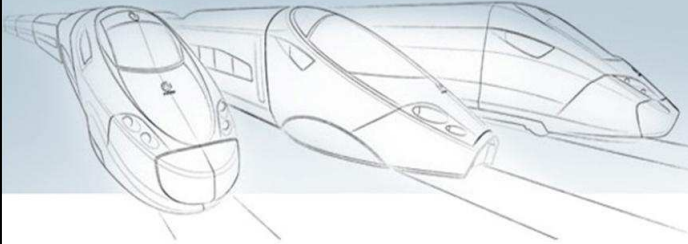


Very High Speed Rail

Many Countries have it – Australia should too!



23 June 2011

Chris Raine

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Agenda

- Introduction & Definitions
- Alstom experience in High Speed Rail
- High Speed Rail around the World – how does Australia compare?
- The Sustainability of High Speed Rail
- Conclusion

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VHSR is like the iPhone...



How did we ever live without it?

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VHSR is Sustainable Infrastructure

- HSR is over 40 years old and continues to deliver economic, social and environmental benefits around the world
- Very High Speed Rail Technology continues to develop – e.g. Could now bring travel times within 3 hours between major Australian cities
- Australia needs to 'future proof' against increasing
 - air and road transport costs & congestion
 - growing population
 - a carbon constrained world

The Case for Australian VHSR is Getting Stronger

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Some Definitions....



AGV for NTV- Italo - Alstom Savigliano

- **Very High Speed** – Greater than 320 km/h
- **High Speed** – Greater than 200 km/h
- Australia's fastest train: Top Speed of 160 km/h...but rarely gets there

Very High Speed Trains are the most attractive proposition for Australia

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Alstom Group Three main activities

93,500 Employees in 70 countries



Power

Equipment & services for power generation



Grid

Equipment & services for power transmission

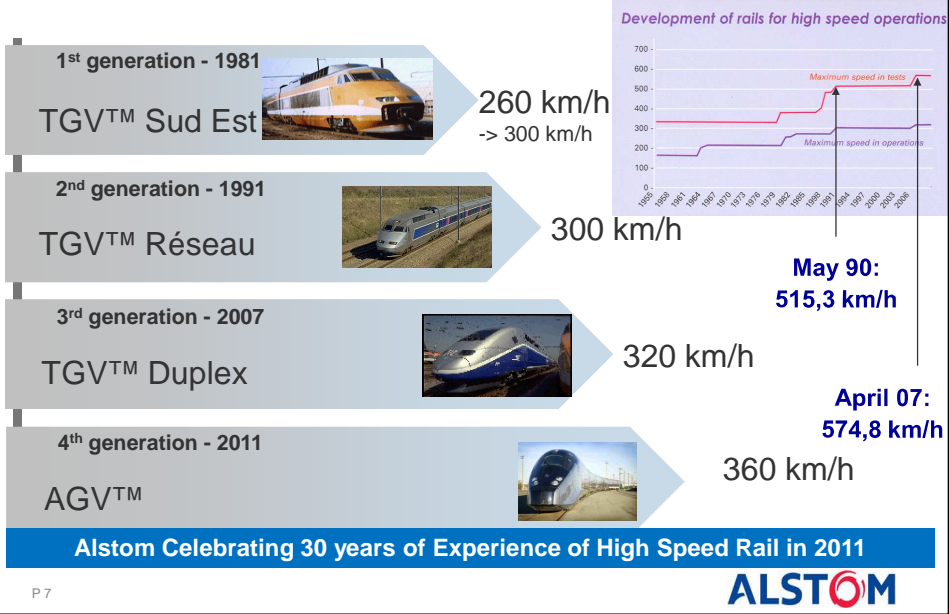


Transport

Equipment & services for rail transport

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Increase of commercial speed vs World Records

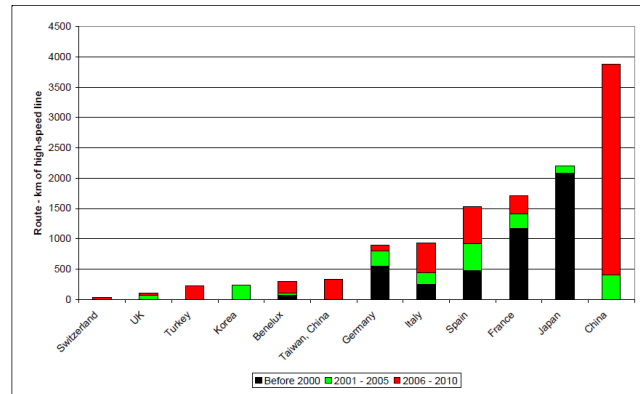


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High Speed Rail Around the World How does Australia compare?



Which Countries Have HSR?



