



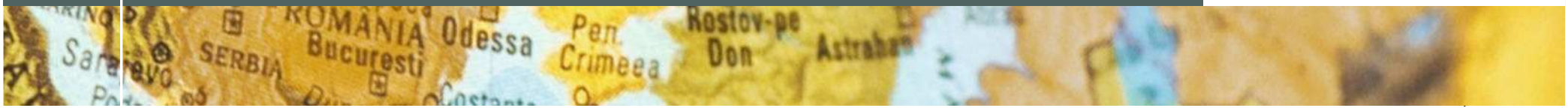
Intercontinental Combined Traffic (ICOMOD)

Status and Prospects of the rail landbridge between Europe and Asia

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Rail transport from Asia to Europe has a significant market potential

Executive summary (1/2)

- Long-term (2030), **rail transport between Asia and Europe is forecasted to reach a level of around 950,000 TEU p.a.** This includes traffic from East Asia, Mongolia and Kazakhstan to the EU in both directions. Traffic from South Asia could add another 150,000 TEU in the long-term
- Already **today**, rail could hypothetically achieve a potential of **480,000 TEU p.a.** if requirements were already fulfilled
- The rail potential is derived from a **volume-based forecast** with subsequent translation into TEU. for overall 432 O/Ds and differentiated by NST/R product groups. It analyzes existing transport volumes and applies a growth scenario for the future
- **Shift factors** were applied to estimate the amount of TEU that could be attracted by rail from maritime transport. Shift factors were **differentiated by commodities** and, within China, **by regions** based on their proximity to the coast
- Currently, **four viable route** options exist: via port of Vostochny, via Manzhouli/Zabaikalsk, trans Mongolia – all of which continue on the TSR – , and trans Kazakhstan via Alashankou/Dostyk. TSR routes benefit from efficient and modern infrastructure, trans Kazakh routes are shorter
- In the long-term, route and terminal infrastructure as well as rolling stock and container equipment will **need to be modernized and adapted to future growth**

To make Eurasian rail transport successful, rail services need to be improved significantly along five key levers

Executive summary (2/2)

- **Time** is the key differentiation for rail transport. Only **fast and reliable transport times** enable benefits compared to sea and trigger time-based monetary benefits for shippers
- **Predictability** is key to shippers/customers. **Reliability allows for price premiums** if time-sensitive or production-critical materials/goods bear high opportunity costs
- Rail generates **highest benefits in hinterland areas for high-value goods**. Continental consolidation terminals should be optimized. High-value goods also qualify for rail from other origins
- Rail can compete with a **comprehensive price view**, i.e. needs to **include time-based benefits like working capital savings and lead time benefits** in its pricing strategies. Fast and reliable transport times are crucial to justify a rail price premium
- Rail needs to **complement its westbound services with eastbound solutions** to optimize rolling stock and container movements and availability at key origins. Infrastructure needs to be improved to accommodate the rail volumes and timing/reliability requirements
- **Frequency** of services needs to be increased and adapted to specific customer needs. Customs procedures need to be facilitated and, long-term, transferred into a **transit customs logic** with customs being handled in origin and destination terminals only

The ICOMOD project assessed the viability of a rail link between Asia and Europe

PROJECT OBJECTIVES



- Establish **viability of a rail link** between Asia and Europe

- Assess **market potential** and quantify future rail scenario

- Assess **routes and terminals** between Asia and Europe

- Define **required steps** to attract more Asian-European traffic to rail

Recommendations have been derived from structured expert interviews with all kinds of stakeholders

Approach

INTERVIEW PARTNERS

Customers, shippers

Forwarders

Associations

Specialized operators/
forwarders

Railways

Sea shipping lines

Different perspectives

STRUCTURE OF INTERVIEWS

Viability of Asia-Europe rail traffic:



