

ARRB Group – Climate Change Actions



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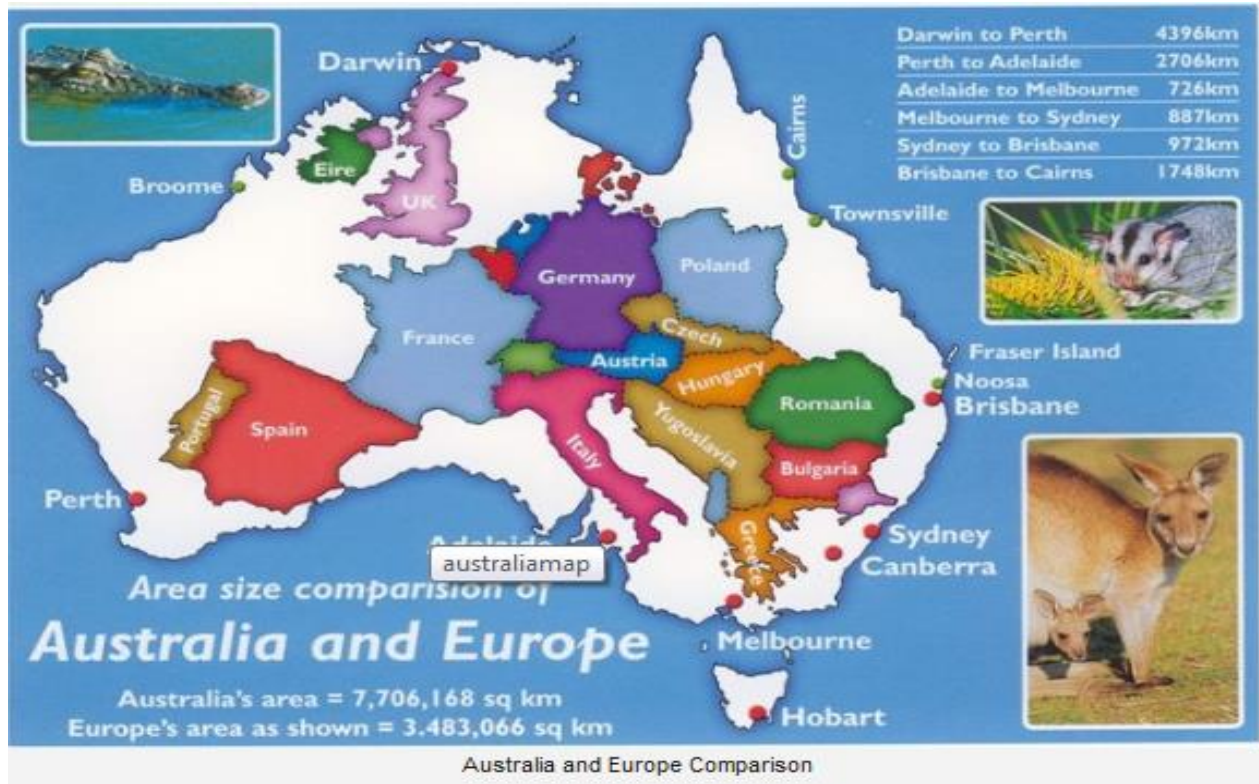
Presentation structure

- Australian perspective
- Background about ARRB Group
- Climate change adaptation and mitigation initiatives
- Other projects developed on environment and climate change



Source: Black spur scenic road in Victoria; www.arrb.com.au

Australian perspective



Source: blog.australian-native.com.au

World rankings

On a global scale, Australia has extensive investments in their road and transport infrastructure.

Australian | World ranking

Road Km/100,000 people 3,657 5	Road network, km ('000) 823 9	Population million 22.5 56	GDP A\$ trillion 1.5 20
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Australia has the fifth largest network length per head of population, but only the 20th largest economy to support it. New Zealand has the 13th highest network length per head of population, but only the 71st largest economy to support it. The imperative is therefore to do more with less, compared to other parts of the world.

