

Global projects & construction

Train Times

Summer edition

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Introduction

Welcome to the summer 2015 edition of Train Times, our global rail newsletter which reviews the issues impacting the rail industry.

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We hope you find **Train Times** an informative and useful read.

Should you have feedback or suggestions for future topics, please contact infrastructure@clydeco.com. Similarly, to hear more from our global projects & construction group, email us providing your area(s) and region(s) of interest.

Rail projects around the world: an update

Rail projects continue to be a focus around the world, some examples of current and upcoming projects are set out below





The GCC Railway Network

By Alexa Hall

Transborder rail transport in the Arabian Peninsula dates back to the early 20th century and the Hejaz Railway which linked Damascus in Syria to Medina in Saudi Arabia. Its principal purpose was to transport pilgrims between Constantinople, the capital of the former Ottoman Empire, and the Hejaz in Arabia, the site of the holy city of Mecca, whilst also shortening travel time for military forces.

Over a century following the closure of the Hejaz Railway, the Gulf Cooperation Council (GCC) is now embarking on one of the largest modern cross-border rail networks in the world.

Project overview

Economic development and rapid population increase demand a shift from road transport towards a more developed national and regional transportation system in the Gulf.

The GCC Railway, once fully operating, is intended to connect all six GCC nations with track running through each of the following key cities: Kuwait City, Dammam in the Kingdom of Saudi Arabia (KSA), Abu Dhabi and Al Ain in the United Arab Emirates (UAE), Doha in the State of Qatar, Muscat in the Sultanate of Oman, and Manama in the Kingdom of Bahrain.

The initial project feasibility study was approved by the GCC ministers in October 2008, and thereafter, conducted in 2009. Based on that scope, the regional network would comprise 2,177 kilometres worth of railway lines, approximately 180 kilometres of which would connect major transport facilities across the Gulf including ports, airports and industrial zones.

However, since approval of the initial study, plans have been subject to change. By way of illustration, in 2008 it was intended that the railway would connect Bahrain and Qatar via a proposed Qatar-Bahrain causeway. That crossing was put on hold in 2010.

Further, this month the UAE's Etihad Rail is rumoured to have decided to drop the link to Al-Ain on the Omani border, which was planned to form part of Phase 2 of the UAE national rail project. Such changes may comprise one of several challenges ahead.

Notwithstanding changes in connections between countries, the basic strategy for project delivery is agreed. Each participating GCC member state will be responsible for the construction work relating to the individual sections of the railway falling within its border, before the common

network is connected. Each country is to build its own stations, branches and freight terminals to supply the main network.

The overall capital investment cost for the mixed passenger and freight service railway could, it is said, reach figures of up to USD 200 billion. The member states intend to share that cost in proportion to the length of the main line in each country. The aspiration is for the cost of the rolling stock, and operation and maintenance to be borne by the private sector, although time will tell whether this is the reality.

With a target operational date set for 2018, and a series of technical, geological and regulatory obstacles to surmount, the participating GCC nations have resolved to set about delivering an ambitious project which could propel them to the forefront of the rail industry practice.

Progress to date

The detailed engineering design work is nearing completion this year and it is understood that approximately 400 kilometres of track is already under construction / constructed.

Each of the GCC governments is planning or implementing freight and passenger railway infrastructure as part of their individual transport master plans. Those plans include the long distance lines which are intended to form part of the GCC Railway, and other urban rail projects that are additional to the common railway.

The UAE and KSA are the leaders in rail investment, having made significant headway with the practical steps required to implement the project.

At the forefront of this progress is the Etihad Rail Network. Etihad Rail released invitations to tender for Phase 2 of the UAE's federal railway project in 2012. The project objective is to link the seven Emirates of the UAE by freight and passenger rail. Phase 2 was previously planned to extend

the existing network to the KSA border via Ghweifat in the west, and the Omani border via Al Ain in the east, forming a vital part of the GCC Railway.