Prices



Transport time



Types of goods and volumes



Geographical coverage, routes



Flexibility and frequency



Reliability



Customs, cargo documents



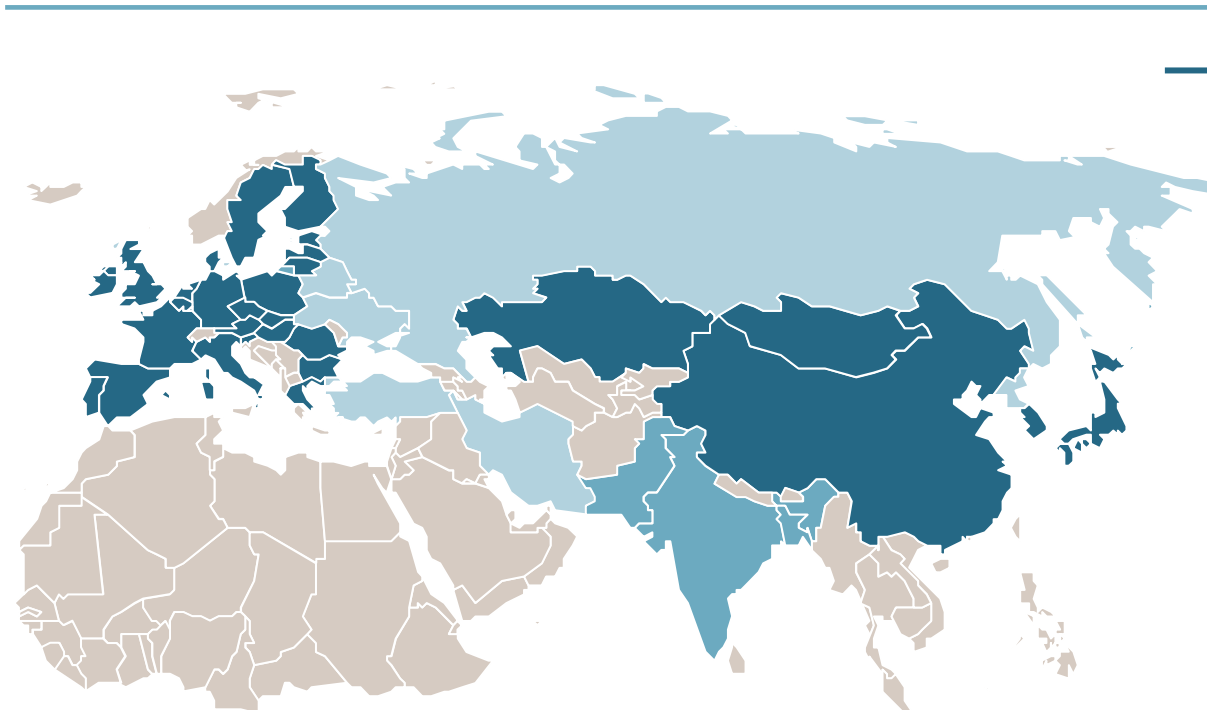
Additional services

RECOMMENDATIONS

- Analyze and evaluate interviews results
- Prioritize parameters influencing viability of rail link
