv.com/en/environment/alternative-fuels-transport/article-138101>

<sup>12</sup> National Greenhouse Gas Inventory 2004, Australian Greenhouse Office, Department of the Environment and Heritage, May 2006

<sup>13</sup> Vehicle Sales, December 2006, Federal Chamber of Automotive Industries

<sup>14</sup> Green Vehicle Guide, Australian Government, Department of Transport and Regional Services. The Ford Focus flexible fuel vehicle, running on E85 produces 100 grams of CO<sub>2</sub> per kilometre from its exhaust, which equates to 100 g/km when 'greenhouse gas absorption by bio-ethanol crops is factored in, according to Biofuel Review, 24 July 2006.

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### **3.5 Flexible fuel vehicles**

Flexible fuel vehicles can run on various blends of petrol and ethanol, ranging from standard unleaded to an 85 per cent ethanol blend (E85). They produce less CO<sub>2</sub> emissions to the extent that they use higher blends of ethanol. The vehicles are common in Brazil and rising in popularity in the United States and Europe.

### **3.6 Diesel**

Small, highly efficient diesel vehicles are now extremely popular in Europe. Until recently, they were not available for the Australian market, because Australian diesel did not meet the low-sulphur requirements of these cars. However, fuel standards have recently been changed and smaller European diesels are becoming more popular in Australia.

While still a fossil-based fuel, the greater efficiency of diesel makes it an attractive alternative for reducing carbon emissions in the short term.

### **3.7 LPG**

Similarly to diesel, Liquid Petroleum Gas is a fossil fuel, which produces CO<sub>2</sub> emissions at lower levels than either petrol or diesel. The Government recently introduced a rebate for conversion to LPG, or for purchasing a new LPG vehicle. While take-up has been reasonably strong, long waiting times have been reported for conversions.

### **3.8 Other innovation to reduce vehicle emissions**

In addition to improved fuel technologies, there is potential to reduce the greenhouse gas emissions of Australia's transport sector through improving the efficiency of our transport systems. CSIRO Transport Futures research has found that the use of intelligent transport systems or telematics could lead a 5 per cent reduction in greenhouse gas emissions in an urban city like Sydney. As a very highly urbanised society, with a relatively small, well educated and affluent society, Australia is well placed to provide a testing ground for such technologies. In addition, Australia's electronics industry has identified that it has key strengths which give Australia a comparative advantage:

“... our designers are innovative and creative, and our engineers excel at technology integration; our contract electronics manufacturers are agile, and are globally competitive in small volume, complex product systems.”<sup>15</sup>

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<sup>15</sup> AEEMA, Submission 19, House of Representatives Standing Committee on Economics, Finance and Public Administration, *Inquiry into Australia's Manufacturing Industry Now and Beyond the Resources Boom*, August 2006