

# Belt and road: more competition between sea and rail? Lessons from modeling generalized costs

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## Research question

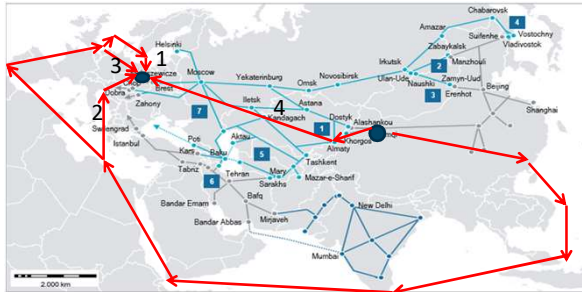
- Can rail become a real competitor to maritime transport?

## Approach

- Literature search, scenario development and cost modeling



### Calculation results (1)



From Xinjiang Uygur (main city of Urumqi) to Lodz (Poland)

Total generalized chain cost (\$/FEU)

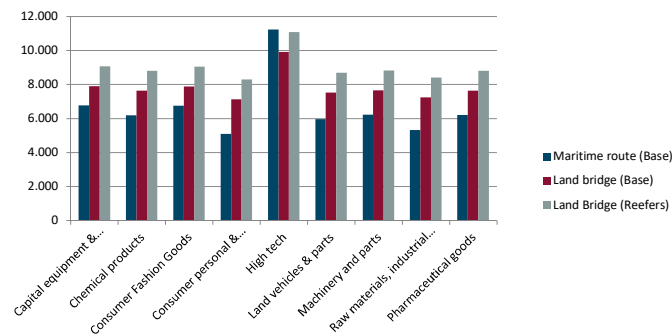
Different product types → different results

Product type	Gdansk (1)	Koper (2)	Rotterdam (3)	Alashankou/Khorgos (4)
Capital equipment & Machinery	8,494	8,969	9,742	4,647
Chemical products	7,733	8,285	8,752	4,439
Consumer Fashion Goods	8,461	8,941	9,442	4,638
Consumer personal & household goods	6,766	7,031	7,435	4,058
High tech	12,982	14,100	14,864	5,206
Land vehicles & parts	7,636	8,020	8,474	4,358
Machinery and parts	7,904	8,325	8,795	4,451
Raw materials, industrial consumables & foods	6,983	7,277	7,693	4,133
Pharmaceutical goods	7,886	8,304	8,773	4,445

### Calculation results (2)

One of the elements that will impact the land bridge route are the harsh winter and summer conditions → What is the impact of needing a reefer container on the competitiveness of the land bridge?

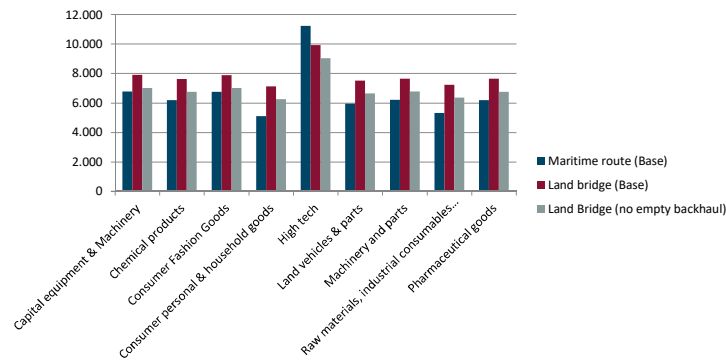
Impact of using reefer containers on the land bridge (Chongqing – Duisburg) (\$/FEU)



### Calculation results (3)

Another element that will impact the land bridge route is having an unbalance trade between Europe and China → What happens if the empty return trip doesn't need to be included?

Impact of not taken an empty backhaul into account on the land bridge (Chongqing – Duisburg) (\$/FEU)



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### First conclusions

The effectiveness of the land bridge is dependent on several factors.

- the geographical location of the origin and destination of the transport chain.
- the different types of cargo.

→ The lower the value of the transported cargo, the larger the catchment area of the maritime routes between China and Europe.

→ If the value of the cargo increases the large the catchment area of the land bridge becomes. This is also observed in reality where HP is shipping high-end products from Chongqing to Europe.

From the sensitivity analysis can be concluded that the following aspects are impacting the competitiveness of the land bridge:

- The need of using a reefer container to protect the cargo
- The trade balance between Europe and China
- The cargo value.

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**Thank you very much!**

**Questions?**

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