- Derive need for action along prioritized key criteria

The trade flow analysis encompasses 35 countries in Europe and Asia

Scope of analysis



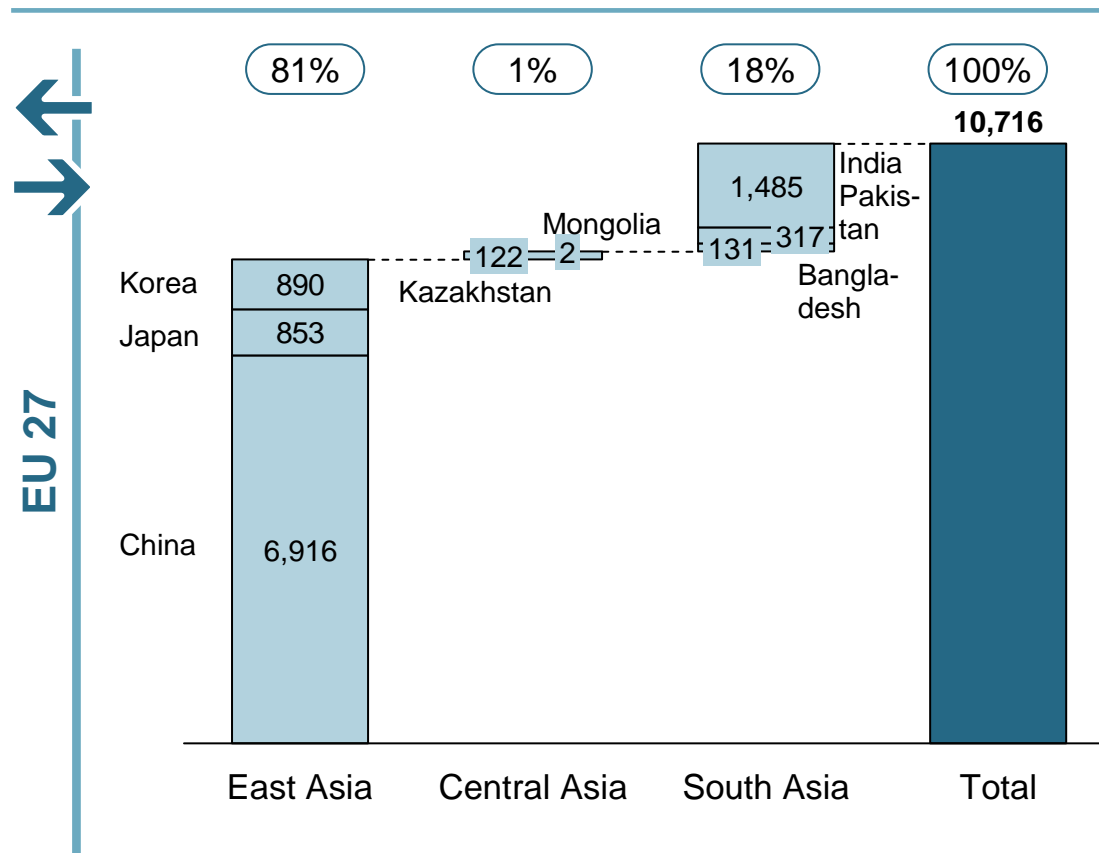
Origin and destination (O/D) countries
 Long-term potential South Asia
 Transit countries
 Not in scope