World Bank: High-Speed Rail: The Fast Track to Economic Development? July 2010

New HSR Infrastructure – Significant growth in Asia over last 10 years

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What has driven Global VHSR development?

- **Relieves Congestion**
 - VHSR alleviates severe congestion between existing rail, highway and air transport modes
- **Regional Development**
 - VHSR helps to economically develop regional centres while managing population growth – where are we going to put the 36 million Australians in 2050?
- **Environmentally Responsible**
 - VHSR has a lower environmental impact – less CO2, less noise, less space
- **Safer**
 - Lower death toll compared to air and road travel – e.g. No recorded fatalities in France or Japan, two of the leading exponents

Australia has all the drivers for Sustainable High Speed Rail

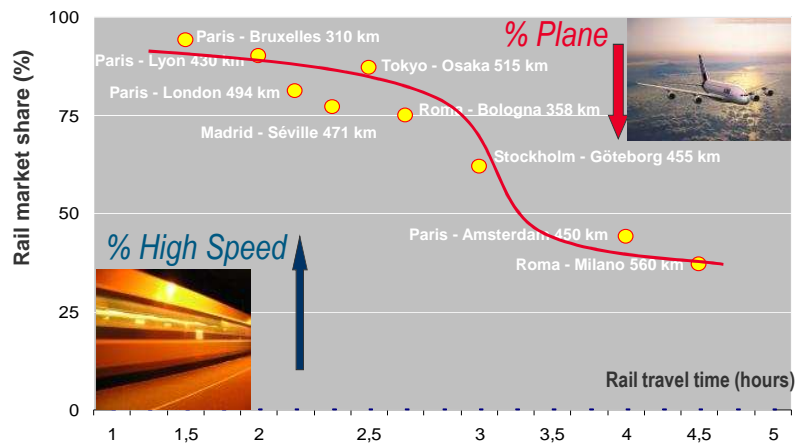
P 10
CRC for Rail Innovation: High-speed Rail: Strategic information for the Australian context, 2010

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Why Very High Speed? Travel Times

VHS an Economic alternative to air transport

Rail / Air modal split
(Distances between 300 and 600 km)



Source UIC

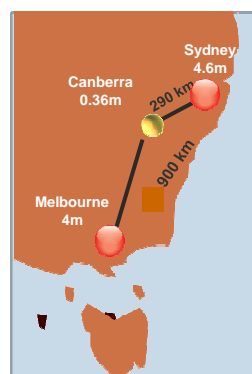
VHS AusRail Plus - 18 Nov 2009 - P 11

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How do we compare? – Spain & Australia



TOTAL POP: 8.4 million
TOTAL KM: 904 km



TOTAL POP: 8.96 million
TOTAL KM: 1190 km

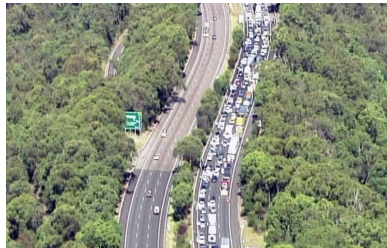
Population sizes & distances compare favourably

AECOM Infrastructure Partnerships Australia 2010: East Coast High Capacity Infrastructure Corridors

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Where should we start?

- “The most favourable starting point ... for high-speed rail **is an already congested transport corridor**”
- “The cost of building new railway lines is **normally cheaper than highways of the same capacity**”
- **Sydney – Newcastle** would be the first step prior to extending to Canberra then Melbourne and beyond

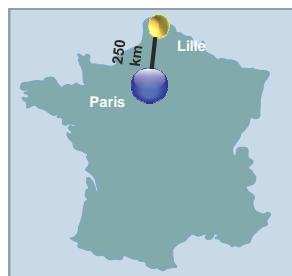


Sydney – Newcastle is the perfect place to start

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World Bank: High-Speed Rail: The Fast Track to Economic Development? July 2010

How do we compare? – Lille & Newcastle



FRANCE
Lille pop: 0.23M



NSW
Newcastle pop: 0.29M

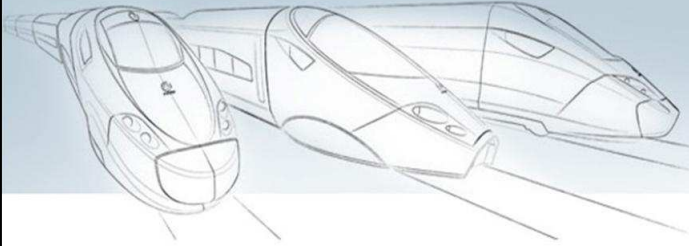
- Before HSR, Lille was a mining & textile town in decline – Now France’s IT sector based around Lille’s HSR rail terminal
- Lille is also a dormitory suburb of Paris – 250 km away!

