

New strategy and structure development for RAI

Final project report



Islamic Republic of Iran
Railways (RAI)



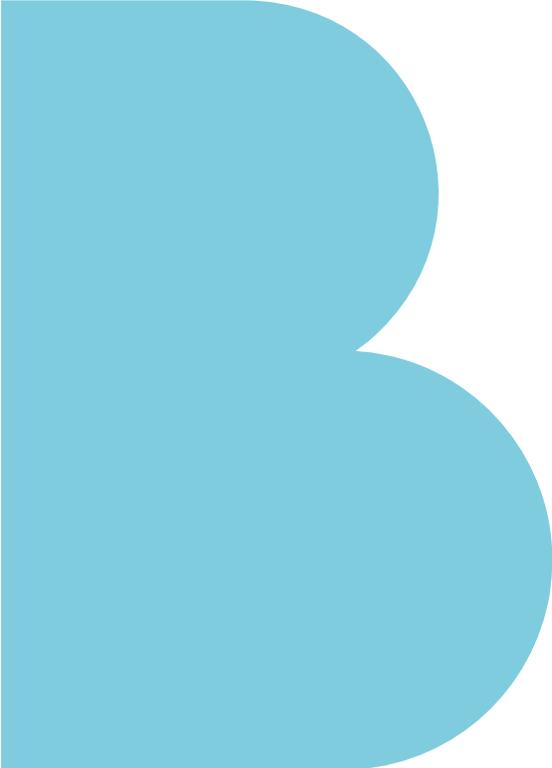
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Introduction

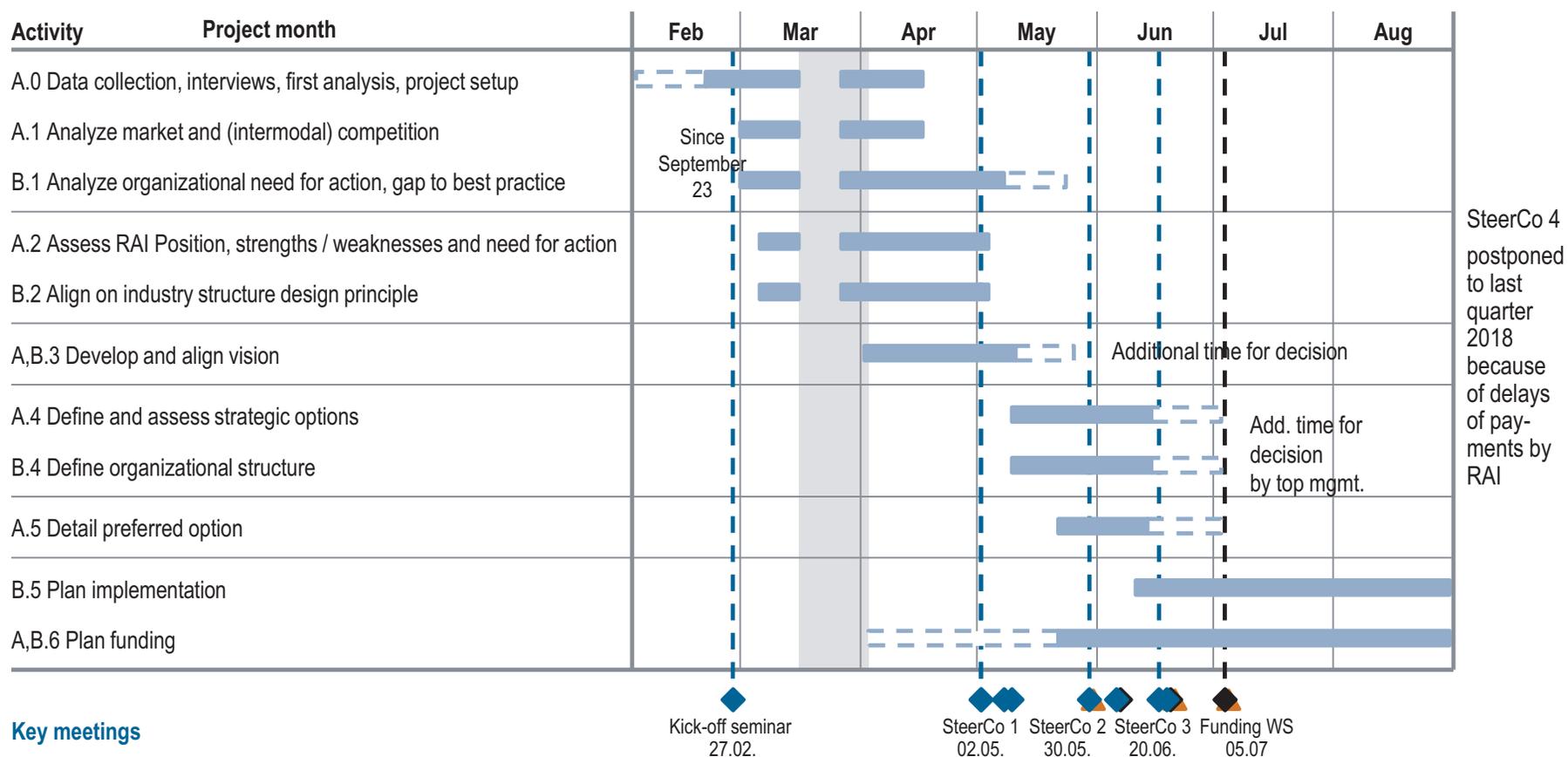
This report contains the results of the new strategy and structure development project conducted by Roland Berger for RAI

Preamble

- > Roland Berger has been contracted by RAI to design an new corporate strategy for RAI and to develop a concept for the structural transformation of the Iranian railway sector
- > The project has been structured in two main modules – the new corporate strategy (A) and the structural transformation (B) – supplemented with a report on funding and implementation (C)
- > The strategy module starts with an analysis of the Iranian railway market and RAI's strengths and weaknesses. Based on the results, a new vision statement and new strategic objectives for RAI are derived. Finally, strategic options for the future development of RAI and concrete strategic initiatives are developed and evaluated against the strategic objectives
- > The structure module starts with an assessment of the current structure of the Iranian railway sector compared to international benchmarks. Based on the results, a target industry structure and organizational structure for RAI are developed. Finally, an approach for implementing the new industry and organization structure is developed
- > The results of the project shall form the baseline for the transformation of the Iranian railway sector incl. RAI and provide the main concepts for the upcoming implementation phase

The project was delivered within a period of 6 month, the fourth SteerCo was postponed to 2018 because of delays of payments

High-level project timeline – Structure and Strategy



◆ - Meetings both modules ◆ - Strategy workshops
 Source: RAI; Roland Berger ▲ - Structure workshops

Management summary



Islamic Republic of Iran
Railways (RAI)

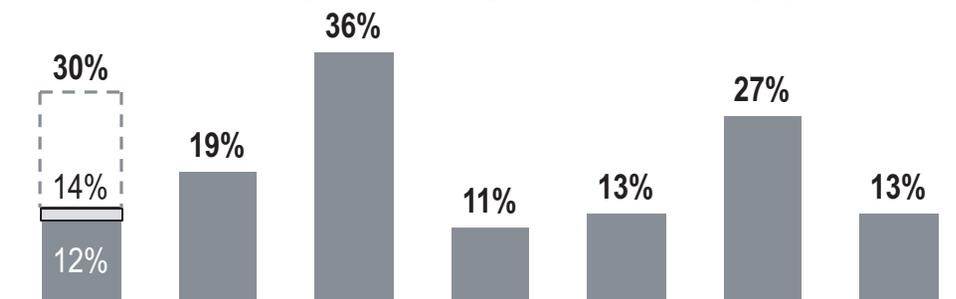


In comparison to other countries, the Iranian railway system is underdeveloped – Organic market growth not sufficient to catch up

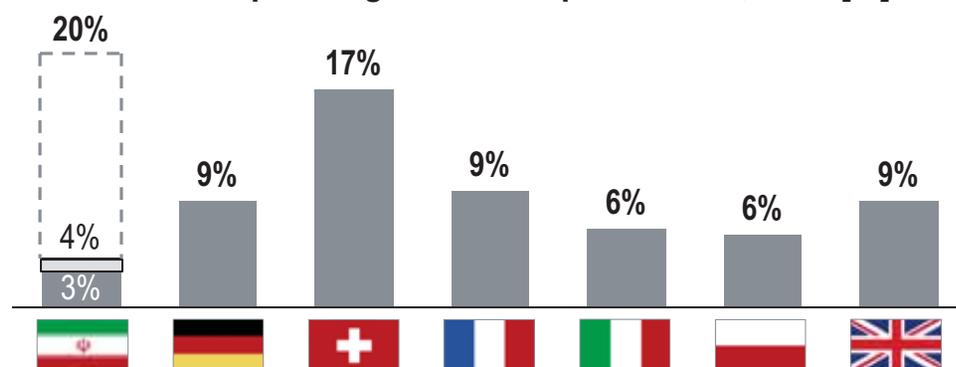
Current situation

Modal share benchmark

Modal share of cargo rail transportation¹⁾, 2014 [%]



Modal share of passenger rail transportation¹⁾²⁾, 2014 [%]



Need for action

- > The organic market growth of the Iranian transportation market will not be sufficient to reach the ambitious modal share targets set by the Iranian government
- > If no strategic intervention is made, this will lead to severe consequences for the Iranian rail sector
 - **Missing social impact** with regards to environmental friendly transportation and regional development
 - **Poor conditions of rail infrastructure** and increasing expenses for maintenance
 - **Unfavorable position of RAI** as a company in the Iranian economy
 - **No customer and market-oriented development** of current product offering

 Government target for 2025
 Projected organic growth until 2025
 Current modal share
 1) Iran share based on 2015 numbers 2) Based on passenger-km

Also, there is significant investment in the railway sector needed –
Otherwise, the current status will deteriorate even more

