

# Infrastructure and Logistics – Prerequisites for Sustainable Economic Growth

By Wolfgang Lehmacher



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He will be speaking about this whitepaper at **Transport Intelligence's [Emerging Markets Logistics Conference](#)** in Singapore, September 24<sup>th</sup>-26<sup>th</sup>, 2013 on the subject of *“Where next for the BRICs?”*

## Infrastructure and Logistics – Prerequisites for Sustainable Growth

A country's prosperity, and with it its economic and social development, depends to a large degree on the level of productivity of its logistics sector. Today's economies are unthinkable without the value and supply chains that modern logistics make possible. And there can be no long-term peace without prosperity, as the turmoil in Egypt or the economic endeavours of emerging nations demonstrate. More and more governments are coming to recognise the importance of logistics as an important growth factor and thus are attempting to improve the performance of their logistics sectors. An efficient infrastructure is a prerequisite for efficient logistic platforms, since run-down streets, ineffective seaports, one-track railways, or a lack of freight airports impede the smooth movements of materials and goods and thus economic growth. Therefore, it is vitally important in particular for emerging economies such as the BRIC nations, as well as for developed industrial nations like Germany, to make investments in infrastructure. They are necessary in order to be able to handle increasing trade volumes and to secure or improve the country's competitive position as a business location. In view of increasing transparency, as well as mega-trends like climate change and the increasing scarcity of resources, the topic of sustainability is also gaining in importance.

This whitepaper will illustrate planned investments in the BRIC nations, Brazil, Russia, India, and China, as well as in Germany, and will try to show why business, politics, and society will have to develop new ways of thinking about logistics.

### **Brazil: Major investments are necessary to ensure further economic development and competitiveness**

With around two million kilometres of roadways, Brazil has the second largest road network in the world. However, only about 200,000 kilometres are asphalt roads, and the streets are often in terrible conditions. Together with the highly outdated railway tracks and inadequate airports, this means that Brazil's transport infrastructure is the biggest obstacle to economic growth and prosperity. That is the reason why, in 2012, the Brazilian government decided to make major investments in the infrastructure. One such measure was that the government granted concessions to private investors who will lay and operate up to 10,000 kilometres of railway track and build around 7,500 kilometres of roads.<sup>1</sup>

The fact that about 60% of the transport volume is moved by road underlines the importance of these measures. In addition, new intermodal hubs will reduce road traffic in economic and logistics centres like Rio de Janeiro and other major cities.

Furthermore, the country faces challenges in the area of rail transportation, since the system works significantly below American or European standards and network density. The 29,000 kilometre long network is centred on the states of São Paulo, Minas Gerais, Rio de Janeiro, and Rio Grande do Sul. Some of the tracks are in deplorable conditions and the fact that the Brazilian system uses differing gauges also complicates operations. As a result, the Brazilian railways carry only about 25% of the country's total cargo volume. Investments in a number of freight railway lines are intended to improve this situation. Further improvements are expected from the new East-West and the new North-South link.

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<sup>1</sup> "Brasiliens 66-Mrd.-Dollar-Programm," *Financial Times Deutschland*, August 15, 2012

The seaports are Brazil's most important interface to world markets. Insufficient cargo handling capacities, too shallow channels, and poor rail and road connections are major disadvantages. Inadequate parking space for trucks in the ports and poorly qualified employees are further factors causing challenges to shippers and logistics companies alike. Government support and private investments are necessary to bring the Brazilian ports up to world standards and to ensure Brazil's competitive position in world trade.

## **Russia: WTO accession leads to investments in the transportation and logistics infrastructure**

Russia, which has further opened to world trade with its accession to the World Trade Organization (WTO), now needs to step up its investments in infrastructure. Sub-optimal roads regularly cause transport delays and breakdowns. According to Germany Trade Invest (GTAI)<sup>2</sup>, rundown streets cost Russia 9% of its economic potential. Of course, the influence of the climate and its effects on the road system are not to be underestimated. Specific investments are being made with the goal of increasing the number of multi-lane highways, which currently account for only 8% of the roads in Russia.

Some of the large-scale projects in this area include the construction of new motorways, like the link between Moscow and St. Petersburg, the development of the M4 motorway into a multi-lane highway from Moscow to Dzhubga, and investments in the M1 as one of Russia's most important routes. The M1 links the Russian capital to Western Europe and is also part of the Asian Highway network. This project was initiated in 1959 to improve the road system in Asia and involves collaboration among 32 Asian states and the United Nations (ESCAP).

Road construction is being fostered at the communal level, as well. The city administration in Moscow is planning to invest more than €24bn in modernisation by 2017.