As noted above, Etihad Rail is rumoured to have recently decided to omit the section of the track linking Al Ain to Oman. It is also reported that there may also be plans to drop the previously planned branch line between Mussafah and Industrial City Abu Dhabi. The impact of any such action on the future of the GCC Railway is, at present, unknown.

KSA is also an active player, with significant lengths of mainline track already functioning through its terrain. The Saudi Railway Company Project (previously the North-South Railway line) is expected to expand the existing rail network to accommodate a 2,400 kilometre freight and passenger line running from Riyadh to Al Haditha, with extensions to Hazm Al-Jalamid and Ras Al Khair, all of which will comprise part of the GCC Railway.

KSA's second major scheme, the east-west Saudi Landbridge Project, is intended to deliver an industrial rail link that is interoperable with the Saudi Railway Company Project and connects Dammam with Jeddah via Riyadh. The Saudi Railway Company plans to increase capacity of this freight line, create a passenger service and upgrade infrastructure / rolling stock to agreed regional GCC Railway standards.

The remaining GCC partners have initiated projects for sections of track which it is anticipated will in time be connected to the GCC Railway. Such projects include Qatar Rail Company's long-distance freight line (part of the Qatar Integrated Rail Programme), a new Bahrain causeway, the Oman Railway Company's USD\$ 15 billion rail network and the Kuwait Ministry of Communication's planned national rail network.

Plans also exist to extend the GCC Railway, in due course, to the Yemen border, and potentially beyond to other destinations including Jordan, Iraq, Syria and Turkey.

Benefits

The GCC Railway is intended to bring with it a raft of immediate and long term benefits.

Reduced travel time will result from passengers no longer being subject to customs checks at every border. Instead, passports and goods will only be checked in at the destination country. A reliable and faster freight transport system will mean shorter delivery lead times and greater supply chain efficiency. This also assists with the logistics of exploiting the Gulf's natural resources, such as phosphate and other minerals in Saudi Arabia.

The project is expected to generate employment opportunities for local workers, companies and rail service providers, and as travel becomes more accessible, establish free movement of labour between member states. The intention is therefore that it serves to strengthen social and economic integration within and amongst the GCC member states.

The railway promises a safe alternative to sea trading import/export routes currently blighted by piracy which presents a threat to any supply chain of the Arabian Gulf.

These factors are intended to work together to stimulate intra-regional trade. That should improve competitiveness and strengthen the investment environment, which, in turn, supports the development of export trading.

In short, the GCC Railway is expected to be an enabler for diversifying non-oil economies and thus a critical driver of sustainable growth for the GCC at a national and regional level. It represents a GCC-wide commitment to delivering permanent improvement of regional transport infrastructure and services for the greater good.



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Ticket splitting splits opinion

By David Moore and Laura Coates

Increasingly savvy rail passengers have discovered that ticket splitting can significantly reduce the cost of rail tickets, with websites and mobile apps being created to meet the growing demand. The basis of ticket splitting is that instead of buying one ticket for the whole journey, buying tickets for component parts separately can be cheaper. The passenger can travel on exactly the same train as they would have done buying one ticket for the whole journey, and there is no requirement that they leave the train and get back on it between the start and end of the journey.

The train travelled on must call at the stations the tickets were bought for, not just pass through the stations. For example, if a passenger wishing to travel from Edinburgh to York buys one ticket from Edinburgh to York and one ticket from York to London, the train travelled on must stop at York.

Whilst it may seem too good to be true, ticket splitting is allowed within the National Rail Conditions of Carriage. Indeed, Section 19 of the Conditions is explicit in this regard, and provides that a passenger may use two or more tickets for one journey as long as together they cover the entire journey and the train calls at a station where the passenger changes from one ticket to another.