The opportunity for ARRB in this is supporting innovation in road agencies through a combination of research, development and implementation (R,D&I) activities. Wherever possible, this will involve adapting overseas R&D to Australasian conditions.

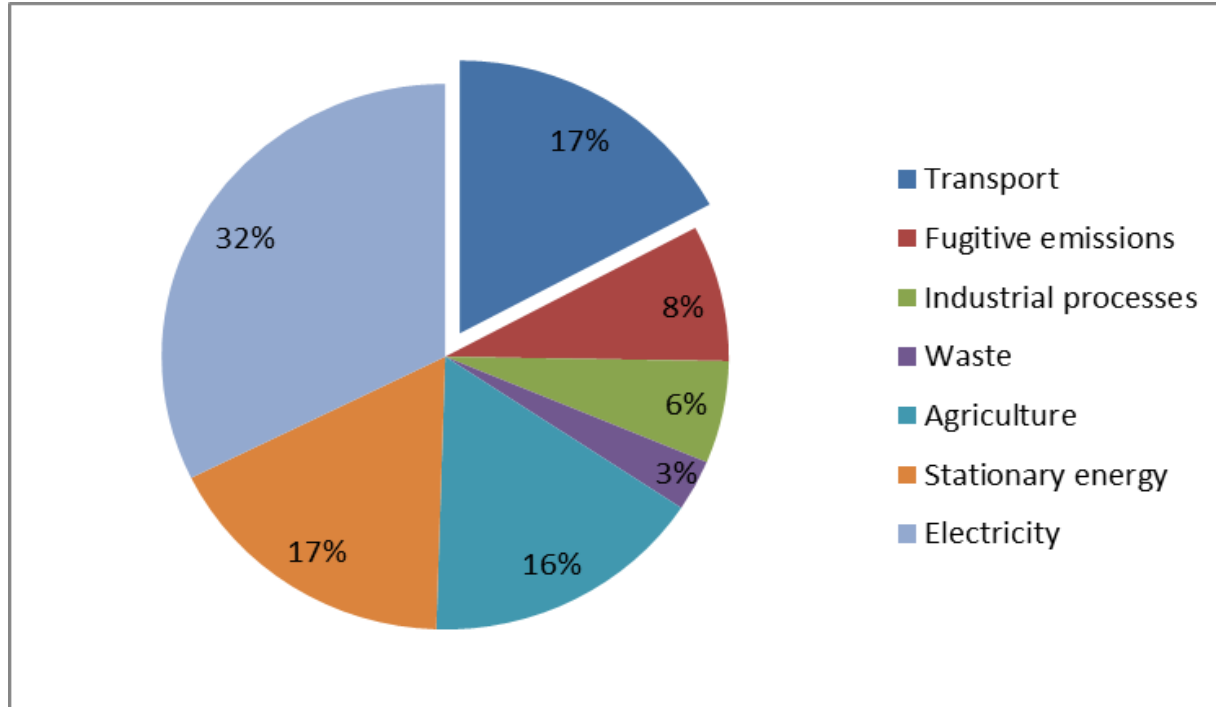


ARRB Group's purpose



Trusted advisor on roads and transport

National transport sector emissions



Source: Commonwealth of Australia (2014)

Climate change in Australia

- Temperature changes
- Variations in rainfall, flooding
- Rising sea levels, Drought
- Storm surges, Tsunami
- Increase in cyclone frequency and intensity
- Other natural hazards – Earthquakes



Black Saturday 2009 – www.advocacy.britannica.com



Queensland Floods 2011 – www.theguardian.com

Consequences of climate change



Increase in rutting



Heat-expansion of prestressed concrete bridges

Heat waves and extreme precipitation



Roadside inundation



Inundation of tunnels



Storm-caused accidents

Other impacts

- Increased bushfire risk
 - Damage to roads
 - Destruction of timber bridges
 - Destruction of signage and utilities