COMMENTS

- 27 countries of the European Union
- 8 countries in Asia
- All O/Ds split by:
 - Mode of transport
 - Product groups (NST/R)
 - EUR and tons
- South Asia treated separately as long-term potential
- Russia, Ukraine, Belarus considered as transit countries

Based on the trade flow analysis, 10.7 m TEU were transported between Asia and Europe in 2009 in both directions

TEU 2009 ['000]

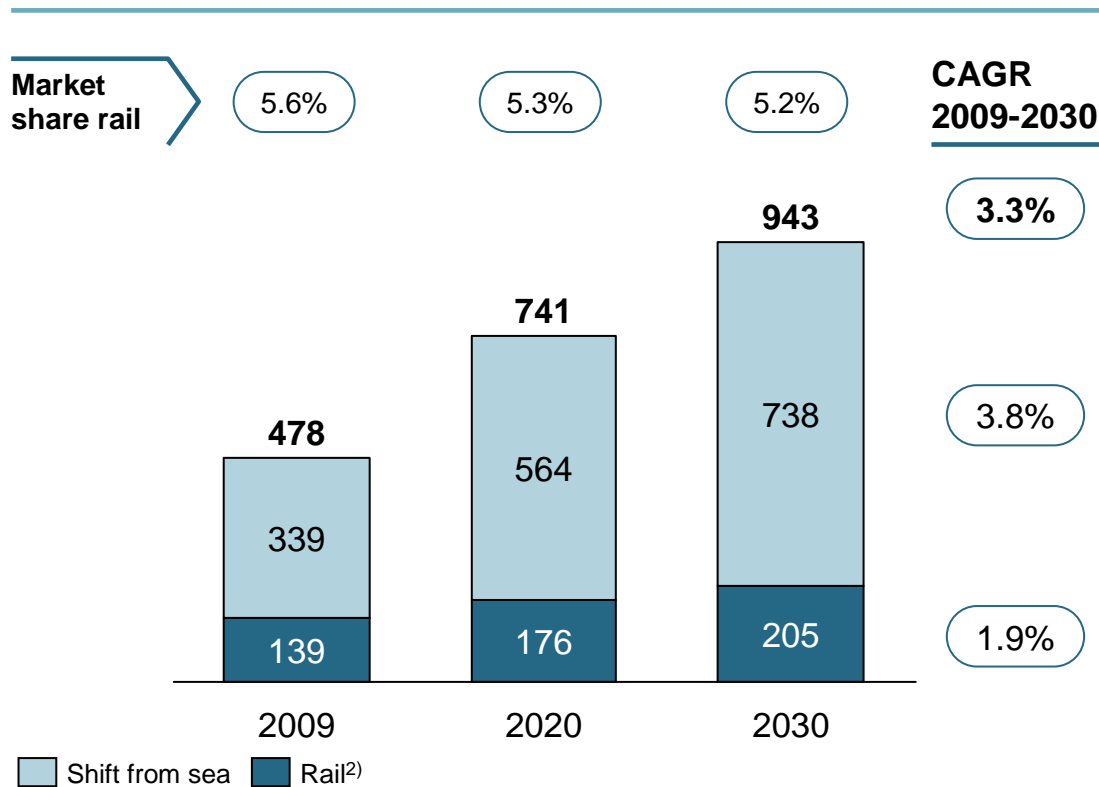


COMMENTS

- East Asia is by far the most important trading partner for containerized freight within the scope of analysis
- China alone accounts for 65% percent of the total TEU trade
- Central Asia only with small share of total TEU – However, geographically interesting for rail, might benefit from infrastructure improvements
- Volumes (tons) were translated into TEU

For 2030, a total rail potential of around 1 m TEU is forecasted – Significant hypothetical market potential already today

Rail scenario/potential ['000 TEU]¹⁾



COMMENTS

- Total rail potential includes
 - Already existing rail volumes, increasing over time
 - Shift from sea to rail, including growth of sea transport
- Shift is based on the shift assumptions
- 943 k TEU can roughly be translated into 38 trains per day in 2030 (assumption: 100 TEU per train,³⁾ 250 days of operations)
- Shift from Air as potential, but small (in terms of volumes) upside

1) Difference due to rounding 2) Potentially contains intermodal traffic entering EU 27 by train 3) Range of 80-120 TEU/train, simplified at 100 for calculation purposes

There are four key railway corridors from China to Europe all of which pass through Russia

Main rail routes Asia to Europe (schematic)



1) TRACECA (Transport Corridor Europe-Caucasus-Asia) route project

To exploit the huge market potential, Eurasian rail services need to be improved significantly along key levers

Transport time



- Time is the **key differentiation** between rail and maritime transport.¹⁾ Only fast transport times enable benefits compared to sea and trigger monetary benefits for shippers
- **Priority** should be given to **reliability**/predictability rather than winning 1 or 2 days more

Reliability



- **Predictability is key** to shippers and customers
- Reliability allows for price premiums if time-sensitive or production-critical materials/goods bear high opportunity costs; reliability might differentiate rail if being further improved

Target markets



- Rail generates highest benefits in **hinterland areas for high-value goods**. It should optimize its product offer for these interfaces (continental consolidation points)
- Look for **balanced traffic** or **combine shorter eastbound traffics** along way back to Asia

Pricing



- Rail can compete with a **comprehensive price view**: D2D, working capital, lead time
- Working capital savings, time-to-market and built-to-order benefits allow for a price premium, but are highly dependent on fast and reliable transport times

Infrastructure, Ops



- Infrastructure requires **continuous updates** and extensions for long-term rail success
- In addition, rail needs to complement its westbound services with eastbound solutions to **optimize rolling stock and container availability** at key origins

Frequency, flexibility



- Unpredictable frequency reduces attractiveness of rail. A **regular service** is entry condition for many customers
- Target frequency of at least 1-2 departures per week, ideally more than 3