Need for strategic intervention

<p>Stagnating modal share</p>	<ul style="list-style-type: none"> > Without strategic intervention, the modal share of rail will stagnate at current levels > According to our market forecast, passenger rail will only improve by 1% (4% in total) and cargo by 2% (14% in total) until 2025
<p>Bad infrastructure conditions</p>	<ul style="list-style-type: none"> > In order to attract more traffic and revenues, infrastructure conditions have to be improved > Less investment will increase poor conditions of tracks and further increase maintenance cost – Also, railway stations will not be renovated to increase customer experience
<p>No improvement of customer experience</p>	<ul style="list-style-type: none"> > The outdated fleet in both passenger and cargo segment as well as the conditions of the railway stations further decrease customer experience > Development of a customer-centric product is necessary to convert traffic from road
<p>Low social impact</p>	<ul style="list-style-type: none"> > Without strategic measures, rail will not change its role in the Iranian society significantly > Investments are needed to support regional development through infrastructure projects and to leverage the environmental-friendliness of rail transport compared to road
<p>Unsustainable financials</p>	<ul style="list-style-type: none"> > Due to the decreasing customer experience as well as increasing maintenance cost, profitability will decrease if no further measures are taken > Moreover, subsidies could still be needed for covering operational cost or rail

To close these gaps, both a structural reform of the railway system and a new strategy for RAI are necessary

Background of project

1 Structural transformation Reforming the Iranian railway system

- > The current setup of the railway sector limits expansion and renewal of the railway system
 - No clear split between policy-related or regulatory activities and transport operations; many regulatory activities in Iran are split between RAI and other government bodies
 - Many of RAI's decisions are influenced by the actions of political actors
 - Significant share of RAI's budget depending on governmental funding preventing efficiency increases
 - Lack of holistic responsibility for national railway infrastructure

New structure for the industry with clear operational and regulatory responsibilities and increased competition

2 New strategy for RAI Designing a corporate strategy for RAI

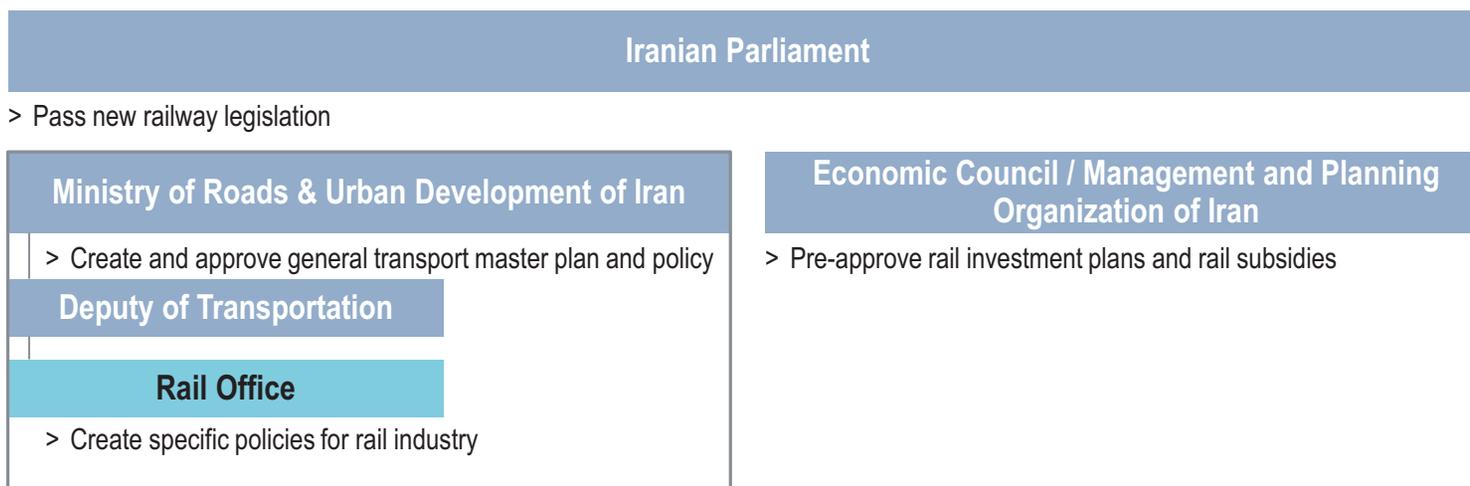
- > Today, modal shares of rail in Iran are significantly lower than in other countries despite significant potential
 - Regional commuter transport has been started but falls behind other transportation modes
 - High speed rail connections are necessary to close the gap between rail and rising air travel
 - Current fleet of locomotives and wagons is outdated and in need of modernization
 - The growing demand for intermodal container transport from ports is not attracted by rail
 - Important production sites are currently not connected to the railway

New strategy for RAI making it an internationally competitive railway and a key player in the Iranian society

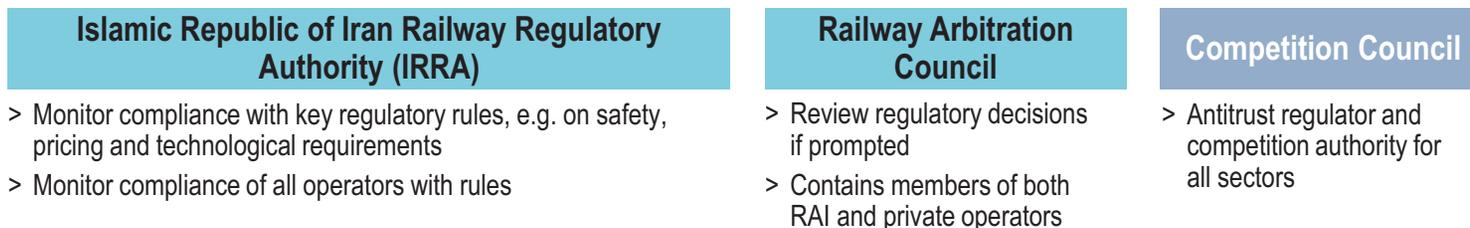
In the new industry structure, responsibilities for policy setting, regulation and operations are clearly separated

Target industry structure

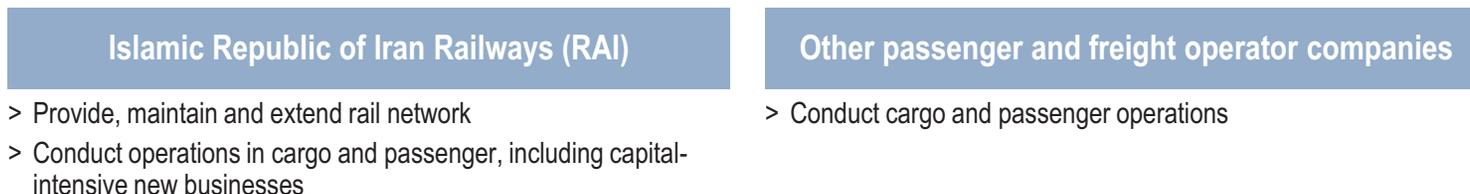
Transport policy setting and financing



Regulatory bodies, arbitration and rulings

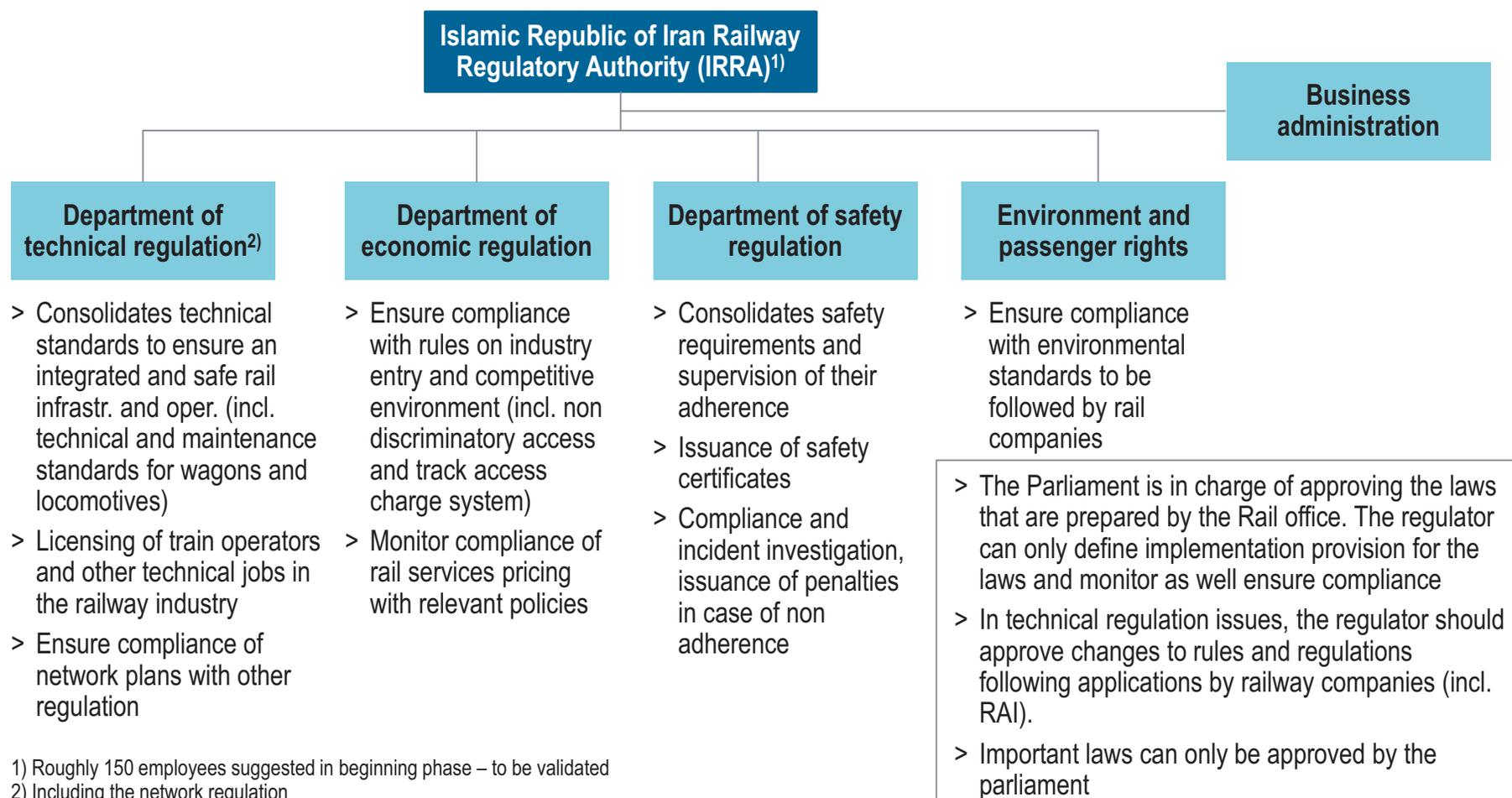


Infrastructure operations and train operations



For that purpose, a new regulatory body should be established with departments split by their regulatory function