Russia's rail network is another major construction project. Because of the sheer size of the country, railways play an important role for both passenger and freight transportation. The Trans-Siberian Railway and the Baikal-Amur main route between Siberia and the Khabarovsk region, as well as numerous secondary lines, ensure that the country has well-developed east-west connections. Thanks to these, cargo only takes 16 days to get from Busan to Helsinki, compared to 47 days on the sea route. Rail connections have gained further importance since Russia joined the WTO. Consequently, the government decided to invest in two high-speed lines: Moscow-St. Petersburg and Moscow-Yekaterinburg.

The freight lines to and from the major seaports are also being improved. For valid reasons: goods like crude oil and petroleum products are exported via the ports in St. Petersburg, Kaliningrad, Novorossiysk, Sochi, Vladivostok, Nakhodka, Magadan, and Petropavlovsk-Kamchatskiy. The (North) Atlantic port of Murmansk, which is kept ice-free all winter, is also a major export hub. Ocean transport accounts for a total of 85% of Russia's foreign trade. Inland waterway transport is also carrying increasing tonnage and showed a growth rate of 20% in 2011. Seaports are the focal point of expenditures in the area of port

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<sup>2</sup> Umann, Ullrich: Russland tätigt umfangreiche Infrastrukturinvestitionen  
<http://www.gtai.de/GTAI/Navigation/DE/Trade/maerkte,did=593582.html>

development, which is intended to reduce dependency on cargo handling capacities in the Ukrainian and Baltic States' seaports. In addition, investments are being made in the ports of Taman, Tuapse, and Novorossiysk, as well as Olya.

## **India – Massive investments in infrastructure are needed for progress towards an industrialised economy**

India is well on the way to becoming an advanced economy, but the road is still a bumpy one. The subcontinent is already one of the leading nations for chemical production. At €76bn, its sales volume in chemicals ranks number eight worldwide and is ahead of Italy and Great Britain. It is expected that India will be able to improve this position even more in the future. According to experts, India will be one of the major growth markets for the global chemical industry. Well-trained employees are a major advantage, but high costs for raw materials and energy, as well as low productivity, are the challenges that India is facing. However, it is India's infrastructure which is the key bottleneck on its way to becoming an economic leader, since it is responsible for high transport costs and regular delays in exporting goods and products.<sup>3</sup> Almost all transport modes are affected. Investment is needed in roads, railways, air traffic, and shipping.

Around 70% of India's cargo is transported by road, some of it under very difficult conditions. Only about half of the approximately 3.3 million kilometres of roads are asphalted. The National Highways, which account for 65,000 kilometres and connect the major cities, generally only have two lanes and some of them are in terrible shape. In addition, the more than 130,000 kilometres of State Highways do not have unified standards. In the poorer states of India some of these are only one-lane roads.

The railways handle the other 30% of India's cargo transport. With a total of 64,000 kilometres of track, India's rail network is the second largest worldwide, following China. However, outdated technology and a low level of electrification, as well as four different gauges of track, prevent efficient use of the Indian rail system. Investments are planned in electrification, double-track main lines, conversion of metre gauge to broad gauge tracks, and modernisation of the technical equipment.

At the same time, the Subcontinent needs to invest in water and power supply. Power blackouts and gaps in the water supply are still common throughout large parts of the country – with all the negative economic consequences. Without electricity, production is impossible, completion of products is delayed, and thus agreed deadlines and contractual obligations cannot be fulfilled. This all leads to losses, in some cases even to contractual penalties. This is one of the key reasons why manufacturing has only been able to contribute a relatively small share to India's economic growth thus far.

The Indian government is well aware of these circumstances and therefore has announced that it is aiming to spend a total of a trillion US dollars on infrastructure development. A major part, but not all, of this package has been included in the five-year plan for 2012-2017.

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<sup>3</sup> "Indiens Chemieindustrie schafft Anschluss an die Weltspitze," *Chemanager*, January 16, 2012; <http://www.chemanager-online.com/news-opinions/nachrichten/indiens-chemieindustrie-schafft-anschluss-die-weltspitze>

## **China – need for sophistication in logistics in the world’s second largest economy**

China has set the goal of putting €124bn into road, highway, and airport construction.<sup>4</sup> This budget will cover the costs of up to 30 infrastructure projects that will ensure economic growth and social prosperity. Thirteen highways and ten city street projects, as well as five seaport projects are planned. In addition, two inland waterways are to be improved.