Customs

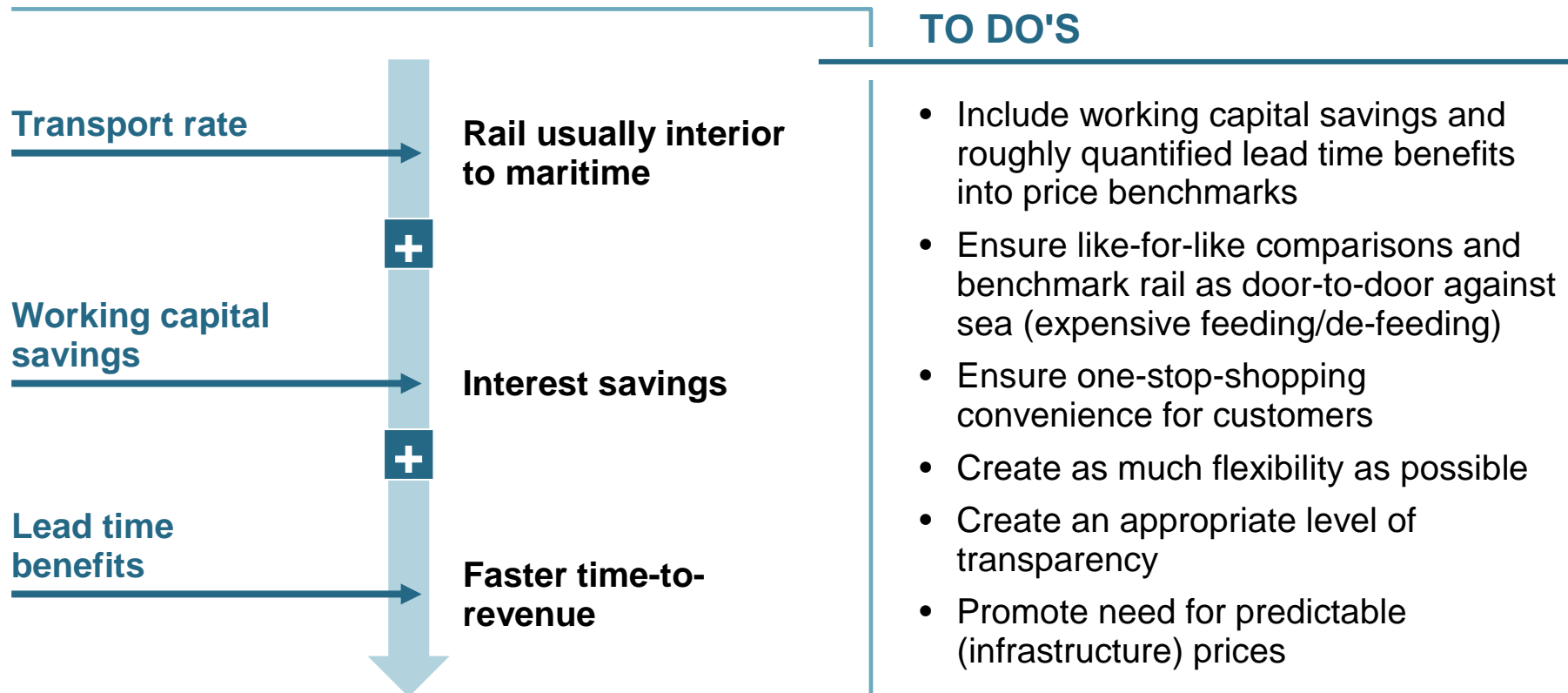


- Improvements **urgently** required, but also related to mistakes by operators/shippers
- **CIM/SMGS consignment note** and paperless transport keys to accelerate border crossing
- **Transit customs logic**: customs only at O/D terminals

1) Of course also to air transport, but the bulk of the volumes which rail could attract comes from maritime transport

Rail pricing Asia-Europe needs to take a comprehensive view beyond exclusive transport rates

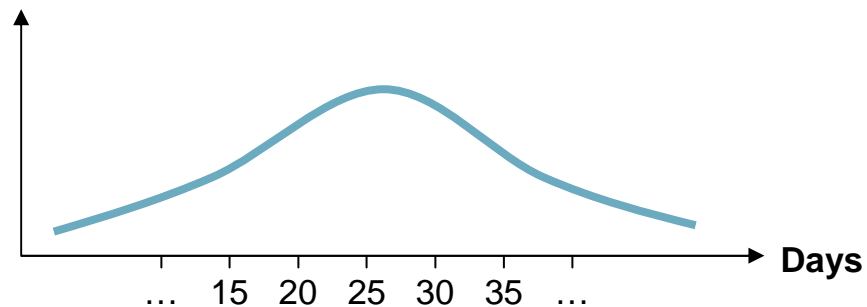
Price – Logic of rail pricing for Asia-Europe and to dos



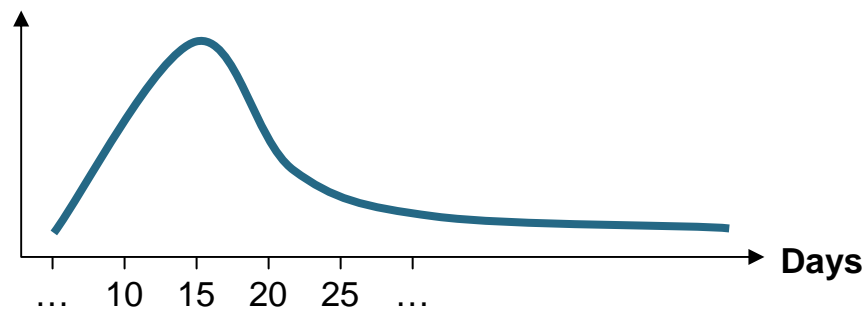
Rail transport times need to be further speeded up – Key is to improve drivers of time and reliability

