

## Railways should build new, not just patch up the old

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The second plenary session at the World Congress on Railway Research (WCRR) produced a wide-ranging discussion on the future economic and environmental challenges facing the world's railways. Kevin Smith was in the audience.

"WE are building for the 21st century, not just amending the 19th," was the rallying call issued by Prof Andrew McNaughton, chair of the European Railway Research Advisory Council (ERRAC) and chief engineer of Britain's HS2 project, to WCRR delegates at May's conference in Lille, France.

Speaking during a session focusing on economics and the environment, McNaughton said that just extending existing infrastructure to maximise capacity will not be enough to substantially increase rail's modal share over the next 40 years.

"We have to build new," McNaughton said. "We have to double, we have to quadruple our capacity by 2050. If we're going to do that we are going to need products that are accepted by the community, whether it is like Perth in Western Australia where they are running in the middle of the highway, or whether it is through new construction techniques which do not harm the countryside as we create a new railway. These are areas of massive opportunity."

McNaughton was responding to a comment from Mr Michel Dubromel, a board member of French National Railways (SNCF), who said that concerns over the impact on landscapes and farmers may hinder rail construction in the future and that increasing capacity on existing infrastructure rather than building new lines might be the more appropriate solution.

Dubromel also pointed out that in order for rail services to be more effective and customer-friendly, there should be greater cohesion between high-speed networks and local rail services enabling passengers to move seamlessly between different modes, cutting the time spent at stations.

Balancing environmental concerns with extending railways to meet future public transport demand was a consistent talking point during the Congress. Mr Bryan Nye, CEO of the Australasian Railway Association, said environmental concerns had "dropped off the page" in Australia since the global financial crisis despite Australia only suffering from one month of economic decline. He argued that railways must do better to make the environment a key part of the debate when competing for funds.

"Not enough people are standing up to say why rail is good," Nye said. "We need to convince policymakers that we deserve that funding."

All panellists agreed that the environmental friendliness of rail will be a major selling point in the decades ahead. Mr Masao Uchida, vice-president of RTRI Japan, said that light rail's ability to beat congestion as a clean transport mode is the secret of its longevity in Japanese cities, while Mr Josef Doppelbauer, vice-president for project management and chief technical officer at Bombardier, argued that for young people the car is no longer the status symbol it once was.

"For them it is not important to have a car, other aspects are more important such as having no barriers to changing from one mode of transport to another," Doppelbauer said, adding that railways need to provide sufficient IT services to

capitalise on this strength.

Inevitably with more people using the network, railways must strive through research to improve, yet, as Nye highlighted, there must also be significant efforts to promote the rail industry as an attractive career path for young engineers. Without new ideas and fresh perspectives coming through he argued that research will not advance at the pace required.

"We are seen as a tired industry, almost as a dinosaur industry," Nye said. "We have done a lot of survey work in Australia looking into why engineers choose certain career paths and we found that sewage engineering was more attractive than railway engineering. How do we go about addressing that? Because as you know in rail we are doing things that are technically innovative, but we just haven't sold that to schools. We need to market ourselves better."

The Congress showcased research from all around the world in all areas - from hybrid technologies, to efficient and cost-saving testing techniques. McNaughton, however, said that this research must be tailored to the current needs of the railways so they have a realistic chance of being implemented.

He pointed to lightweight innovations developed in Japan as the example that the rest of the industry should follow and called for the development of products that can be renewed and re-engineered, rather than lasting a lifetime.

"We have got to think our way out of this," McNaughton said. "Why has the Shinkansen got a perfect safety record yet the trains are lighter than anything in Europe? That is something that we have got to change because what is the success in saying let's engineer not to have a crash. What would happen if we engineered aeroplanes to survive a crash from 10,000 feet? We have to change in Europe, and the Japanese have shown the way."

"It doesn't have to be a railway product that lasts longer than you and I live. It ought to be capable of being recycled, thrown away and re-engineered after 10-15 years so that it stays attractive. One thing is for sure, society will continue to change. And delivering technology from a 2010 product that is still in service in 2050 is absolute nonsense. We have the opportunity if we radically cut the energy we use, if we cut the weight of the trains dramatically so they perform better, to reach a breakthrough that is not Victorian rail."