While China’s urban areas have traffic systems that are up to European standards, in the more remote regions of the country, which covers over 9,571,302 square kilometres, transportation is often still below par. Furthermore, cargo volumes have been increasing rapidly over the last years. For example, freight haulage by the railways grew from 535 billion metric ton-kilometres in 1978 to 2,482 billion metric ton-kilometres in 2008. This represented a major challenge for the Chinese rail network and led to transportation bottlenecks. Therefore, the government began setting rail transport contingents. The planned 4+4 PDL rail grid, which is made up of high-speed rail corridors, is intended to bring relief. China’s high-speed rail network, with a total length of 50,000 kilometres, aims primarily at speeding up passenger travel, but along some stretches mixed use with freight trains is possible.

Further infrastructure projects include new long-distance corridors in the west, upgrading existing single-track lines throughout the nationwide network, and the provision of additional capacity for freight transport. Among other things, the current coal transport routes will be improved and further corridors added. In addition, a new 16,000 kilometre long container train network will be constructed.

The Chinese government recognised the importance of infrastructure for the country’s prosperity early on and has made it an integral part of economic growth packages. With its centralised planning, China was able to implement infrastructural programmes quickly and extensively and thus set up the prerequisites that enabled the country to catch up with the leading economic powers in the world. However, logistics expertise in China is still under-developed. Therefore, entrepreneurs like Jack Ma, the founder of the e-commerce giant Alibaba, have been investing in logistics development and are intensifying their efforts to bring China up to world-class standards in logistics, as well. Otherwise, companies like Alibaba will struggle in certain areas to continue growing at the targeted pace.

## **Germany: increasing investments in maintenance and sustainability**

The industrial nations are also showing increasing needs for investments in the infrastructure. In Germany, for example, numerous bridges and roads are in bad repair and need to be renovated. Therefore, the Federal Parliament’s Finance Committee approved an addition of €750m to the transportation budget in 2013.

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<sup>4</sup> “China pumpt Milliarden in die Infrastruktur,” *Financial Times Deutschland*, September 7, 2012; <http://www.ftd.de/politik/konjunktur/:konjunkturprogramm-china-pumpt-milliarden-in-die-infrastruktur/70087199.html>

This sum will be invested primarily in the number one mode of transport, roads. But this will not only benefit cars and trucks; at least €10m are to be invested in bicycle paths along federal highways. All in all, the budget will provide €570m for investments in the road networks.

In comparison, the €40m dedicated to the railways seem marginal and this money is to go to a new noise control package. Another €25m is available for railways that do not belong to the federally owned system. This is the first time that the independent railways will benefit from such stimulus. Another €140m will be invested in waterways, bridges, locks, and dams.

## **A fresh look at logistics and infrastructures**

Many countries throughout the world are making significant investments in infrastructure. However, this alone is insufficient. In view of the global mega trends, such as worldwide population growth, mass mobilisation, scarcity of resources and land, climate change and the increasing awareness of environmental impacts, continuing globalisation, tightly integrated and thus increasingly complex and risky supply chains, it is essential that we re-think logistics infrastructures and systems. Infrastructure and logistics planning, both at domestic and international level, needs to be grounded in a comprehensive understanding of the economy and society, and the logistics sector must increasingly live up to its role as a key enabler for growth and prosperity.

We need to develop fresh ways of thinking which can help ensure that transport and handling hubs contribute to the growth and prosperity of individual countries, regions and the world economy. Concepts are required which not only promote economic growth, but also help improve the common good. Concepts are needed that not only serve individual interests, but also aim at maximising value for the entire system. Development of clear local competitive advantages and of services that increase productivity and improve business conditions for manufacturers and logistics service providers alike must go hand in hand with measures to ensure sustainability.

Modern seaports can serve as an example for the way infrastructure can be shaped in future. Ports have to be viewed from a global perspective and as an integral part of the region; which has to be considered in the planning process. The starting point is a clear understanding of what all the stakeholders expect and need. For example, ports are expected to provide a broad range of services starting with warehouse capacity for all kinds of goods including dangerous cargo, foodstuffs and other temperature-sensitive goods, as well as container leasing, repair, and cleaning, up to comprehensive security plans on-site. These reduce the risk of theft as well as potential terrorist activities. Environmentally sound disposal of oily wastes, ships' waste water, or solid waste and chemicals is also an essential part of a modern port's range of services, as are noise reduction measures and traffic safety systems that ensure safe and efficient waterside and landside operations in the port. In an increasingly transparent world, there will be rising demand for competitiveness and sustainability. The concept of a smart seaport pays attention to sustainability, while at the same time increasing productivity through the use of state-of-the-art technology, embedded in a holistic concept. Such ideas can also be applied to other areas, for instance inland ports and airports, as well.