Transport time – To dos

TODAY



TARGET












COMMENTS

- Introduce schedule/regular departures or adjust departures to actual customer needs (block trains)
- Improve efficiency of border crossings (especially customs)
- Improve customers'/forwarders' understanding of required transport and customs documentations
- Improve infrastructure
- Improve capacity planning (availability of rolling stock, east bound traffic)
- Optimize routing to achieve fastest transport times for each O/D
- Enhance joint/coordinated planning

Rail should focus on specific commodities – Anything else only opportunistically

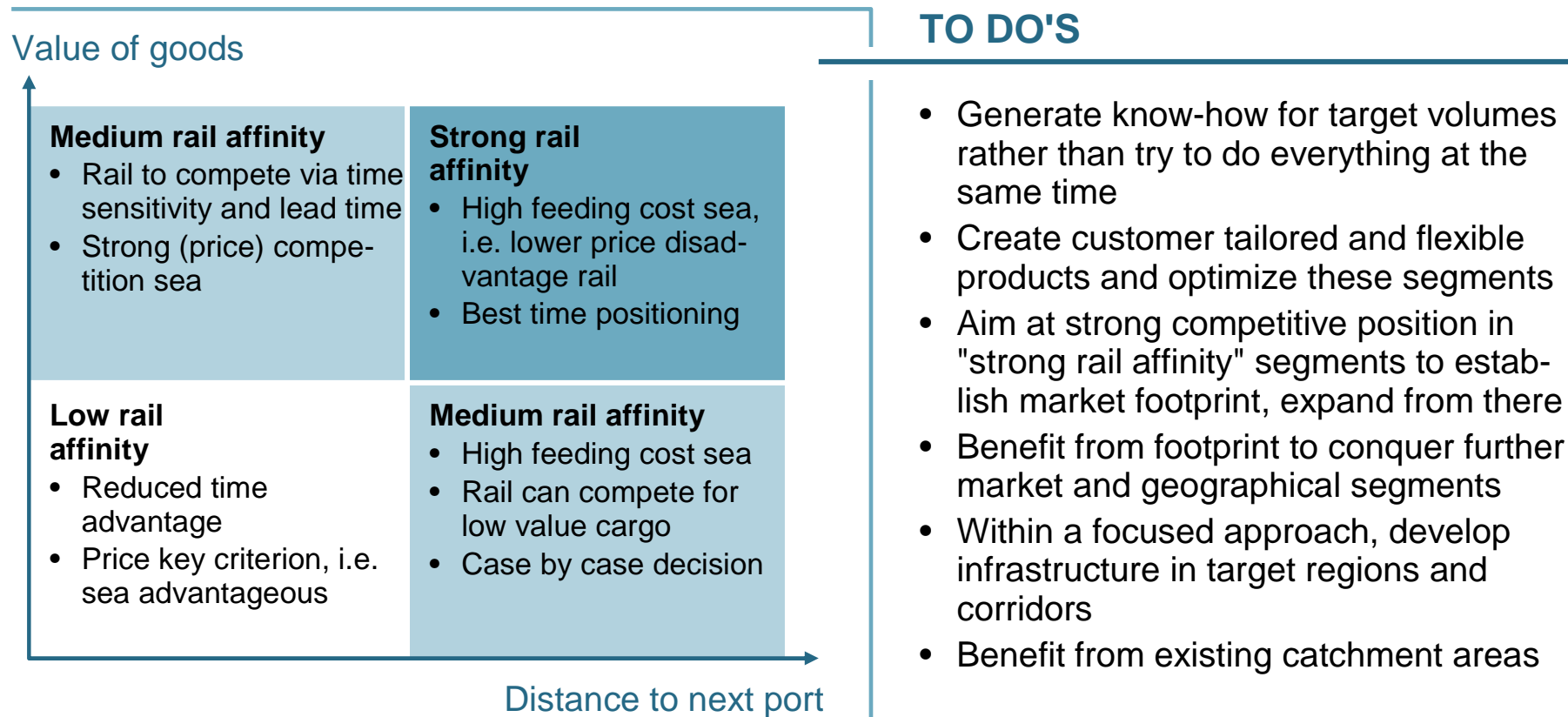
Volumes – Analysis of interview

COMMODITIES ¹⁾	TARGET FOR RAIL	COMMENTS
High-value		<ul style="list-style-type: none"> • Highest working capital savings, also potential from non-inland locations
Automotive, parts		<ul style="list-style-type: none"> • Time sensitive, just-in-time production, high value, often heavy
High-tech, electronics, FMCG, computers		<ul style="list-style-type: none"> • Mostly confirmed as target commodity, but also contradicting assessments (temperature sensitive) • Mostly high-value, sometimes high volume at low weights
Chemicals		<ul style="list-style-type: none"> • Contradictory assessments, low containerization for high-value chemicals • Dangerous goods mostly seen critical due to complex permissions, but also critical on sea. Potential for niche positioning of rail
Spare parts		<ul style="list-style-type: none"> • Time sensitive, but singularly mentioned in interviews only
White cargo		<ul style="list-style-type: none"> • Only singularly mentioned in interviews; high volumes and high weight
Health care		<ul style="list-style-type: none"> • Only singularly mentioned in interviews
Fashion		<ul style="list-style-type: none"> • Time-sensitive character before start of seasons, otherwise price sensitive
Food		<ul style="list-style-type: none"> • Only singularly mentioned in interviews; temperature/cooling issues

1) Partly overlapping

Rail positioning is best for high-value goods between inland origins and destinations

Volumes and geographical coverage – Analysis of interview



A higher and reliable frequency of services is considered necessary for the viability of the rail link

Flexibility and frequency – To dos

Required frequency [trains/day]

Minimum | As a minimum, 1 train per week is enough, two would be nice



Ideal | Ideally, more than 3 trains per week

COMMENTS

- Position rail as a different product than sea/air with their daily departures (individual carrier less frequent)
- Ensure high number of services Asia-Europe from consolidation points/terminals (i.e. minimum volume per train to be ensured for terminals)
- Benefit from feeder trains/trucks to terminals to be able to deal with smaller volumes from original customer points – cooperate with feeder service companies at origins (e.g. Chinese railways)
- Introduce schedule
- For block trains, adapt frequency to specific customer needs (departure when required)/ enhance joint planning with customers

