

## Frost & Sullivan Strategic Insight on the GCC Rail Sector

### HISTORY OF THE RAIL TRANSPORT SECTOR IN THE GCC

The History of the Railways in the GCC can be traced back to the legendary Hejaz Rail Link of the early 20<sup>th</sup> century, in the erstwhile Ottoman Empire. This railway line once brought pilgrims from Damascus in Syria to the holy city of Madinah in Saudi Arabia, through the Hejaz region of Arabia, covering a long distance of 1,300 kilometers mostly across the desert. However, the railway line was damaged during World War I and was subsequently closed. Despite revival of respective territorial parts by Syria and Jordan, the line could not regain formal operation across all connected countries, including Turkey and Saudi Arabia, due to political differences. Meanwhile, over the years, during the later part of 20<sup>th</sup> century, several nations in the Middle East expanded their rail transport networks significantly. But, unfortunately, none of the GCC nations embraced railways as a prominent mode of transport, either for passenger or cargo movement.

As of 2010, only Saudi Arabia has a notable railway line for cargo transport between the capital city Riyadh and coastal city Dammam on the Persian Gulf. This line has a partial link connecting another eastern city, Hardh, to this main line. However, the major industrial belt of Jeddah, Tabuk, and Rabigh etc. in the western belt remains uncovered; thus depriving numerous industries the much-needed rail support for shipment of goods.

**Figure -1: Advantages of Rail Transport**

*Listed below are the 10 prominent advantages of rail transport:*

- 1. On average, one freight train can carry 1,000 tonnes of freight replacing 50 trucks' movement*
- 2. Rail freight transport is capable of carrying almost all types of goods and even over-sized cargo*
- 3. Rail transport uses about 60-80 per cent less energy per kilometer than road transport*
- 4. Studies by various transport institutes indicate that transporting cargo by rail results in 80 per cent lesser CO2 emissions, compared to transporting cargo by road*
- 5. Rail offers relatively higher speed than road, along with safety and reliability*
- 6. Noise damage from road traffic is estimated to be about 25 times that of rail*
- 7. Rail is about 9 times safer mode of transport than road*
- 8. Rail makes more efficient use of space. On average, a double track railway can carry up to 10 times the number of people per hour than a two-lane road*
- 9. Rail transport has very low scope for disruptions due to changes in seasons and climatic conditions*
- 10. On the whole, rail-based cargo transport is at least 30 per cent cheaper than by road*

**Source: Frost & Sullivan**

## LACK OF RAIL MODE A MAJOR HINDRANCE FOR THE GCC TRANSPORT INDUSTRY

Due to lack of the rail mode, which can move large volumes of cargo safely and economically, the Transport Industry in the GCC has had to rely primarily on road networks for movement of goods. Since the GCC nations are connected only by road, the entire trade across the borders is reliant only on road transportation. High cost of air mode and non-viability of coastal shipping has also resulted in the GCC Transportation Industry being reliant solely on the road mode. But, the movement of products by road involves huge cost and long transit periods, which poses a major hurdle to the transporters that provide services to the end users. Such hindrances are also restraining the growth of international companies in the logistics industry.

Commodities such as chemicals, petrochemicals, mineral ores and mining products, metals, and also the basic materials such as stone, concrete, and cement used in construction are required to be transported in bulk quantities; for which, rail is the best form of transport, as costs are very low, especially over long distances. Also, rail is the best and most efficient form to transport containerized cargo over long distances. Lack of rail networks is compelling all these commodities to be transported through road, causing significant constraints on transport volumes and distances.

Like the cargo transportation industry, passenger transportation services are also limited to either road or the costlier mode, air, due to lack of rail transport facilities. Passengers are compelled to use air travel even to travel between two neighbouring GCC states that would normally be just about 4-5 hours by rail. This results in high costs, without providing any benefits, as productive hours are lost due to waiting time at airports.