High-level organizational structure and tasks of IRRA

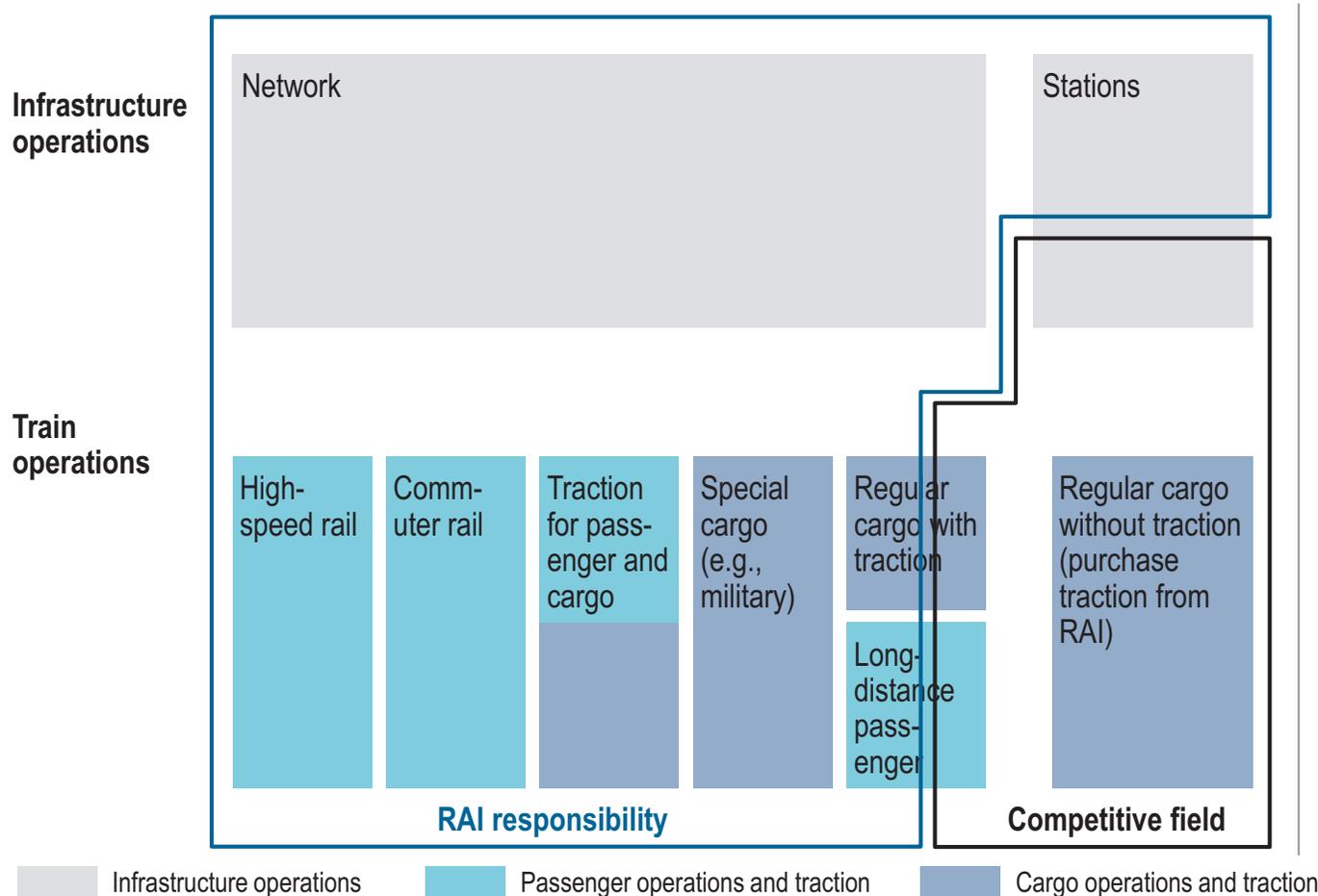


1) Roughly 150 employees suggested in beginning phase – to be validated

2) Including the network regulation

New industry structure boosts competition and opens up new opportunities for the private sector

Target operational and competitive landscape for Iran

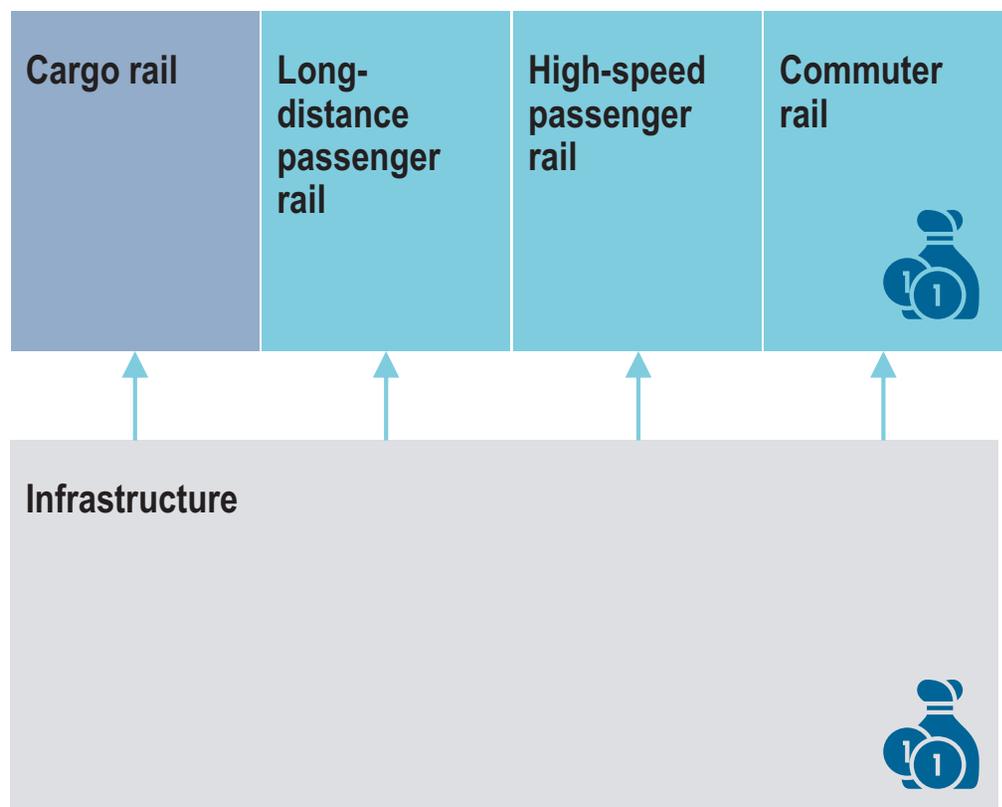


Comments

- > RAI will act as infrastructure provider and develop operations that **require large upfront investments** (high-speed rail, commuter rail)
- > In addition, RAI will take the lead on developing **potential new rail businesses** (dry ports, innovative mobility)
- > Regular passenger operations and cargo operations **conducted also by companies other than RAI** (except for special cargo)
- > **Private cargo operators** to have a **choice** between purchasing locomotives or forwarding cargo with RAI's traction (as in current model)

To make rail a competitive mode of transport in Iran, subsidies should be a mixture of direct and indirect subsidies

Target subsidy system for Iranian railway industry



Direct subsidies

- > **Direct subsidies required for commuter rail** which is unlikely to be profitable without direct subsidies (granted via performance contracts)
- > **If track access charges are sufficiently low** there is **no need for direct subsidies** of rail cargo, long-distance passenger and high speed (further research required)

Indirect subsidies

- > Subsidies for infrastructure **granted via network performance contract enable lower track access charges** (especially on less profitable routes), and benefit both cargo and passenger indirectly
- > **Network performance contract recommended** to incentivize efficiency

→ Indirect subsidization  Direct subsidies recommended

Finally, for a successful structural reform, we propose to reintegrate RAJA into RAI

Reintegration of RAJA

1 RAJA is currently government owned – RAJA is owned by the Tourism Holding of Social Security Organization which is owned by Social Security Organization of Iran (ISSO)

2 Locomotives for RAJA trains are provided by RAI – RAJA operates only wagons, traction is provided by RAI based on the own locomotive fleet

3 RAI is the best owner for RAJA in IRAN – As long as RAJA is still governmentally owned, RAI is the best possible owner for RAJA in IRAN.

- > Single customer interface for long-distance passenger rail transport in Iran
- > Reduced interfaces and transaction costs due to integrated train operations
- > Maximum railway know-how and experience with RAI as the owner