Reliability as one key success factor needs to be optimized by improving especially timing and border crossing issues

Reliability – To dos

RELIABILITY



Border crossings

- Facilitate border crossings (unified documents, pre-advice, etc.)
- Reduce number of required customs stops (transit mindset)

Security

- Reduce danger of theft, e.g. by reduced stops, container tracking, surveillance of terminals

Tracking, handling of irregularities

- Introduce comprehensive tracking systems, improve IT equipment
- Introduce system-based information management to customers

Predictability for customers

- Enhance joint planning of operators/forwarders and customers to meet customer expectations on transport

Transport times

- Depending themselves on other inputs (e.g. border crossing)
- Improve infrastructure, optimize routing, introduce regularity

BENEFITS

- More trust in rail product, positive case
- More regular services, hence better predictability for customers (can plan ahead)
- Chance to equal reliable and proven maritime benchmark
- Opportunity to position rail as more secure because of no piracy issues (compared to maritime)
- Better planning of rolling stock and containers
- Justification for price premium

International rail transport needs to be positioned appropriately to enable attention for customs improvements

Customs – To dos

CUSTOMS



Customs "OWNERS"

- Conduct **stakeholder dialogue** with customs "owners" to promote international rail transport
- **Train customs** officers
- Further promote **unification and electrification of transport documents**
- Long-term, establish **customs points at port/terminal of origin and destination** (transit customs logic)

Customs "USERS"

- **Inform and educate** customs "users" about customs' requirements of all potential border crossings (required documents, languages, notice periods, etc.)
- Emphasize need for users to **present complete and correct documents** for all customs points along a selected route
- Support stakeholder dialogue by providing **suggestions for unified documentation** and harmonize interfaces/ systems to prepare for electronic customs documents

Additional services merely differentiate rail transport – Container tracking required to further support predictability of services

Additional services



- Additional services mentioned during the interviews, examples warehousing, labelling, re-packaging
- Are usually done in the proximity of ports/terminals, i.e. are also common for maritime transport
- Additional services normally offered by logistics/forwarding companies, i.e. rail operators do not need to take care of them or would then compete with their ordering parties
- However, transparency services need to be established to comply with market standards, examples train/container tracking, automatic delay messages
- Additional services incur additional time and hence dilute the time advantage of rail



Little potential for rail differentiation, rather need to close the gap to market standards