So to what extent are train operators required to make passengers aware of cheaper split ticket options? Principle 1 of the Code of Practice on retail information for rail tickets and services (introduced in March this year) states that "Retailers should ensure that passengers are provided with all the information they may need to enable them to choose, buy and use the most appropriate ticket for their journey". By failing to promote split ticket options, are retailers failing to meet the requirements of Principle 1? The answer is that it seems unlikely that they are. Principle 1 sets out an indicative list of (fairly sensible) information which ought to be provided but this does not refer to ticket splitting options. Furthermore, although Principle 4 of the Code requires that retailers make it clear what tickets are or are not available at each sales channel (e.g. where ticket vending machines offer a restricted range of tickets), the information requirements relating to available fares have not yet been extended to split ticket options.

Some may argue that if websites and app developers can promote ticket splitting, why can't ticket machines and ticket offices? The argument from retailers has generally been that to provide someone at a ticket office with every single permutation to get from A to B would be both impractical and unmanageable in terms of booking office capacity. Also, providing a more complicated product in an already confusing environment may not be seen as progress. Those with time to do so can book split ticket in advance but those who turn up at a station may have to wait for practices to change.



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High Speed Rail (India) - A work in progress

By Vineet Aneja

Often a subject of derision, due to its never ending woes, Indian Railways remains an irreplaceable national asset with a total network of 65,000 km that connects far flung areas of the country. It runs 12,000 passenger trains connecting around 8,000 stations spread across the country and carries over 23 million passengers per day. It runs more than 7,000 freight trains per day carrying about 3 million tonnes of freight.

India has the world's fourth largest web of railway track and is considered second largest by usage carrying 8.4 billion people annually in 2014-15.

Notwithstanding the massive size, scale and glory of Indian Railways, the overall rail network remains in a decrepit condition owing to a variety of reasons but largely due to a lack of funds. India's political realities have ensured that rail fares have not kept pace with annual inflation thereby creating a wide revenue deficit leading to a poor operating ratio.

The lack of funds stemming from low revenue has hindered expansion and modernisation plans. As a result of poor financial health, India's high speed network comprises a few routes such as the Rajdhani, Shatabdi, Duronto, Garib Rath Express that run at a top speed of 130kmh.

High speed rail projects have been a financing nightmare globally, and India is no exception. The magnitude of the funding challenge can be demonstrated by the fact that the cost of laying a metro is three times higher than that of a regular rail line while a high speed rail project requires six times more investment than what is required to build a regular rail line. That Indian Railways has not been able to replicate China's modernisation and expansion of its network is evidence of India's resource shortfall.

Significance of high speed rail for India

Clearly, the lack of long-term capital is holding up India's high speed rail plans. However, given India's position as one of the fastest growing economies in the world and the growing needs of its businesses and aspirations of its people, the question now is not whether India can afford a high speed rail system but for how long can India afford not to have it.

Implementing the HSR network would lead to the upgrade of policies, procedures, human resources and organisational restructuring that is essential to run a modern railway system. If implemented in a planned and precise manner the spin-off effects of HSR trains on the economy can be very significant. It is an established fact that high speed rail spurs the revitalisation of cities by encouraging high density, mixed-use real estate development around the stations. It also fosters economic development in second-tier cities along train routes by linking cities together into integrated regions that can then function as a single stronger economy. Reduced travel time, increases in employment and industrial shipments, energy efficiency and low carbon emissions are some of the many known benefits of a high speed rail system.

Making high speed rail a reality

In light of this financial constraint, the government has permitted 100% foreign direct investment in railway infrastructure that includes high speed rail, thereby opening the railway sector to investment by international rail companies, foreign governments, pension funds, insurance funds and bilateral and multilateral funding agencies. In the Union Budget 2015-16, the government announced its decision to embark on an ambitious Diamond Quadrilateral Network of high speed rail, connecting major metros and growth centres of the country.