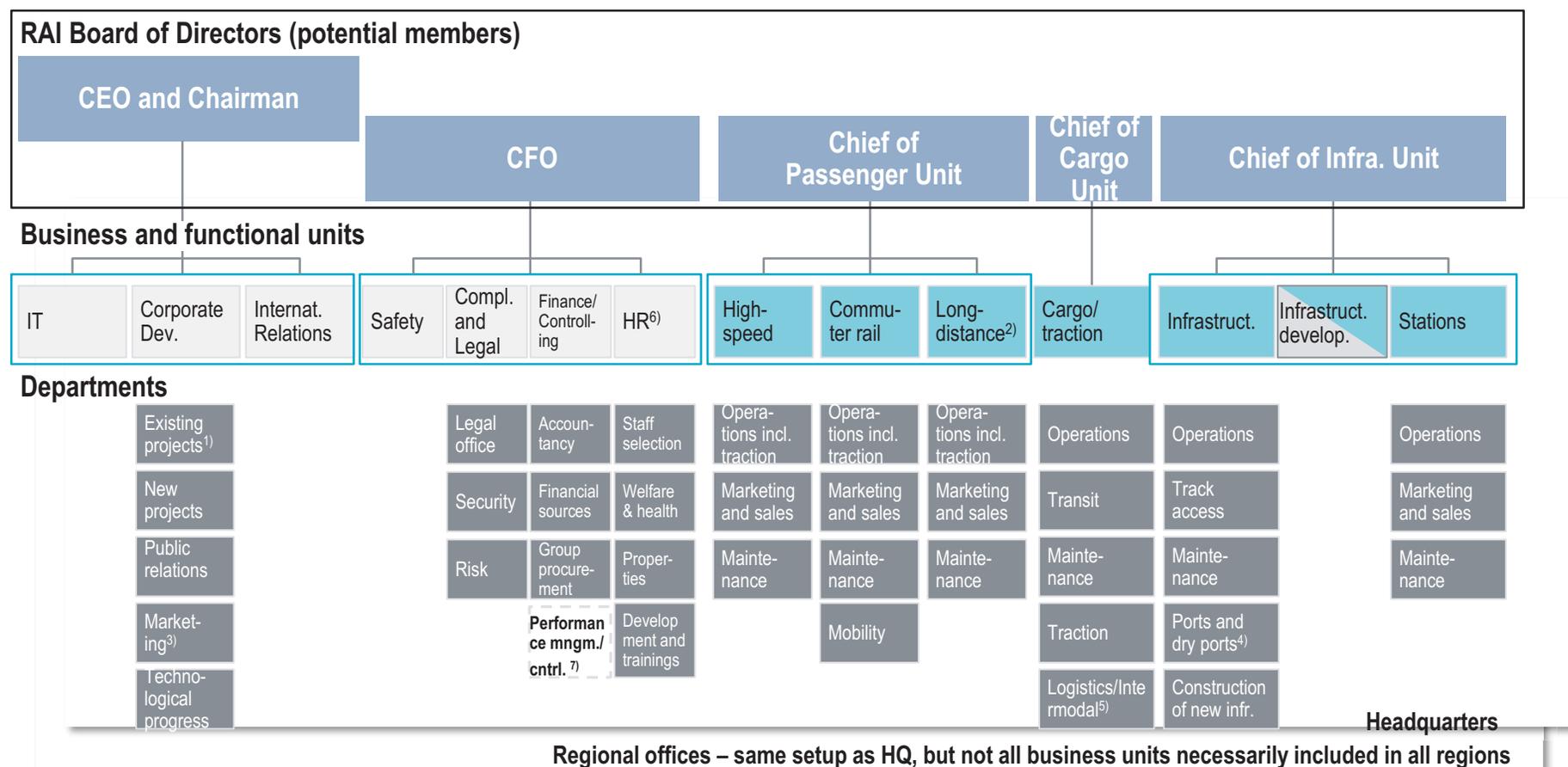
According to the best-owner principle¹⁾ and to create a strong rail company RAI should reintegrate RAJA

1) The best-owner principle states that no business has an inherent value in and of itself; it has a different value to different owners or potential owners, in this way RAJA will have more value with the more competent owner RAI

To fulfil its new scope of services RAI needs to reorganize its governance and organizational structure

RAI recommended organization structure

Reporting lines only – Not final legal structure for RAI



1) Includes safety improvement and electrification; 2) Responsible for passenger sales; Re-integration of RAJA recommended to create strong rail organization; otherwise, long-distance unit to be newly built up; 3) Cargo only for interim phase 4) Together with cargo unit 5) To be split later 6) As unions do not play such a major role in Iran we do not advise to have a separate Head of HR like at DB 7) Should also be established in all BU

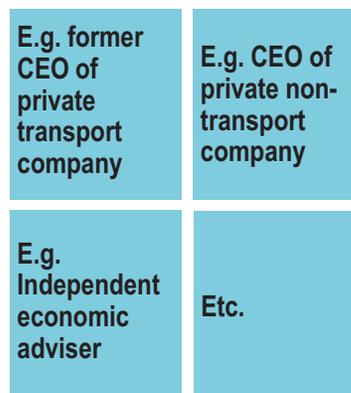
In addition, the governance of RAI should be overtaken by three different bodies

RAI governance structure

General Assembly



Advisory board



RAI Managing Board (potential members)



Existing member New/changed member

Main responsibilities

General Assembly

- > Set RAI's overall strategy, approve budget, P&L and balance sheet
- > Select RAI CEO, appoint members of advisory board
- > Approve changes to company bylaws

Advisory Board

- > Discuss all decisions to be taken by General Assembly
- > Supervised by the General Assembly
- > The secretariat should be located where the secretariat of the General Assembly is today
- > List of criteria for selecting members: Active or former Iranian or International business leaders, no conflict of interest, impeccable standing and reputation, excellent track record in managing their companies, experience that adds value for RAI

Managing Board

- > Execute GA decisions
- > Propose plans to reach strategic targets, take care of day-to-day company operations
- > General assembly selects CEO and then approves managing board members by the CEO proposal
- > The CEO can suggest the board dismissal to the GA and then the GA has to approve it

To ensure long-term success within the new industry structure, a new vision for RAI has been developed

Vision of RAI



راه آهن ایران - ایران در حرکت
RAI – Moving Iran

The new vision has then been broken down into a comprehensive set of strategic objectives

Strategic objectives¹⁾

RAI – Moving Iran

Overall goal: Increase modal share of rail in passenger business to 10% and cargo business to 20%

1 Operational excellence

A Safety

Reduce number of rail accidents involving injuries of people and fatalities to zero

B Fleet

Adopt average fleet age of locomotive and coaches inferior to industry standards

C Average speed

Increase average speed of passenger trains by 25 km/h and cargo consignments by 5 km/h

2 Customer loyalty

A Seamless travel

All major cities in Iran have integrated ticketing system

B Customer satisfaction

Increase satisfaction score of customer opinion polls by 20%

C Brand perception

Become one of the top ten brands in Iran²⁾

3 Social impact

A Employer attractiveness

Become one of the top ten employers in Iran²⁾

B Socioeconomic benefits

Reduce CO₂ emissions per ptkm by 30%

C Regional development

Increase real estate price at and around stations by 30%

4 Financial sustainability

A Profitability

Achieve overall EBITDA margin of 15%

B Investment level

Execute the infrastructure investment plan with zero tolerance

C Effective subsidy system

Fulfil all conditions of network and commuter performance contracts

1) Time horizons of individual targets depend on level of investment 2) In case there is no industry measurement available, RAI should develop own polls for measurement

After detailed analysis and discussion with industry experts, a set of concrete initiatives has been developed for RAI to reach its objectives

Strategic initiatives



Infrastructure

Network upgrade

- > Upgrading network with double-tracking and electrification
- > Diminishing current infrastructure bottlenecks

Stations transformation

- > Transforming stations into transit-oriented transport hubs
- > Expanding retail, catering, advertising and parking spaces

Safety program

- > Designing a comprehensive safety program
- > Modernizing signaling facilities and level crossings



Passenger

Commuter rail

- > Extending commuter rail using existing rail infrastructure
- > Additional trainsets and stations in Tehran, Tabriz and Ahvaz

High speed rail

- > Proceeding with the high speed rail development
- > Construction of five major high speed lines across the country

Innovative mobility

- > Becoming the platform for passenger transportation in Iran
- > Offering integrated tickets and innovative mobility solutions



Cargo

Access to production sites

- > Connecting major production sites to the rail network
- > Building tracks to iron ore mines and oil refineries

International expansion

- > Expanding access to important international rail corridors
- > Building new tracks to connect to Iraq and Azerbaijan

Ports and terminals

- > Improving operations in major ports with new equipment
- > Building multimodal terminals in Tehran and Bandar Abbas

3-PL logistic services

- > Offering modern 3-PL logistics services through partnerships



General

Rebranding

- > Developing a new group brand portfolio and marketing

Operational improvements

- > Streamlining processes and improving operations

Customer service improvement

- > Creating a modern loyalty program and enhancing customer service processes

Employee development

- > Offering attractive training opportunities for employees and attracting the best talents

Environmental program

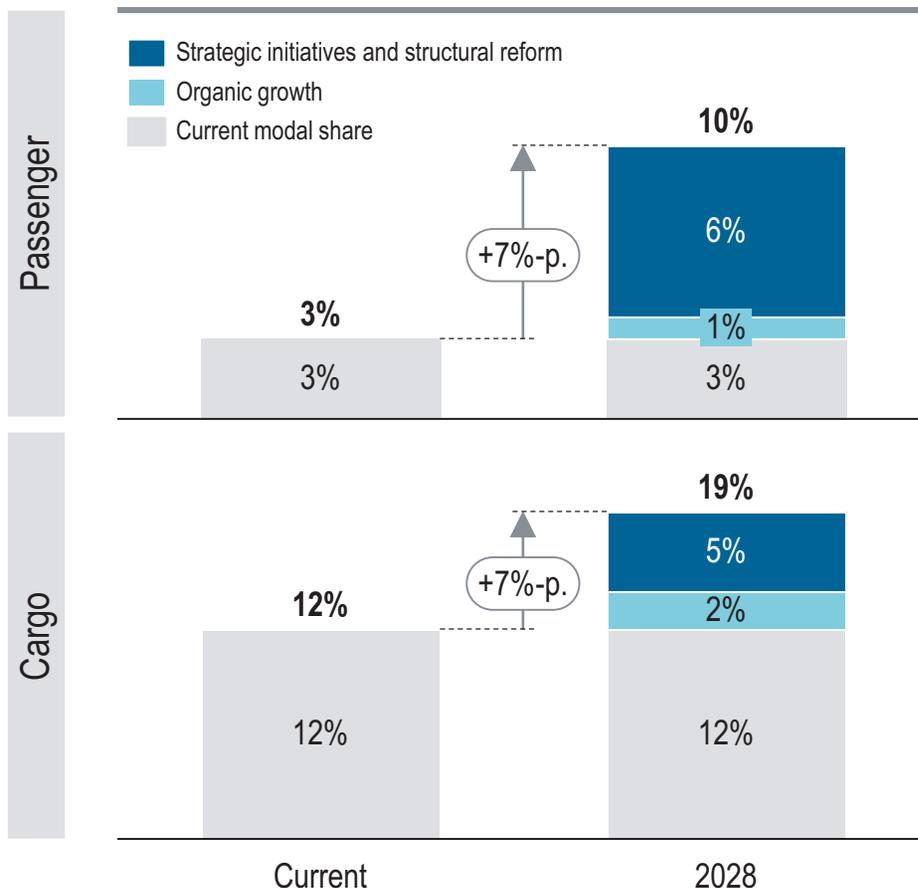
- > Reducing CO2 emissions by use of renewable energy

By implementing these initiatives, the position of the rail sector in the Iranian economy will be improved significantly