Time scale effects

- Climate change can have an impact on the efficiency of transport operations and ability of infrastructure to withstand extreme events outside 'typical' threshold
- Two types of impacts on the road network:
 - direct or short-term
 - indirect or longer-term

www.arrb.com.au



Adaptation frameworks

- Broadly, assessment of vulnerability involves:
 - Climate predictions & potential impacts on the transport system
 - Adaptation strategies
 - Asset management – know what you have
 - Assess vulnerability and risks (identify stressors / thresholds)
 - Value management (prioritising protection and spend)
 - Planning and project evaluation considerations
 - Monitor and revisit

Some adaptation measures

- Hard engineering solutions, e.g. levees, alternative surfacing's, design for inundation, improving resilience of infrastructure
- ITS solutions
- Soft engineering solutions, e.g. barrier islands, green infrastructure to cope with rainfall events
- Design standards
- Evacuation planning
- Community self-reliance and social resilience



Further adaptation measures considered

- Austroads Fellowship with Griffith University - Development of pavement deterioration models
- ARRB-QLD - assessing how much resilience to build into infrastructure to deal with frequent flooding
- National and State initiatives
- Bushfire and Natural Hazard CRC

Source: www.abc.net.au



Australian Low Carbon Transport Forum (ALCTF)

Climate change mitigation

- CSIRO/BITRE/ARRB Group initiative
- Objectives
 - to bring together knowledge on the options for greenhouse gas abatement and explore how deeply emissions could be cut in the transport sector
 - to bring together transport sector stakeholders and experts
 - identify how to pool knowledge across the sector
- 47 abatement options across all modes

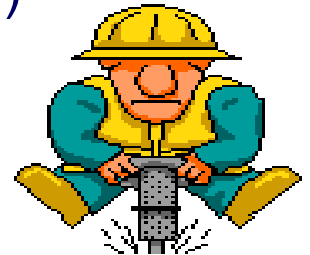


Austrroads and ARRB Group Projects developed on environment & climate change

- Guide to Project Evaluation, Part 4 (2012)
- Carbon and asphalt: a review of environmental factors including emission calculators (2012)
- Future Availability and Assessment of Alternative Surfacing Binders (2012)
- Investigation into the Properties of Alternative Surfacing Binders and Bitumen Extending Binders (2012)
- Guidelines for Environmental Reporting (2011)
- Strategic Review of Future Asset Management Issues (2010)
- Review of the Environmental Aspects of Warm Mix Asphalt (2010)

Other key projects

- Impacts of Climate Change on Road Performance (2010)
- Guidelines for Selecting Techniques for the Modelling and Analysis of Network Operations including Environmental Impacts (2010)
- Impact of Climate Change on Road Infrastructure (2004)
- National Performance Indicators- Greenhouse, Fuel Consumption and Consumption of Road Transport (2004)
- Valuing Environmental and Other Externalities (2003)



Recent Austroads and ARRB projects

- **Updating Externalities Unit Values (2014)**
 - provides values for externalities used in BCA, and economic evaluation of road infrastructure and transport projects
 - covers air pollution, greenhouse gas emissions, noise, soil and water, biodiversity, nature and landscape, and upstream and downstream costs
 - road passenger and freight vehicles and rail (urban and rural)
- **Economics of Material Availability and Recycling (2014)**
 - investigates the economics associated with the continued use of traditional pavement materials
 - adoption of recycled materials
- **Maximising the use of crumb rubber asphalt (2015)**

International Activities in Climate Change

- FEHRL Climate Change Resilient Road Transport Scanning Tour
- PIARC Technical Committee 1.3 Climate Change and Sustainability
- PIARC Strategic Plan 2016-2019
- UN Experts on Climate Change Group



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Opportunities

November 16th-18th 2016
Melbourne, Australia

Key focus: Maintaining links in the face of climate change

Call for abstracts now open; closes mid February 2016

<https://www.ivvy.com/event/ARRB16/>

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