

## **MEDIA RELEASE**

### **SA should look to China for sustainable rail solutions**

***“Railway development in China over the past 25 years provides ample examples of what can be achieved when it comes to modern railways. Some aspects of China’s railway solutions could be applicable to South Africa and are worth considering in particular for a new Durban-Gauteng high-standard, standard-gauge railway,” said GIBB railway consultant, Bruce Evans.***

Evans said China has become a global leader in railway development, from high speed passenger trains to heavy freight trains. “China is now the world’s most intensive user of railways and its rail system carries more passengers and freight per route-kilometre than any other system in the world.”

When Evans first visited China in 1989, he concluded that in general technical terms the Chinese railways were about 15 years behind South Africa’s railways. “At the time China still used many steam locomotives, only a few mainlines were electrified, little in the way of long-welded railway track was in place and railway maintenance was labour intensive,” he said.

Today, Evans says China is well ahead of South Africa on many technical developments. “China has undergone massive economic development and a sophisticated railway system was recognised by the government as critical. Massive investment was ploughed into the system and development continues at extraordinary pace.”

Between 1989 and 2013 China’s public railway system grew from around 60,000 to 100,000 route-km and on average between 200 and 400 route-km of new lines continue to be added each month. China’s railway network is now the world’s second largest. About 40,000 trains are operated daily of which about 4,000 are long-distance and regional passenger trains.

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Evans said in 1989 China's fastest passenger trains were limited to a maximum speed of just 120 km/h. "From 1994 the key mixed-traffic mainline network was progressively up-graded to permit maximum speeds of up to 160 and 200km/h in some cases.

"Just five or six years ago China opened its first true high-speed modern dedicated passenger railway and since then a network of such lines totalling about 9,000 route-km has been put into operation with maximum permitted speeds ranging from 250km/h to 350km/h. About 800 streamlined high-speed train sets are now in service. Many more lines are under construction to meet China's target of having a 20,000 route-km high-speed dedicated passenger network in place by 2020."

China's high-speed dedicated passenger railway network with its sleek modern bullet trains and large architecturally dramatic stations in the major cities has greatly impressed the world, attracting many politicians, railway officials and others eager to assess whether something similar could not provide solutions to particular transport challenges in their own countries.

Evans said although there are many factors that support high-speed passenger railways in China - high population, many large cities, rapidly growing affluence and a large pent-up travel demand - there are many in China who question the viability of some of the new high-speed passenger lines. "Internationally high-speed passenger railways have also generally been controversial."

So, apart from a dedicated high-speed passenger railway what other modern railway options should South Africa be looking at in China?

Evans said the well-deserved attention being paid to China's impressive high-speed dedicated passenger railway system has tended to push other important rail developments there into the shadows. "Looking specifically at the Durban-Gauteng corridor, the development of high-standard mixed-traffic (passenger and freight) high-capacity railways in China warrants serious attention too."

Most of China's older key double-track mixed-traffic mainlines were steadily up-graded from 1995 to allow for 160-250 km/h passenger and 120 km/h freight train operation on the same lines. These standards have also been adopted for important new high-capacity mixed-traffic mainlines.

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Another important and more recent development for certain key corridors is the adoption of increased vertical clearance standards to allow for the movement of high-profile freight traffic, in particular double-stack container trains and possibly also multi-deck motor vehicle trains. Several new lines to these standards were recently opened to traffic and several more are under construction. China's intention is to create a 10,000km network of such lines linking major production centres to the key import/export ports and international borders.

Evans believes this type of line – freight and passenger with clearance provision for double-stack container trains - merits close examination as a possible model for the proposed new Durban to Gauteng line.

“Anyone travelling on the N3 freeway between Johannesburg and Durban cannot fail to notice the large numbers of trucks transporting containers and transporting new motor vehicles. Studies predict that the movement of containers on this corridor is going to grow significantly over time – by as much as 400% over the next 25 years.”

“For technical reasons, double-stack container trains cannot be operated on the existing railway in this corridor. Construction of a new line that would allow for this would be of a much higher standard and thus shorter and should cut the cost of container movement significantly thus helping to boost the country's trade competitiveness and cut the costs of doing business.”

“If one considers that switching containers from road to rail would help to reduce accidents on the roads in this corridor, would lower energy requirements and also contribute towards containing carbon emissions growth, then the appeal of such a railway solution is clear,” said Evans.

At present the operation of double-stack container trains is common-place, and is being expanded, in North America (the USA, Canada and Mexico). Comparable trains run across Australia between Perth and Adelaide and in Saudi Arabia. India is developing several high-standard freight rail lines for double-stack container train operation and China is developing a network of around 10,000 km for such operations. Essentially, these trains require a standard-gauge line with a vertical clearance for bridges, tunnels, etc., of about three metres higher than most existing railways allow.

Evans said the present plan for rail in the Durban-Gauteng corridor is not clear.

“Several government sources appear to favour a dedicated passenger high-speed standard-gauge railway. On the other hand, there have been recent calls for a high-standard freight line that can accommodate double-stack container trains. Proponents of the freight line proposal suggest that passenger transport could be left mostly to the airlines and roads. China is showing that, with some compromises, it is possible to build a high-standard modern railway that can handle both forms of traffic”.

Using the Chinese model described, a new Durban-Gauteng high-standard mixed-traffic line could provide for rail services that would include the following:

- 200-250km/h electric multiple unit passenger trains offering services that would appeal to the business community and more affluent travellers (see caption 1);
- 120-160km/h air-conditioned conventional locomotive-hauled passenger services with several standards of accommodation that would appeal to the less affluent, tourists and local holiday makers (see caption 2);
- 100-120km/h double-stack container and triple-deck automotive trains (see caption 3); and
- other freight trains carrying high-value or time-critical merchandise that can travel at 120-160km/h.

To Evans, a high-standard mixed-traffic mainline rather than a passenger- or freight-only line along the Durban-Gauteng corridor potentially offers several advantages. Container, automotive and other suitable freight traffic would be encouraged to move to rail as a higher quality of service would be available – this would lead to safer roads, lower transport costs and energy efficiency and carbon emission benefits.

“Some passenger traffic would move from air and road transport to rail transport, improving road travel safety, providing access to more affordable transport and leading to energy and emission benefits. Such a line would also reduce the need to expand air and road transport infrastructure on this corridor,” he said.

“A new railway linking Durban and Gauteng would probably take at least 15 years to implement. It would likely to be the largest single transportation project ever undertaken in the country and it would require major investment. Such a project would provide a once in 50-100 year opportunity for the country’s most important transport corridor.

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The necessary feasibility and planning studies would have to be robust and rigorously validated to ensure maximum benefits are obtained for the country,” concluded Evans.

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