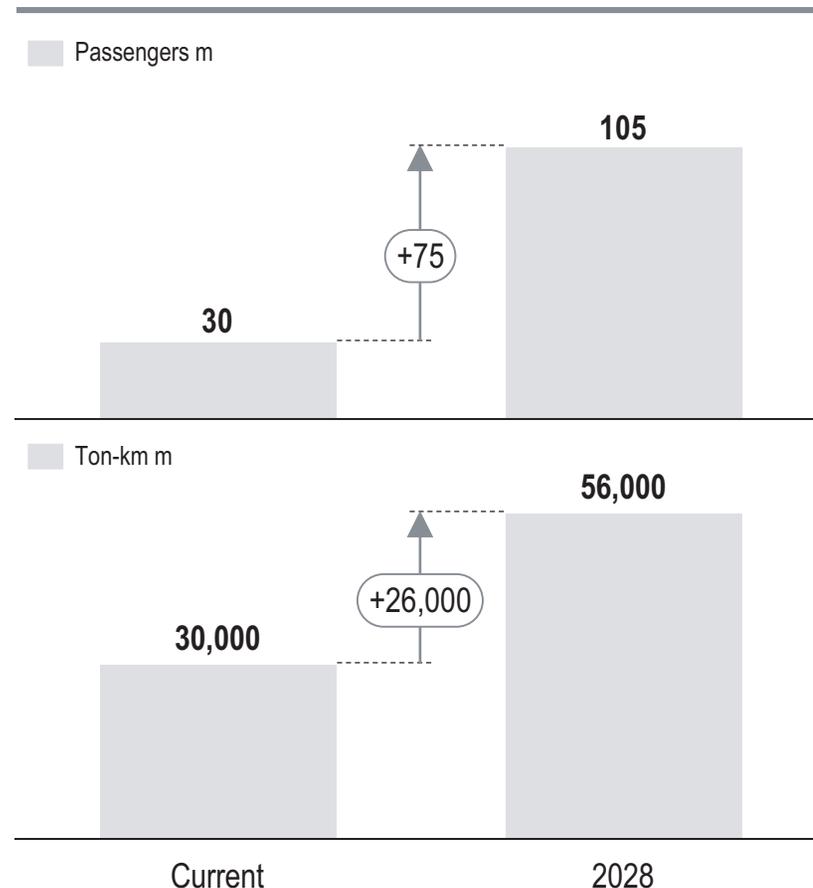
Results of the strategy

Potential development if all proposed actions are implemented as scheduled

Modal share of rail



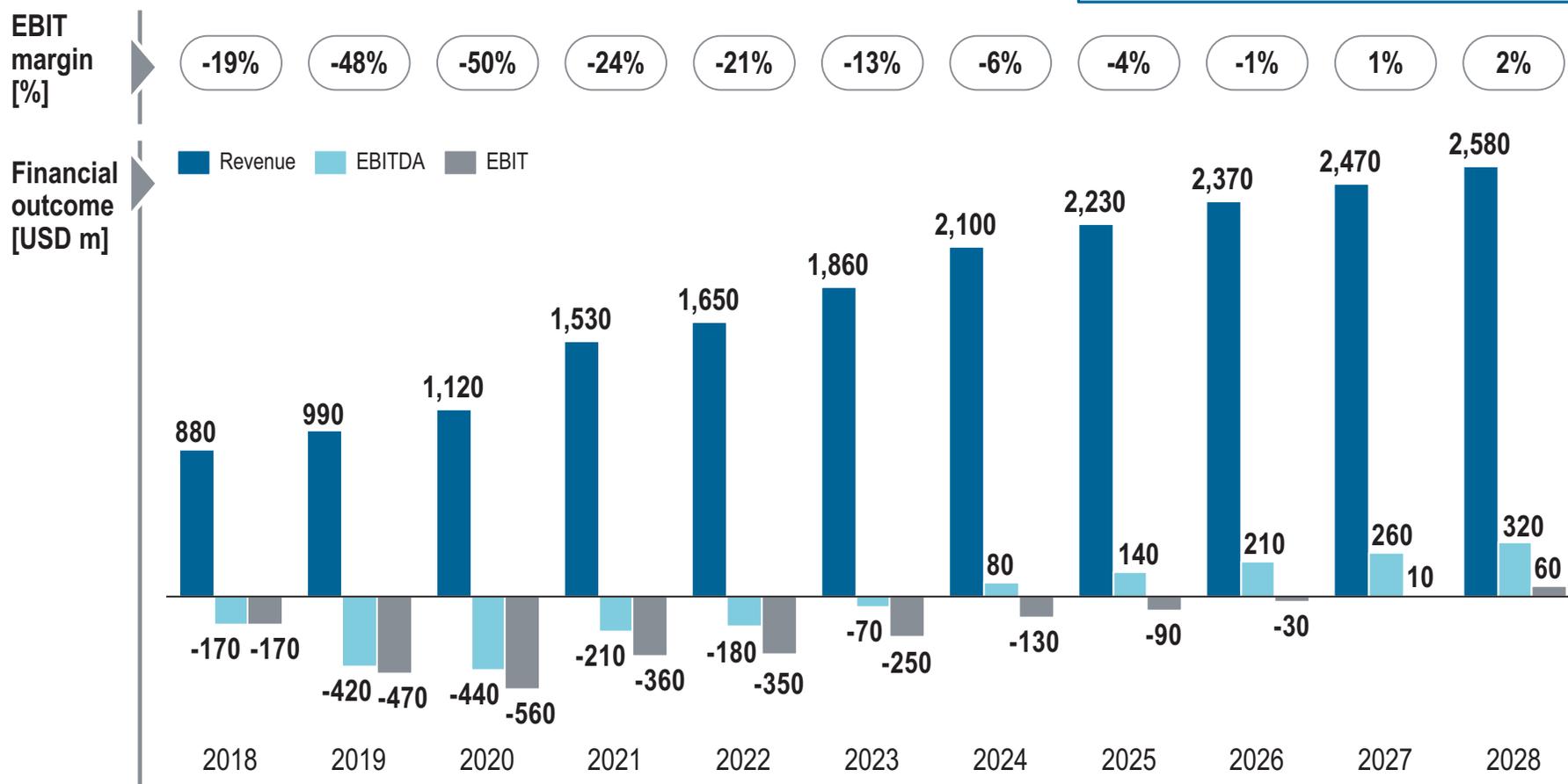
Traffic



Also, the new strategy will enhance RAI's financial position – Break-even on an EBITDA-basis expected to be realized in 2024

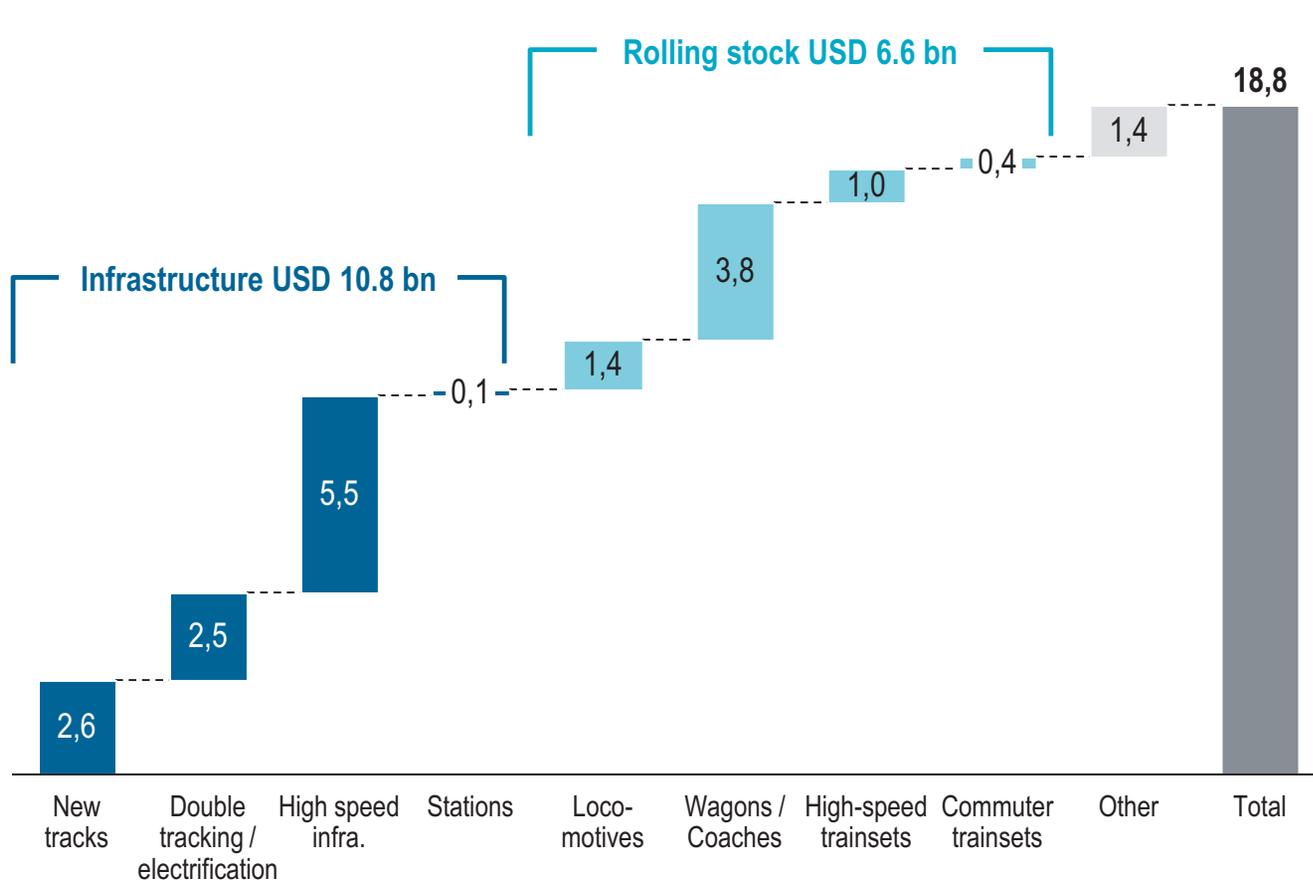
Financial performance forecast of RAI

Potential development if all proposed actions are implemented as scheduled



Implementing the strategic initiative requires capital expenditure for new assets of USD 18.8 bn over the next decade