## POTENTIAL REASONS WHY THE GCC NATIONS HAVE NOT FOCUSED ON RAIL TRANSPORT

### **Small Geographic Size of Nations**

Except Saudi Arabia, and to an extent Oman, the remaining GCC nations are small in terms of geographic area, with an average stretch of just 250-300 km from end-to-end. This means a typical transport time of 4-5 hours within a particular nation. Whereas, rail transport is advantageous for covering longer distances such as 500 kms and above. Further, rail transport requires relatively higher loading and unloading time due to handling of large volume of cargo. As a result, transporters as well as governments in the GCC have preferred road over rail for all kinds of transport needs.

### **Unfavourable Geographic Conditions**

The desert terrain with shifting sand dunes and volatile ground surface across the GCC nations has been another prominent reason to avoid rail transport. Challenges of maintaining the railway network in such unfavourable conditions have dissuaded both governments and rail infrastructure builders from undertaking railway projects in these countries.

### **Availability of Cheap Fuel for Road Transport**

Railways in several countries have shifted to electric power from petroleum fuel, primarily to avoid the impact of spiraling oil prices. But, the GCC nations are oil rich and the price of fuel in their domestic markets is extremely low as well as stable, when compared to oil prices in other nations such as India and the US. Hence, road transport has gained prominence in these countries.

### **High Investment Cost and Potential Low Returns**

Rail transport involves high investment costs for materials, equipment, and labour both for initial development as well as for management. Such high investments are justified when there is high potential usage of the network to reap the benefits and return on investment. The GCC nations' cargo volumes are heavily dependent on the oil and gas sector, which prefers to use pipelines over other modes for surface transportation. Therefore, the scope of reaping returns from high investments in rail gets diminished, discouraging governments and transporters from considering the development of rail transport.

### **RECENT RISE IN FOCUS ON RAIL TRANSPORT IN THE GCC**

With advent of the 21<sup>st</sup> century and rapid growth of urbanisation in the past decade, transport authorities in the GCC have started looking for alternative modes of surface transport and identified rail as a viable solution for the passenger and freight challenges confronting the region.

The ambitious Dubai Metro Project, which was conceived and executed in remarkably quick time, triggered a series of similar projects in the Gulf; with all the GCC governments increasingly focussing on developing rail projects, either for passenger or freight transportation. The Dubai Metro was the first new rail line built in the GCC in more than 20 years. With the changing economic and demographic scenario, railway networks are considered the backbone of the public transport system and it is important for governments to achieve their socio-economic development targets. Currently rail projects worth over \$100 billion are being developed in the GCC.

The most ambitious project spanning all the six GCC nations is the development of a regional railway network linking each of the member states, to be known as the GCC Railway Network. Upon completion in 2017, the network is likely to change the face of Transport and Logistics in the region. It would offer immense efficiencies in transportation, apart from furthering the vision of a closely-integrated regional community.

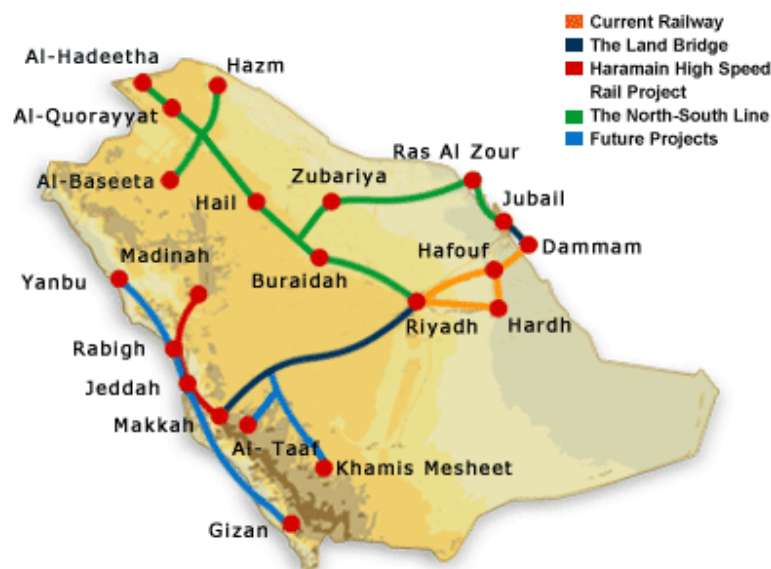
But, to enable the integration across nations, the six member states would need to have national rail networks. Driven by this agenda, each of the GCC Governments has launched various long-range as well as urban rail projects in their respective nations. Foremost among the lot to launch massive projects are Saudi Arabia, the UAE, Oman, and Qatar.