HSR brought economic stimulus

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The Sustainability of High Speed Rail Economic, Environmental, Sustainable Innovation



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Economic Sustainability: The Rising Cost of Peak Oil

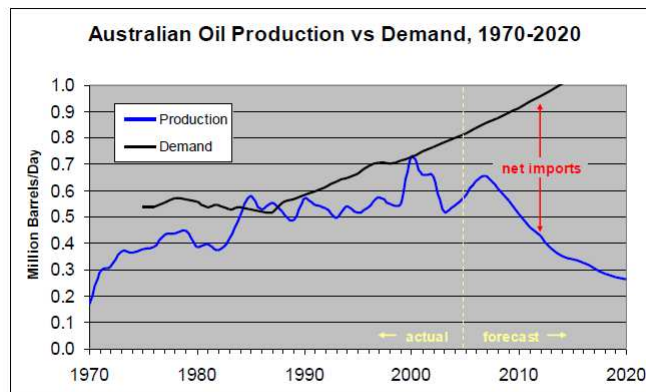


Figure 6. Australian Oil Production (Geoscience Australia, actual and P50 forecast) vs Demand (ABARE), 1970-2030.

**Australia will need to import two thirds of its oil by 2015:
VHSR will become more competitive with air & road**

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Economic Sustainability: Reduce Congestion



Extra capacity in our transport infrastructure is going to be essential for a modern connected economy

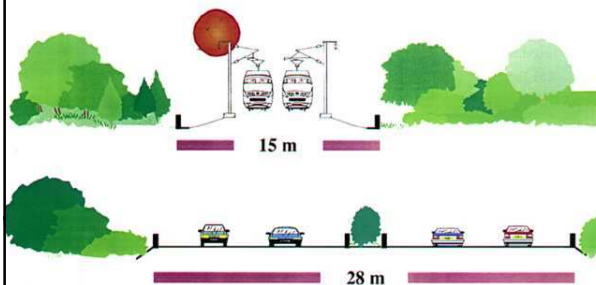
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Economic & Environmental Sustainability: Less Land Required

A rail-line can carry more passengers than an eight lane highway.

The capital cost to adding another 4 lanes to a highway or a HSR line are comparable.



Source :
SNCF-I

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HSR Highway

Economic Sustainability: Reducing Operating Costs

Technical Innovation



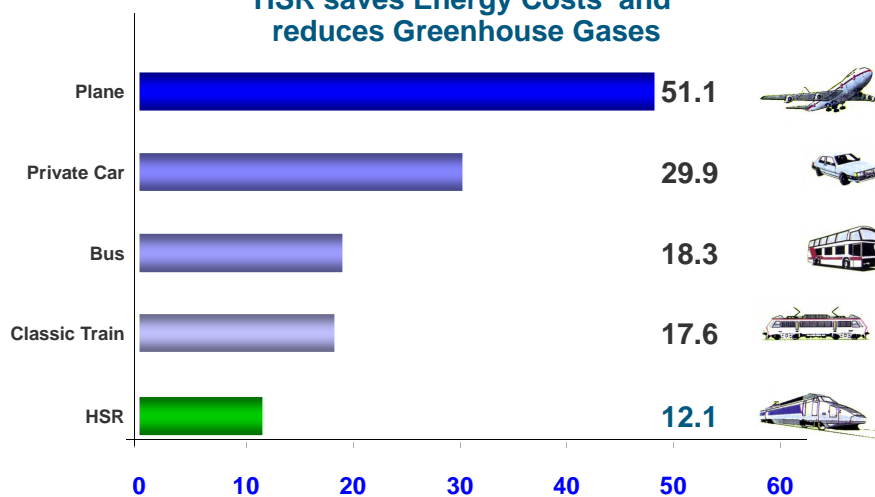
- Fewer bogies than conventional trains: *15% reduction in maintenance costs*
- Specific wheel design: *15% more lifetime than other trains*
- Modularity of trainsets: *Fine-tuning for trains' circulation, train fleets and railway hubs*

Technology innovation not just about SPEED

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Environmental Sustainability: Less CO2