Those responsible can make good use of the digital interconnections between the economy and society in implementing these and other added value services. For example, real-time data on ship movements can be leveraged to coordinate landside processes more efficiently. When docking and unloading times are

known well in advance, logistics service providers can optimally plan and schedule their operations so as to reduce costs and optimise the utilisation of resources. Increasing digitalisation in logistics and the continuing spread of RFID makes processes more efficient and safe, since containers, pallets, and wire mesh containers can be tracked worldwide, thus boosting productivity and security. Furthermore, it is possible to simulate alternative contingency plans. In this way, service providers can find optimal solutions and respond quickly in case of unexpected events such as accidents or natural disasters.

In order to put such concepts into practice, it is necessary to have a high-performance infrastructure and also transverse platforms that are often developed and implemented not by just one stakeholder, but by collaboration among diverse stakeholders. Modern logistics concepts often require not just foresight and openness to change, but also the ability to cooperate with various stakeholders. Many companies and governments will have to shift their way of thinking and acting away from concentrating on competition and differentiation towards looking for common interests and joint activities.

## **Facilitating continuous dialog with stakeholders**

Large parts of the population in general will have to change their ways of thinking as well since they often over-emphasise the negative aspects of infrastructure and logistics projects. The most common arguments that logistics facilities and service providers face involve concerns such as high land consumption, increased traffic, more noise pollution, and environmental impact. Such worries are often fed by a lack of knowledge or by uncertainty. Many citizens and local residents do not consider the whole picture. People tend to focus on isolated issues, neglecting the economic and social benefits and advantages of the overall system. Large parts of the public often oversee that the area-wide supply of food and other goods would be impossible without warehouses and commercial traffic. Modern life needs logistics systems, which at the same time benefit the community and have very limited negative impact. In order to raise the understanding and acceptance throughout the population and to avoid resistance and failure of logistics projects, the logistics sector has to facilitate a continuous dialogue with all relevant stakeholders. In this light, it is important to take concerns seriously and to inform the public continuously about respective measures for risk mitigation and about the importance of logistics for the economy and society. The connections between logistics and economic and social welfare need to be stressed constantly.

This can be achieved if technological, environmental, and social aspects of logistics are integrated into national, regional, and global strategies. These need to be grounded in appropriate regulatory frameworks and developed by the logistics industry. Thus, the logistics industry must develop master plans for its sector and contribute to area development initiatives. These plans should aim at creating holistic logistics systems that are embedded in macro-economic strategies. The logistics concepts and plans must respond to the concerns of all stakeholders and at the same time provide efficient supply chain solutions and systems for businesses and the population as a whole.

## The Author



Wolfgang Lehmacher (born in 1960 in Bonn, Germany) is an international manager, entrepreneur, and expert in the field of transportation and logistics. He is a partner and managing director for China and India at the global strategy boutique CVA. He supports companies and institutions worldwide in strategic positioning and development.

Lehmacher began his career in 1980 with the German Red Cross, and then moved on to Kuehne & Nagel and ASG. Subsequently, he took on executive roles at TNT (1991-1999) and Groupe La Poste (1999-2010); he was also managing director at DPD (2003-2005). As president and CEO of GeoPost Intercontinental, he was responsible for the global expansion of the express parcel business of French La Poste.

Lehmacher was involved in significant developments in the transportation and logistics industry, including setting up GD Express Worldwide, a joint venture of five postal organisations (1991) in Germany, heading the German joint venture of Deutsche Post and TNT Express Worldwide (1994-1996), driving the expansion of TNT Express Worldwide in Eastern Europe and the Eastern Mediterranean region (1997-1999), the European expansion of the French La Poste (1999-2001), the integration of the parcel network DPD in the La Poste Group (2001-2005), and the worldwide expansion of the express parcel business of La Poste (2005-2010).

Lehmacher's new book, **Wie Logistik unser Leben prägt: Der Wertbeitrag logistischer Lösungen für Wirtschaft und Gesellschaft** ("How Logistics Shapes Our Lives: The Added Value of Logistics Solutions for the Economy and Society"), will be published in German by Springer Gabler at the end of August 2013.

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The **Emerging Markets Logistics Conference**, sponsored by Agility (Singapore: September 24-25, 2013) will discuss the issues included in this article and many more. It will provide exclusive research, with each session led uniquely by an expert Ti analyst, combining insightful presentations with contributions from senior figures in the manufacturing, retailing, consulting and logistics industries. In addition to a content rich programme, there will be plenty of networking opportunities to meet and discuss these issues with fellow senior industry professionals. For more information visit: [www.ticonferences.com](http://www.ticonferences.com).

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