### **Saudi Arabia Pioneers Cargo Transport Rail Projects**

Within Saudi Arabia, the North-South Rail Project, Saudi Land Bridge, and the Haramain High-speed Rail are the most important projects. The North-South Rail connecting Al Hadeetha at the Northwest corner of the country with Riyadh and the eastern port cities Ras-Al-Zour and Jubail, is considered the first major new long-distance rail line in decades within the GCC. With its overall final length expected to be 1,486 km, it will form part of the GCC Railways. This railway line is predominantly targeted to transport phosphate and bauxite mineral ores from Jelamaid in the northern region to processing centers in Ras al-Zour. The North-South Rail is expected to start operations in early 2011. Once operational, each locomotive is expected to haul 100 wagons, carrying 15,000 tonnes of cargo with each trip. Each journey is expected to carry the same amount of raw material as 600 trucks on the road.

The 950 km Saudi Land Bridge project aimed at linking Dammam with Jeddah via Riyadh, is another key railway project being developed by Saudi Arabia. Realisation of this link would result in a significant transformation in the country's transportation industry. It would open immense opportunities to transport about 8 million tonnes of cargo and also containers from the port city of Jeddah in the west to the capital city of Riyadh and industrial cities located in the east. Despite reported delays, the project is likely to gain steam again. The Haramain Rail, linking the holy sites of Makkah and Madinah is the most important passenger transport project being developed in the country. The 444 km line is expected to cater to the 10 million annual visitors to the holy sites, adding a new transport option for pilgrims and other travellers from the country's main airport in Jeddah.

Figure – 2: Saudi Arabia's Existing and Future Railway Network, 2010



Source: Saudi Railways Organization

### The UAE Triggered the Development of Rail Projects in the GCC Region

The UAE is the second largest economy in the GCC and has been a pioneer in the region's rail revolution with the Dubai Metro Project. Apart from completing the remaining phases of the Dubai Metro, the nation is building another ambitious rail project to link the seven Emirates of the UAE by rail for the first time. Christened the Union Railway, this network would later be integrated into the GCC Railway Network. Initially intended for cargo movement operations between the Abu Dhabi desert to the western port city of Ruwais, this rail network would be expanded until Khor Fakkan on the east coast and also to Al Ain on Oman's border, so as to facilitate integration into the GCC Railway Network. The Union Railway Network potentially offers a significantly cost-effective way to move large amounts of aggregates, steel, iron ore, sulphur, and other cargo, as well as large numbers of passengers across the Emirates. In addition, it opens up a completely new industry for the country and the wider region, apart from reducing congestion, pollution, and improving safety.

Two other planned major railway projects in the UAE are a proposed high speed rail link between Abu Dhabi and Dubai (that could be extended up to Sharjah), and the Abu Dhabi Metro.

Figure – 3: Planned Network of the UAE’s Union Railway, 2010



Source: UAE’s Union Railway Authority

### Other GCC Member States Are Also Active on the Rail Transport Arena

Oman’s National Rail Network is being built in three phases. The first phase comprises a 230 km line that runs from Sohar to Muscat. The second phase will involve building a 560 km line running from Muscat to Duqm. The third phase would involve extending the line from Duqm to Salalah. Oman also has plans to develop a metro system in the capital city, Muscat.