HSR saves Energy Costs and reduces Greenhouse Gases



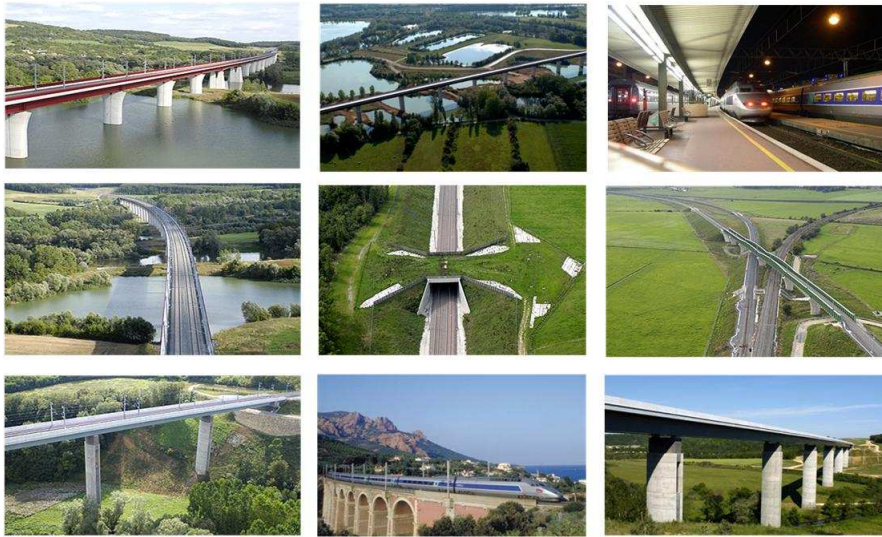
Source : SNCF-I

"Petroleum equivalent gramme" per passenger-kilometre

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Environmental Sustainability: Innovative Infrastructure



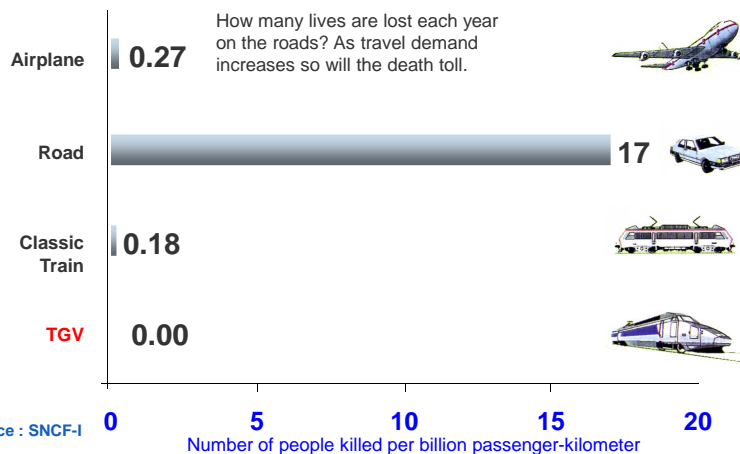
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Social Sustainable: Safety

HSR is SAFER

How many lives are lost each year on the roads? As travel demand increases so will the death toll.



Source : SNCF-I

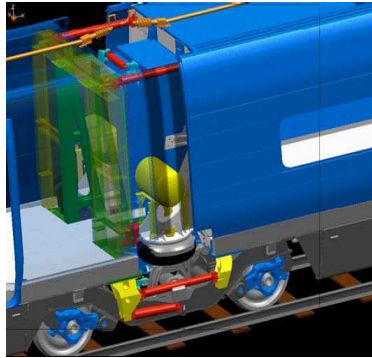
Number of people killed per billion passenger-kilometer

Since 1984, nearly 44,000 people have died on Australian Roads vs ZERO fatalities for HSR France & Japan

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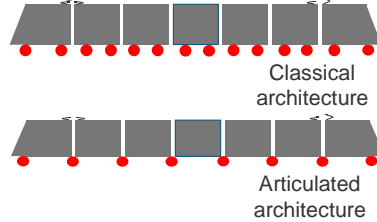
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Social Sustainability: Safety Innovation



Position of power bogie on the AGV

Position of the bogies

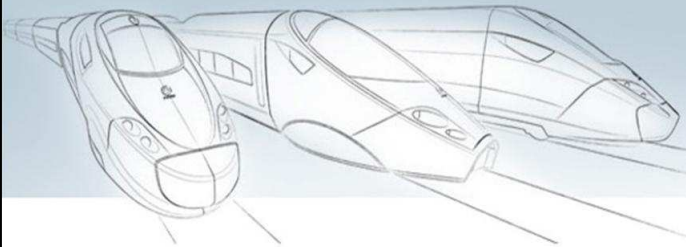


- Safety: trainset rigidity
- Comfort: less noise and vibrations

Bogies positioned between the cars of the train stops 'jack-knifing'

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Conclusion



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Why Should Australia Consider VHSR Today?


- Many successful case studies in both developed **and** developing countries with **comparable population centres and distances**
- Australia's growing population, urban sprawl, congestion and rising oil prices make **costs look more reasonable**
- The benefits of High Speed Rail are not based purely on economic returns to shareholders – but **the triple bottom line**
- A number of technical **innovations regarding speed, safety, passenger comfort, environment** make VHSR more attractive than ever

VHSR is becoming more and more attractive

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Now we agree, what needs to be done?

1. **Feasibility Study** 
2. **Secure the Corridors**
3. **Coordinated National Transport Plan**
4. **On-going bipartisan commitment**
5. **Significant government financial involvement to support potential private sector investment**



Let's secure the corridors today!

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ALSTOM World High Speed Record

www.alstom.com/australia

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