High speed rail – Indian and Global perspective

Below is a snapshot of various models of high speed rail employed by other countries:

1. Dedicated: Japan's Shinkansen is an example of a dedicated high speed rail system with separate and exclusive high speed tracks. The system was developed because the existing rail network which was already congested with passenger and freight trains could not support the new high speed trains



2. Mixed high speed: France's TGV (Train à Grande Vitesse) is an example of this model that includes both dedicated and high speed tracks that serve only high speed trains and upgraded, conventional tracks that serve both high speed and conventional trains
3. Mixed conventional: Spain's AVE (Alta Velocidad Española) has dedicated, high speed, standard-gauge tracks that serve both high speed and conventional trains equipped with a gauge-changing system, and conventional, non-standard gauge tracks that serve only conventional trains
4. Fully mixed: In this model, exemplified by Germany's ICE (Inter-City Express), most of the tracks are compatible with all high speed, conventional passenger and freight trains

In the Indian context, the speed of semi- high speed systems will range from 160- 200kmh and high speed rail will range from 250-350kmh. The high speed corridors identified for the purpose of carrying out feasibility studies are Mumbai-Ahmedabad, Delhi-Chandigarh-Amritsar, Delhi-Chennai and Chennai-Bengaluru-Mysore. High speed trains with speeds of more than 160kmh would run on normal conventional tracks. Nine corridors, Delhi-Agra, Delhi-Chandigarh, Delhi-Kanpur, Nagpur-Bilaspur, Mysore-Bengaluru-Chennai, Mumbai-Goa, Mumbai-Ahmedabad, Chennai-Hyderabad and Nagpur-Secunderabad, have been identified for passenger trains with speeds of 160-200 kmh. The first passenger train at 160 kmh will run from New Delhi to Agra.

Financing

The following financing models are likely to be adopted.

- Budgetary funding where Indian Railways retains the full control on construction, operation and maintenance of the HSR system
- PPP wherein financing, construction, O&M and revenue risks are transferred to the private sector
- Multilateral funding through soft loans
- Government to government co-operation during construction and PPP model for operation and maintenance

Key determinants of an HSR project in India

The success of high speed rail projects in India is heavily contingent on the following factors:

- Land acquisition: In 2014, almost 189 transport projects worth Rs 1,800 billion were held up due to problems with land acquisition. High speed rail tracks are typically laid in a straight-line so flexibility over land acquisition is limited
- Environmental clearances: In India 40% of the 419 infrastructure projects worth Rs 20,000 billion are held up due to delay in project clearance. A delay in obtaining environmental clearances can have a knock on effect on the programme and costs
- Financial feasibility: While evaluating the financial feasibility of the project, factors such as the anticipated revenue of the project and the availability of long-term finance should be taken into account based on current realities
- Risk allocation: Risk allocation in large infrastructure projects in India, in its present form, is heavily skewed against the private sector. It has been seen that the private sector is often left grappling with risks that it is ill-equipped to handle. The government should, in the interest of the project, adopt the cardinal rule of risk allocation that the risk should be allocated to the party which is best suited to manage that risk
- Other key aspects: In addition to the above, other factors which would play a major role before an HSR project is set up in India are as below:
 - Decision on the speed - whether 250, 300 or 350kmh
 - Acquiring the requisite technology
 - Corporate structure - to be a part of railways or be an independent organisation
 - Ownership - fully private or public private partnership
- Appropriate financial incentives

Investment by the government

The Railway Minister informed Lok Sabha in March this year that laying high speed rail track will cost India Rs. 1-1.4 billion per km. Considering the staggering cost involved in HSR projects, all major high speed rail systems have been funded in part by government investment. Even projects like the UK's High Speed 1 line and Taiwan's high speed rail system, that were initially intended to be fully privately financed, ultimately benefited from heavy government investments in the form of loan guarantees and the purchase of ownership of the companies that built the rail lines. Some other instances where the government invested in high speed rail projects are as below:

- The Netherlands' HSL-Zuid line, which links Amsterdam and Rotterdam, relied on the public sector for 86 % of its cost
- The Perpignan-Figueres high speed rail connection between France and Spain benefited from a public investment of 57 % of project costs
- Portugal's high speed rail network is projected to be built with 55 % of its budget coming from public sources.
- Tours-Bordeaux high speed rail line in France will be built with 50% public investment from France and the European Union
- The Japanese Shinkansen high speed rail network, the only HSR System to break even, was built by Japan National Railways. It has been privatised, with six large, regional, privately-owned companies responsible for operating high speed rail service

Conclusion

It may still be early days for high speed rail construction in India but the government's allocation of vast funds for studying railway schemes speaks volumes for its determination. In addition, the presence of some of the best known engineering firms in India suggests that the government's message is not going unheeded.



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We have advised participants from across the rail sector including train operators, infrastructure managers, construction companies, infrastructure maintenance companies, lenders, insurers and reinsurers, regulatory bodies and central and local governments.

Our experience is international and includes advising on:

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- Economic and safety regulation
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For further information on our rail expertise please contact infrastructure@clydeco.com.

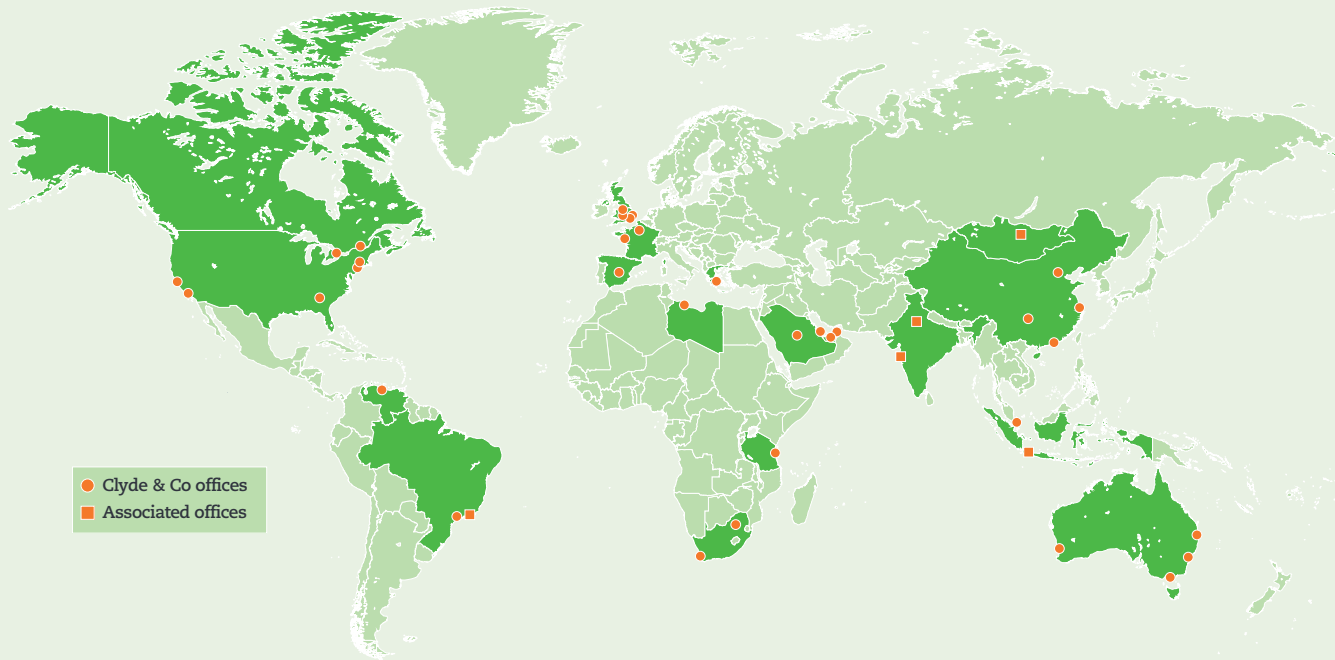
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