

# Perth's hydrogen bus trial

The Western Australian government has taken the road to the future with investment in a trial of fuel cell buses.

By the middle of next year, three prototype hydrogen-powered buses will begin operations in Perth. Each will have nine hydrogen tanks and two fuel-cell stacks on the roof to convert the energy in hydrogen to electrical energy to run the bus motor. These remarkable vehicles will produce no smog or greenhouse gases; the only exhaust emission is water vapour.

The Mercedes-Benz Citaro buses will run on normal Perth bus routes, have an anticipated range of 200 kilometres, a top speed of 80 kilometres per hour and capacity for 70 passengers at a time. They will be quiet, efficient, and low to the ground.

Vehicle-maker, DaimlerChrysler invited the Western Australian Government to participate in their innovative project involving trials of hydrogen fuel cell buses in ten European cities including, London, Hamburg and Amsterdam. Perth is the only city outside Europe taking part, enabling Western Australia to gain valuable experience in applying hydrogen technologies and to prepare the way for a potentially sustainable transport system.

Mr Simon Whitehouse of the WA Department for Planning and



**The forthcoming trial of hydrogen-powered buses is a major investment in a sustainable future by the Western Australian Government.**

Infrastructure explains that the buses are provided by Evobus (a subsidiary of DaimlerChrysler), the fuel cell engines come from Ballard (a Canadian company), and BP is providing the hydrogen. The Commonwealth Government is helping to fund the trial and Murdoch University will be evaluating the project.

'DaimlerChrysler see this as a two-year pre-commercial trial and are aiming for commercialisation by 2010,' says Whitehouse. 'Their basic philosophy has

been to put a fuel-cell drive in a standard diesel bus, while taking out as few other parts as possible. This means we can thoroughly test the fuel-cell components under normal operating conditions.'

Hydrogen for the buses will be supplied by the Kwinana oil refinery (50 km south of Perth) which currently produces 50–100 tonnes of hydrogen per day. Of the 11 bus trials in progress, Australia's is the only one using hydrogen produced by this method. It will allow comparison with the other European demonstration projects using different methods of hydrogen production, as all data will be shared. In future, the hydrogen could be produced from natural gas. This might be a transitional arrangement leading to a future in which the state's ample renewable resources are used to produce the hydrogen fuel by electrolysis.

There are many challenges in getting a ground breaking project like this up and running. Whitehouse says that regulators have been very enthusiastic about the project, but one of the trickiest aspects has been to gain approval for gas-powered buses from all authorities. Codes and standards for hydrogen and fuel cells for transport just do not exist in Australia yet.

Steve Davidson

**MORE INFORMATION:**  
Simon Whitehouse (08) 9216 8490

resorting to the international legal system. Although the issue of the scientific program was settled, the national catches have not been agreed since and bilateral relations have remained troubled over tuna fishing. Australian public perceptions of the fishery tend to be hostile, especially towards the Japanese side,' Dr Barclay said.

'The outcome of this project will be to give representatives of industry, government and science in both countries an insight into the social, political and cultural factors that influence their counterparts. It is possible that even after years of negotiating with the same people the importance of such factors aren't appreciated.'

To be completed next year, it is hoped the collaboration will lead to studies involving other fishing countries and develop expertise in fisheries social science in Australia.



**Unresolved quota disagreements could hamper recovery of bluefin stocks.**

Dr Barclay said management of the fishery to achieve the balance between economics and sustainability can be hampered by social and political problems.

'A disagreement over Japan's scientific fishing program, for which extra quota was required, in 1999 resulted in Australia

## Bluefin social study

**A DETAILED SOCIAL and political profile of the fragile southern bluefin tuna fishing industry is being developed to reduce potential for quota tension between Japan and Australia, the biggest stakeholders.**

Dr Kate Barclay of UTS Institute for International Studies and Associate Professor Sunhui Koh of Kagoshima University are working with the multilateral fisheries management body, the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) which was established to manage recovery of stocks after they collapsed in the early 1980s. It is the forum for setting an annual total allowable catch for each signatory country but some scientists feel commercial interests have kept the allowable catch too high.