Qatar’s railway network development is lagging significantly behind its neighbours, reportedly, due to lack of coordination and indecisive progress by the Qatar Government and Germany’s Deutsche Bahn, which won a contract to build the network along with government-owned domestic real estate company, Qatari Diar.

The remaining two GCC member states, Bahrain and Kuwait, are also busy planning their own railway networks, which will eventually link to become part of the GCC Railway. However, these two states are lagging significantly behind the UAE and Saudi Arabia in terms of progress.

**Figure-4: Major Ongoing or Planned Railway Projects in GCC, 2010**

S.No	Name of Project	Budget	Length	Target Date of Completion	Coverage	Usage Focus
1	GCC Railway Network	\$30.0 bn	2,177 km	End of 2017	All six GCC nations	Passenger and Cargo
2	Qatar National Railway System	\$25.0 bn	Approximately 850 km	Mid 2015	North-South within Qatar	Passenger and Cargo
3	UAE National Railway Project	\$10.9 bn	1,500 km	End of 2015	Connects All Emirates in the UAE	Passenger and Cargo
4	Dubai Metro	\$10.6 bn	180 km	End of 2015	Entire Dubai	Passenger
5	Bahrain Rail Masterplan	\$7.9 bn	103 km	End of 2025	Entire Bahrain	Passenger
6	Abu Dhabi Metro	\$7.0 bn	131 km	End of 2020	Key Cities in Abu Dhabi	Passenger
7	Kuwait City Rapid Transit	\$7.0 bn	171 km	End of 2016	Entire Kuwait City	Passenger
8	Saudi Land Bridge	\$7.0 bn	950 km	End of 2014	From Jeddah to Riyadh in KSA	Passenger and Cargo
9	Haramain High-Speed Railway	\$7.0 bn	444 km	End of 2014	From Mecca to Medina in KSA	Passenger

*Source: Frost & Sullivan Analysis*

## CHALLENGES IN THE GCC'S PLANNED RAILWAY PROJECTS

### **Limited Public Private Partnership (PPP) Model Financing**

Public Private Partnership (PPP) funding mechanisms are gaining prominence in the GCC region in order to help cover the massive costs of rail projects. The \$7 billion Kuwait Metro Project spanning 171 km across Kuwait City is being funded by a PPP model. Riyadh's \$3 billion proposed light rail project is also expected to be a PPP project. However, not all projects are able to garner the expected level of private funding. The credit crunch from the recent global economic crisis and its consequences have severely reduced the appetite among banks for financing long-term projects. The longest permitted tenure to avail bank credit for such projects is estimated to be no more than 10 years, which means that any rail project hoping to use bank credit will have to procure refinance in due course and tackle the risks involved. In addition, since this is an entirely new industry for the region, financing companies do not have any record of accomplishment to estimate the risk-reward calculations to arrive at concrete decisions on funding. Hence, to procure finances and evaluate risk factors in these projects, the private sector companies are seeking at least some form of sovereign guarantee from GCC Governments. While the oil-rich State Governments in the Gulf are able to provide such

guarantees or support funding of some key rail projects with state resources, it is not always possible to support majority share of projects.

### **Development of GCC-wide Railway Network Depends on Achieving Uniform Standards across All Individual Country Networks**

The key challenge in building a seamless GCC-wide regional rail transport network is to develop the six individual country networks according to uniform standards and specifications. Each member state is already progressing with the development of a national rail network based on their individual requirements. The integration of these different networks, each using a different set of engineering and construction providers, could later pose a challenge. This could be mitigated if exactly the same or compatible standards are adhered to by each state. For example, having in place a 1.435-metre standard gauge track with the same capacity, power source, signalling systems, and operating mechanism across all six member states. In addition, uninterrupted movement across borders is required, which needs significant standardisation in regulations and fares. Unfortunately, no concrete agreements in this regard have been formed till date and a formal 'GCC Railway Authority' is still at the planning stage. The reported delay in building the Qatar-Bahrain Causeway due to political differences is also a cause for concern and has become a potential roadblock in realising the ambitious GCC Rail Network Project.