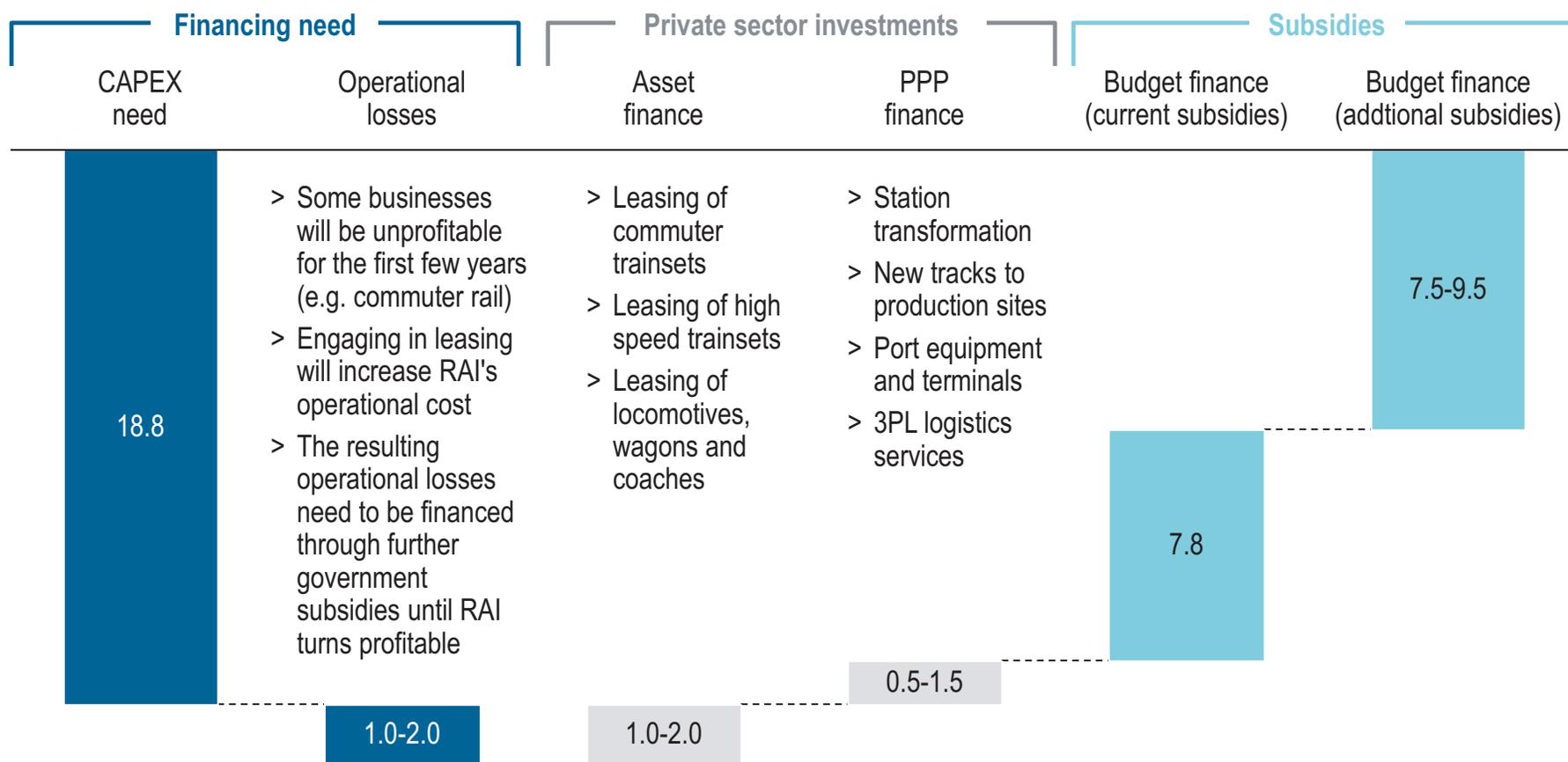
Capital expenditure per asset type [USD bn, 2018 to 2028 accumulated]



- > Executing the strategic initiatives requires substantial investments in new assets
- > The largest part of investments is required for new infrastructure or upgrading of the existing Iranian rail network
- > To supply the increased traffic for both passenger and cargo rail, a large extension of RAI's current fleet of locomotives, wagons and coaches is necessary

Next to conventional government subsidies, investments by the private sector are expected to cover USD 1.5 bn to USD 3.5 bn

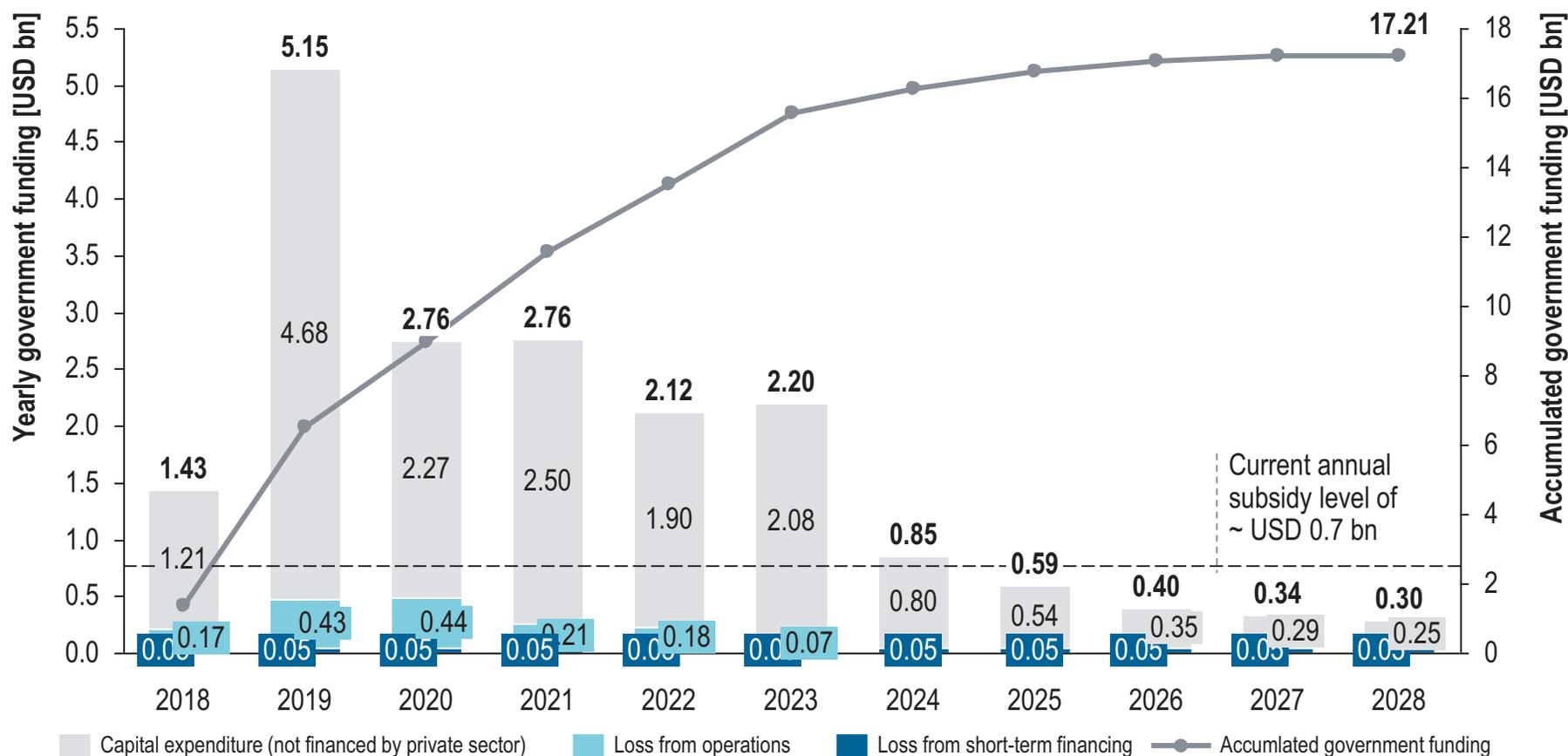
Distribution of possible funding methods [USD bn, 2018 to 2028 accumulated]



In total, USD 17.2 bn of subsidies are necessary from 2018 to 2028 for investments not covered by private sector and operational losses

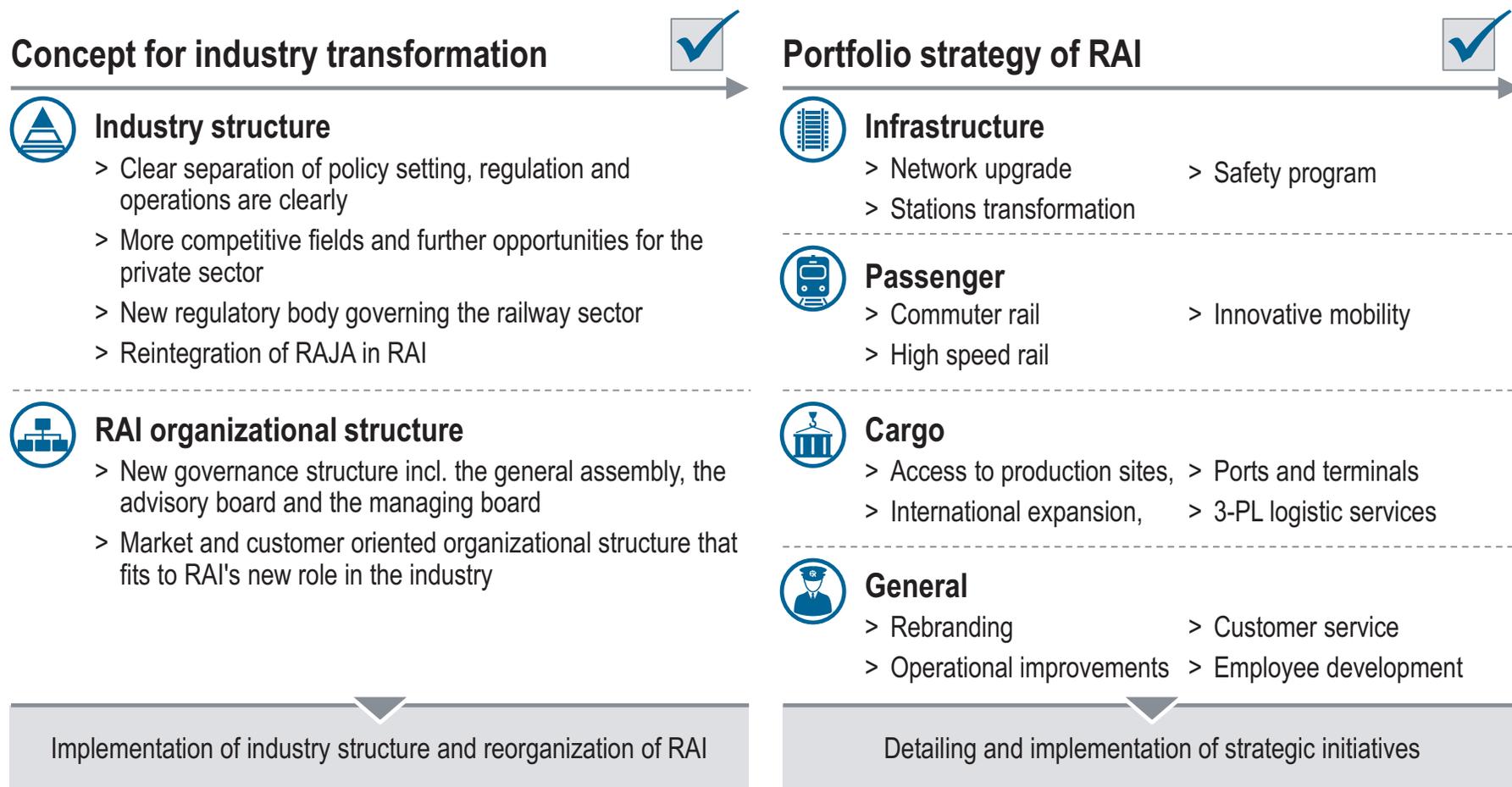
Required government funding p.a., 2018-2028

