

The New Silk Road: Opportunities for Global Supply Chains and Challenges for Further Development

> Norbert WAGENER Bernard ARITUA Tong ZHU

WSL Forum, Poznan, 18. November 2019



- The Role of New Silk Road in Global Supply Chains
- A New Driver: China-Europe Block Trains
- Historical Obstacles and Emerging Challenges
- Opportunities for Further Development
- Conclusion

New Silk Road – China-Europe Landbridge for Development

China proposed the Belt and Road Initiative (BRI) in 2013 Six overland corridors to improve connectivity and trades on a transcontinental scale

- Constant Expansion of Economic, Trade, and Investment Cooperation:
- US\$6 trillion China's trade value with BRI countries
- USD\$90 billion China's direct investment in BRI countries



Norbert Wagener, Bernard Aritua, Tong Zhu 2019

Picture: Beifert, et.al.,2018

China-Europe Block Trains experienced a dynamic rise since the BRI in 2013

- China-Europe Block Trains:
- Increased from 80 to 6,363 per year
- 17,000 trips has been completed (2013 - June 2019)



Number of Block Trains between China and Europe (including Russia)

Norbert Wagener, Bernard Aritua, Tong Zhu 2019

Data: Chinese Railways, Belt and Road Portal

Absolute volume is increasing with a reduced imbalance of traffic

- China-Europe Block Trains (continue):
- Unbalance of the traffic could be reduced
- Ratio between the Westbound to Eastbound trains could be increased from 1 / 10 (2014) to 6.5 / 10 (2018)



Norbert Wagener, Bernard Aritua, Tong Zhu 2019

Data: Chinese Railways, Belt and Road Portal

Rail freight transport opens new opportunities complementing air and sea transport

- Chongqing-Xinjiang-Duisburg by Rail Freight Corridor:
- Price: 1/3 of Air Transport
- Time: 1/2 of Sea Transport



Picture: Beifert, et al., 2018)

The New Silk Route changed trade patterns and supply chains

- BMW's Supply Chain on Rail
- Over 8,000 different car components are carried over the rail route
- Dedicated company trains between production sites serve as "warehouses on wheels" within Just-in Time supply chains
- 100% reliability is a very precondition for production planning systems and sales programs.

BMW company train between Leipzig and Shenyang via Brest and Zabaikalsk S SIA utaanha Zabavk NONGOLIA CHINA LGERIA LIBYA SUDA NIGER CHAD

Picture: Route according to Belorussian Railways

Obstacles and Emerging Challenges

The lack of railway interoperability on legal, operational and technical terms is a major historical obstacle. There are also emerging challenges in capacity, economic and financing constraints

- Lack of systematic design and regional coordination
- Different railway technical systems
- Administrative & legal obstacles
- Limited capacity of intermediate nodes
- Economic & financing challenges



Lack of systematic design and regional coordination

- There are over 60 cities in China operating westbound block trains to Europe
- All these routes are managed by local governments
- The lack of systematic top-level design and regional coordination has led to inefficiency in terms of railway capacity utilization and resource allocation



Norbert Wagener, Bernard Aritua, Tong Zhu 2019

Picture: Belt and Road Portal



Different railway technical systems

- Power system: electrified, non-electrified
- Rail tracks: double, single
- Track Gauge (mm): 1435, 1520

Illustration of Existing Rail Routes Connecting Western China to Europe





Limited capacity of intermediate nodes

- The transit freight at the Belarus-Małaszewicze crossing increased from 5 trains per day in 2016 to over 10 trains in 2017 and continuously increasing...
- Due to railway infrastructure, locomotive fleet, and rolling stock have not been upgraded in long time, this crossing is a key impediment



Norbert Wagener, Bernard Aritua, Tong Zhu 2019

Picture: World Bank



Economic & financing challenges

- Subsidies range from under 50 % to about
 75 % of the unsubsidized costs
- Government of China is reducing subsidies year by year
- Large scale infrastructure investment and rail rehabilitation project financing is challenging for BRI countries

Subsidy to China-Europe Block Train (2018) **Subsidy to China-Europe Block Train** City Harbin, Xi'an, US\$3000 per Forty-foot Equivalent Unit (FEU) Hefei Chengdu, Chongqing, US\$7,300-7,500 per FEU Guangzhou Suzhou Corporate income tax refund Chongqing Land resource and corporate income tax refund Ministry of Finance of China set a subsidy of US\$0.8 per FEU per km as the national guideline Data compiled from China Ports and Harbours Association, 2019

Norbert Wagener, Bernard Aritua, Tong Zhu 2019

and Chinese Business Journal, 2019



(1) Gateway concepts and high performance terminals

- Gateway concepts for trains would reduce costs further though bundling of cargo flows on the main route
- Future high performance gateways in Central Europe and in Northwest China could serve as hubs connecting high frequency block trains on the main routes between Europe and Asia with antenna trains within Europe and China
- Małaszewicze (PL) and Schwarzheide (D) are well suited locations for such a gateway function





(1) Gateway concepts and high performance terminals

Potential Gateways on East, Middle and West Corridors:

- East corridor: Changchun, Harbin
- Middle corridor: Erenhot, Zhengzhou
- West corridor: Urumchi, Lanzhou, Chengdu





(2) Corridor management and (3) e-commerce platforms for eastbound demands

- The United Transport and Logistics Company Eurasian Rail Alliance (JSC UTLC ERA) as a joint venture of the Kazakh, the Russian and the White Russian railways operates as a joint operator of block trains running through their territories
- The European Union rail freight corridors are defined and managed jointly by the European rail infrastructure providers
- An increasing demand on eastbound Fast Moving Consumer Goods from SMEs through e-commerce platforms



(4) Further expansion of the landbridge container transport market

• Additional demands can be generated through nodes along the landbrigde routes connected by antenna routes to middle size agglomerations, like a "fishbone"



• The higher traffic volume would result in lower costs through economy of scale



Norbert Wagener, Bernard Aritua, Tong Zhu 2019



(5) Digitalization and Blockchain

- Digitalization is almost ready
- Innovative solution: Blockchain
 - ✓ Greater transparency of the logistics process
 - ✓ Less paper work and clear responsibility (A pre-defined smart insurance contract is stored on a blockchain and is executed automatically as part of a transaction)
 - Trust and credibility grow as all transactions are immutably recorded
 - ✓ Costs are reduced by eliminating intermediators
 - Optimize business processes by analysing information chains recorded by blockchain



Source: The World Bank

Conclusion

1. Cross regional co-operation and harmonization of trade and investment policies Internation

CG 044 283 01 MAX. LDAO 2000 TARE 2010 NAX.CO 200 100 100 12 100 400

- 2. CIntegrated and synchronized development of infrastructure EXPRESS
- 3. Targeted and coordinated use of Infrastructure Financing Instruments

NCAAGO III WCAAGO III

Thank You For Your Attention!

Contact

Corresponding Author

Norbert Wagener Prof. nadzw. Dr. rer.oec. habil.

Wagener&Herbst Management Consultants GmbH Zeppelinstr. 136 14471 Potsdam Germany

n.wagener(at)wagener-herbst.com

Bernard ARITUA CEng PhD Senior Infrastructure & Logistics Specialist - Central Asia, China and Mongolia

WC4AGO M WC4AGO

Transport Analyst

The World Bank Group No.1 Jianguomenwai Ave. Beijing P.R. China