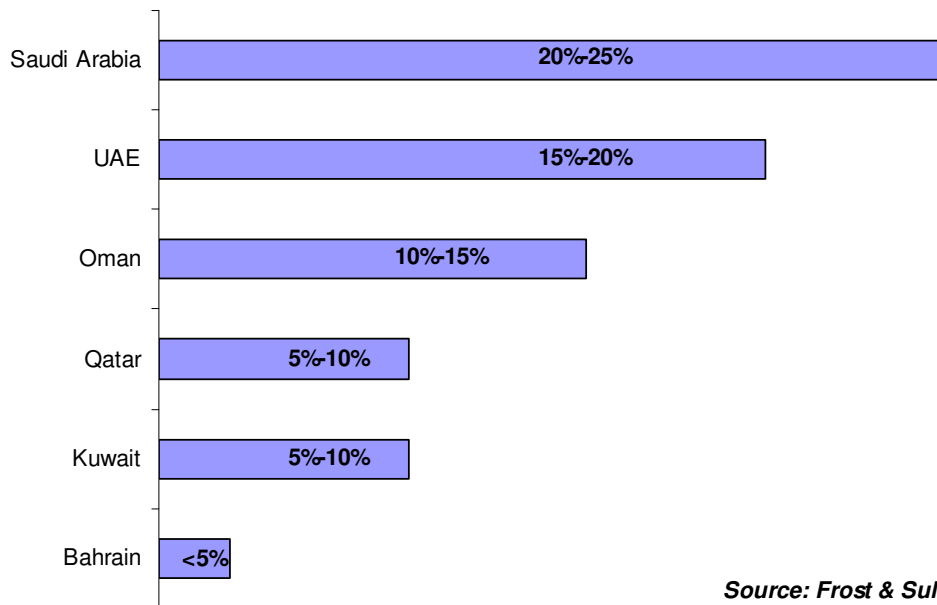
### **Lack of Clarity on Utility of Some Projects**

The ambitious Saudi Land Bridge Project is reportedly on hold until the North-South Rail and Haramain Rail are completed. The delay has been caused due to lack of acceptable bids from prospective financiers, builders and operators, and the Government is still undecided if the project would be entirely state-funded. Kuwait is also not actively progressing on its National Railway Network (which is eventually going to be part of the GCC Rail Network) due to reported concerns on utility of the network, since its non-oil economy is very small.

## **OUTLOOK**

Transportation practices in the GCC region are likely to change with the various ongoing and planned railway transport projects that would be executed by the Governments. However, while Saudi Arabia and the UAE are likely to witness significant changes within the next 2-3 years due to advanced progress in projects, the other GCC member states are not likely to reap the benefits of railway networks for at least 4-5 years. However, in the long term, rail transport is expected to play a significant role in the development of each GCC member state, which has a prominent manufacturing and consumption base.

**Figure-5: Estimated Share of Railways in Cargo Transportation by Country in GCC, 2020**



*Source: Frost & Sullivan*

Further, GCC nations can proceed with the integration and form a regional railway network only once the individual national rail links are in place. For this to happen, the member states need to work with consistent dual focus – first to expedite their own rail projects, and second, to quickly iron out all pending issues on the GCC Railway Network, including that of governing body, funding shares, standardisation, execution, and maintenance responsibilities.

As per Mr. Richard Bowker, CEO of UAE’s Union Railway, “The direct and associated benefits of building the Union Railway far outweigh any challenges that the project might face in its development. For the UAE, the railway offers significant benefits to the economy and society through the introduction of a completely new industry for the country and the wider region.” It is true for each of national rail networks of member states and the overall GCC Railway Network too.

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