Funding plan to be adapted according to progress of RAI



Both concepts for the structural transformation and the new strategy of RAI are in place – Success depends on accurate implementation

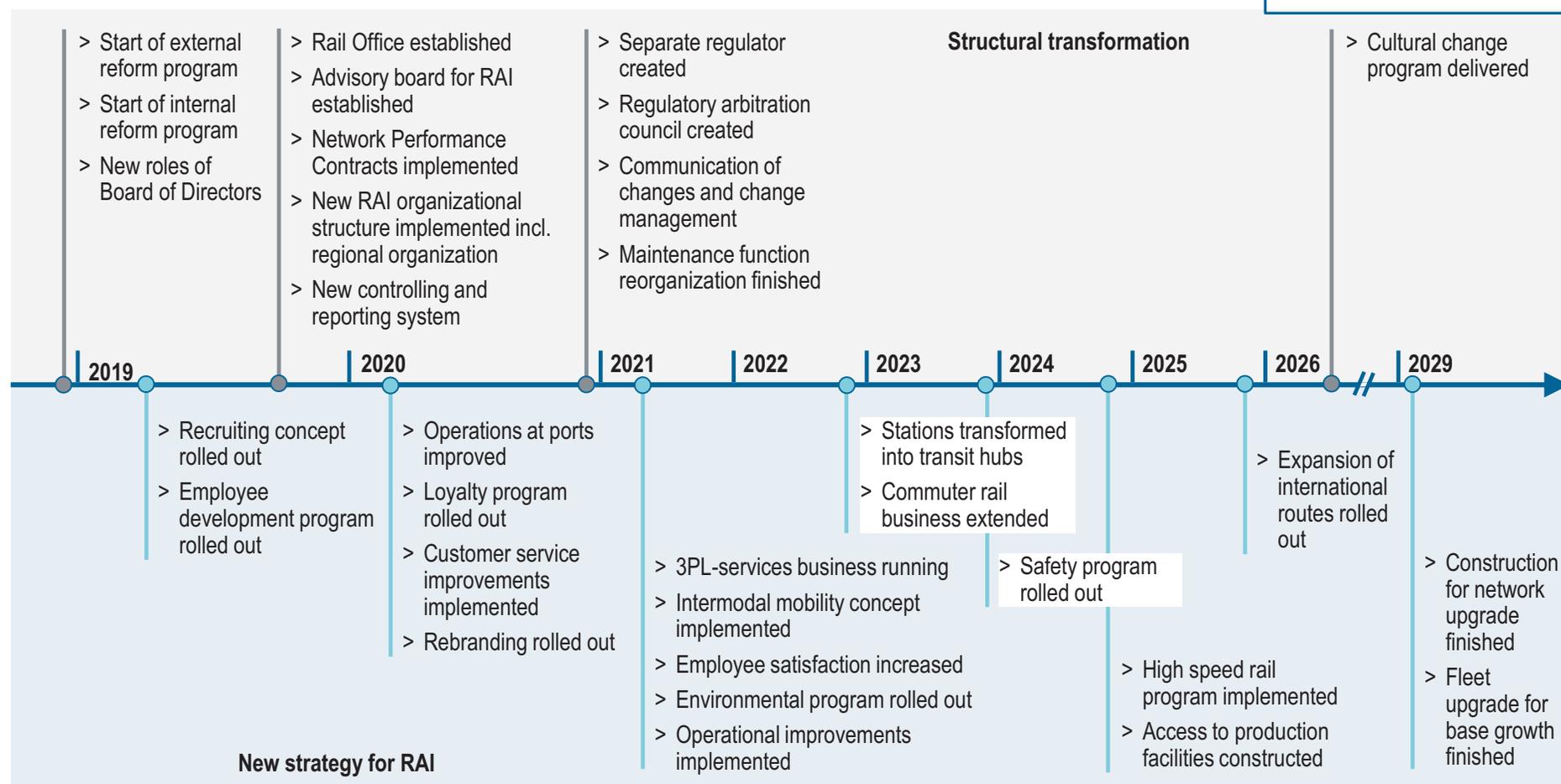
Next steps



The major steps in the structural transformation can be taken during the next three years – Strategy to be delivered until 2029

Implementation roadmap

Time plan to be adapted in discussion with RAI



However, there are significant risks involved in the implementation process that need to be mitigated and managed

Major implementation risks

Insufficient financial resources

- > Inability to acquire sufficient financial resources to implement both structural and strategic changes

Slow decision making

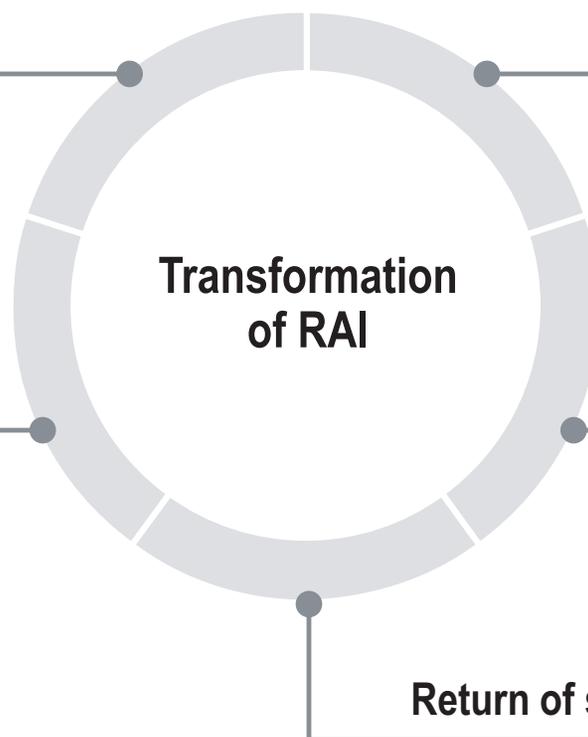
- > Lack of stringent management and quick decisions – Intermodal competition will grow quickly

Complex change management

- > Lack of skilled and passionate people capable of driving the implementation

Low availability of talents

- > New structure and strategy requires recruiting significant number of new people for RAI



Return of sanctions

- > Harmful external risks like the return of sanctions which could slow down the implementation significantly

After the transformation process, RAI and the Iranian railway industry will become a major backbone of the Iranian society

Outlook

A **reduced travel time and high speed connections** between major population hubs will allow for a new way of travelling – For example, the travel time between Teheran and Esfahan will be reduced significantly from seven to only two hours



A number of new railway stations will be built while existing ones will undergo comprehensive modernization programs – A significant number of **new business opportunities** will be created in and around railway stations

The existing Iranian commuter rail network will be extended and upgraded with more frequencies, modern trains and more stops resulting in **changing the way people travel to and from their work place**



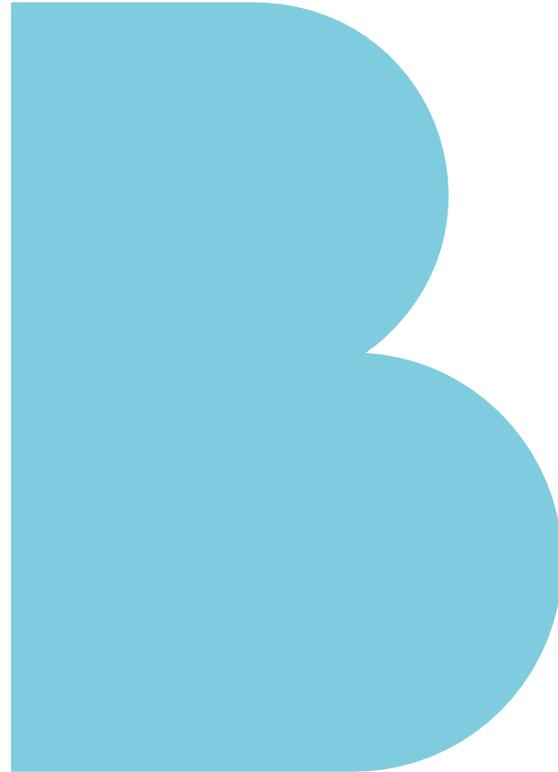
During the implementation of the structural reform, new jobs will be created within RAI, the private sector and the government – In the future, RAI will offer even **more attractive carrier opportunities** and a modern working environment

There will be an enormous cultural shift in the railway sector and in particular in RAI itself towards **market and customer-centric offerings** in both passenger, cargo and infrastructure services markets



Finally, there will be **significant environmental benefits** from the shift in the current Iranian transportation mix from road to the environmental friendly rail while everyone will profit from less congestion on the roads in the cities

A. Structural reform



A.1 Assessment of RAI's current structure



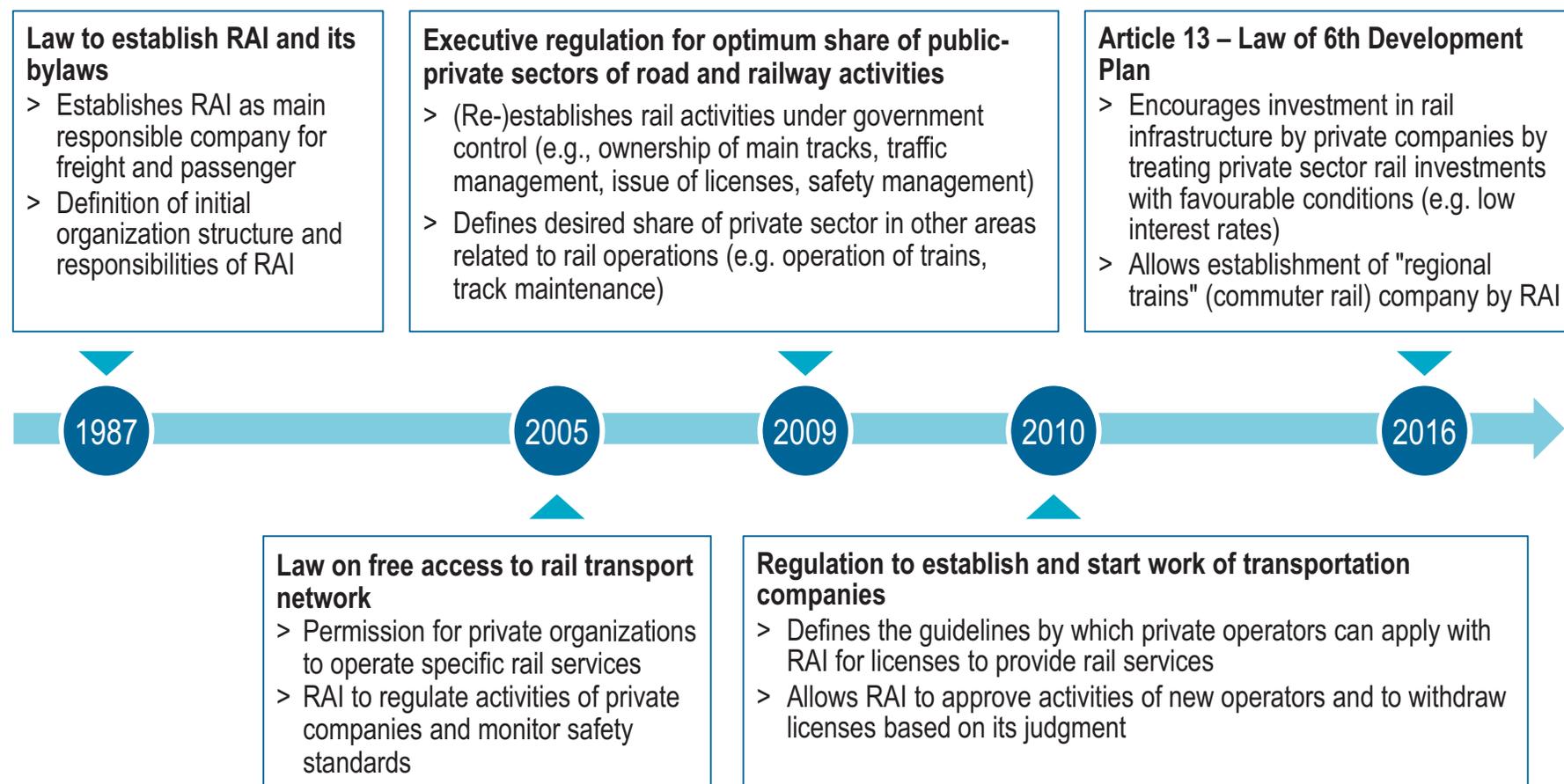
During the project we have identified 12 success factors for rail reforms to be addressed during RAI's structural reform

Rail reform success factors



Since 2005, the regulatory framework in Iran has been altered to allow private sector participation in certain activities

Development of regulatory framework for Iran's railways



RAI's tasks include both operations and regulatory activities, some of which are outside the scope of current legislation

Distribution of rail responsibilities

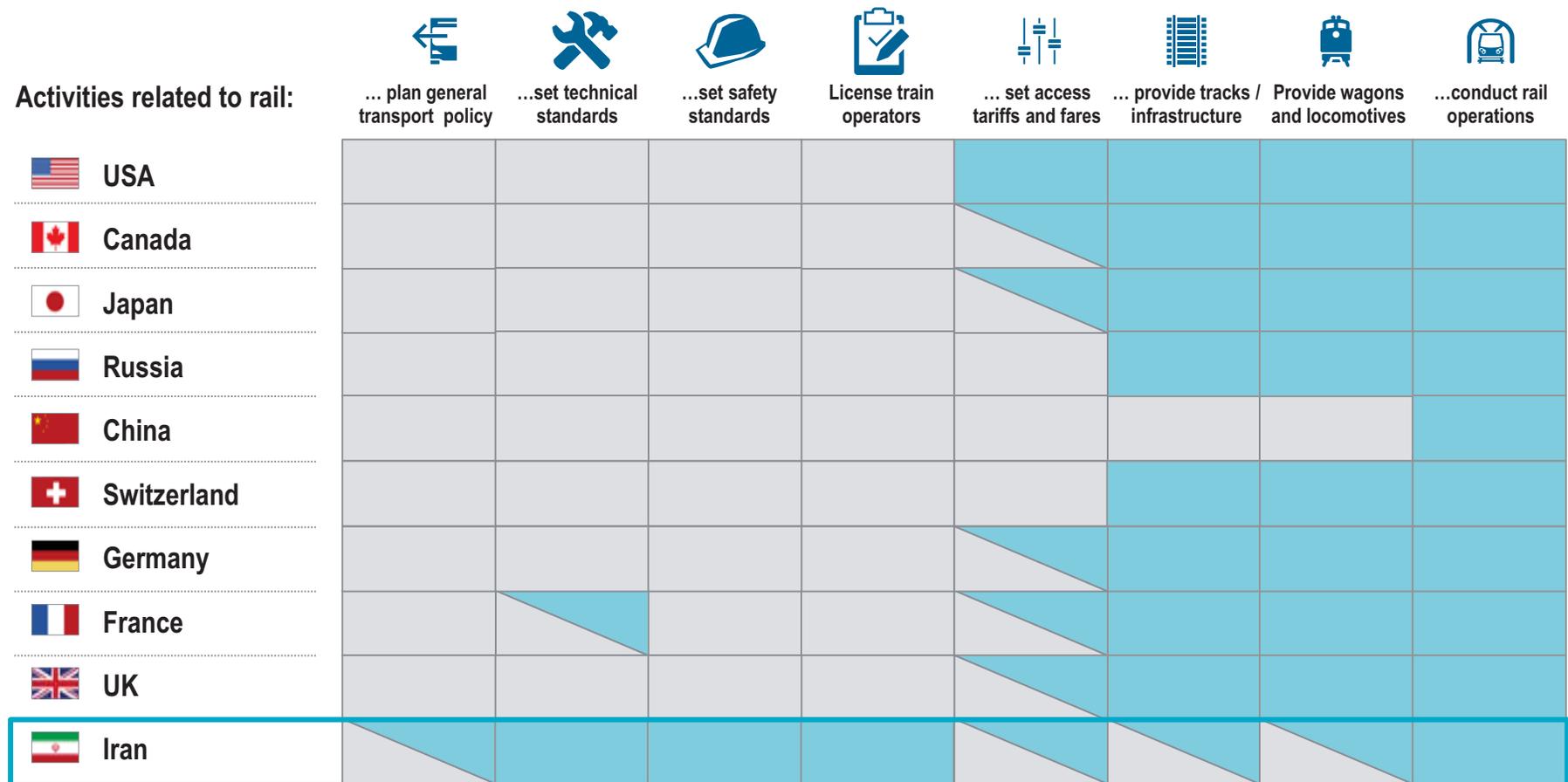
	General transport policy	Track access charges/fare setting	Tracks/ infrastructure	Wagons and locomotives	Transport
Ministry of Roads and Urban Dev. 	<ul style="list-style-type: none"> > Set general transport policy and strategy (<i>in practice only approval</i>) > Approve passenger tariffs (delegated to RAI by Ministry) > Incentivize private sector participation¹⁾ 	<ul style="list-style-type: none"> > Approve tariffs 	<ul style="list-style-type: none"> > Constructing new lines (done by Construction and Dev. of Transportation Infrastructures Company on behalf of Ministry) 	N/A	N/A
Iran Railways 	<ul style="list-style-type: none"> > Set access charges and transportation passenger tariffs > Set general transport policy and strategy 	<ul style="list-style-type: none"> > Set track access charges for operators > Set guidelines for passenger fares to be followed by operators 	<ul style="list-style-type: none"> > Maintain and extend rail network > Own main tracks > Develop and maintain infrastructure > Manage network and plan traffic 	<ul style="list-style-type: none"> > Regulate production, import and maintenance > Set safety requirements > Provide locomotives to private operators 	<ul style="list-style-type: none"> > Issue licenses to private operators and monitor performance > Regulate standards for rail tickets / bills of lading > Resolve operational issues with clients
Private Operators 	<ul style="list-style-type: none"> > Set transportation freight tariffs and propose passenger tariffs to RAI 	N/A	<ul style="list-style-type: none"> > May own subsidiary tracks for 10-20 years > Pay access charges for using infrastructure 	<ul style="list-style-type: none"> > Provide rolling stock > Provide wagon maintenance 	<ul style="list-style-type: none"> > Responsible for passengers / cargo from the moment passenger ticket / bill of lading is issued

Regulatory activities *Activities not based on legislation but carried out in practice*

1) Not done in practice

Other countries have a clear split between policy-related/regulatory activities and transport operations

Split of railway activities



Rail operating company (public or private)
 Other government bodies/ public regulatory authorities

RAI faces certain legal restrictions in developing the future target industry structure

Legal restrictions for Iran Rail

Obligation to provide free access to network



- > Iran Rail is obligated to plan, guide and control railroad traffic such that the fleets of all (governmental and non-governmental) **rail companies are able to reasonably use the network**
- > Access tariffs must also be set in such a way that **no railway companies are excluded from using the network**
- > Imposing constraints on the passing of any wagons is only admissible in the case of a few exceptions, for example:
 - Ensuring movement safety
 - Avoiding overuse of specific network lines
- > Iran Rail is obligated to **provide wire and wireless communication services** and data transfer to private rail companies

Obligation to take on certain responsibilities



- > Specific responsibilities are designated as **responsibilities of RAI and cannot easily be passed on to other existing actors**
- > These responsibilities include for example:
 - Ownership of main rail tracks
 - Establishing training facilities to develop qualified railway personnel

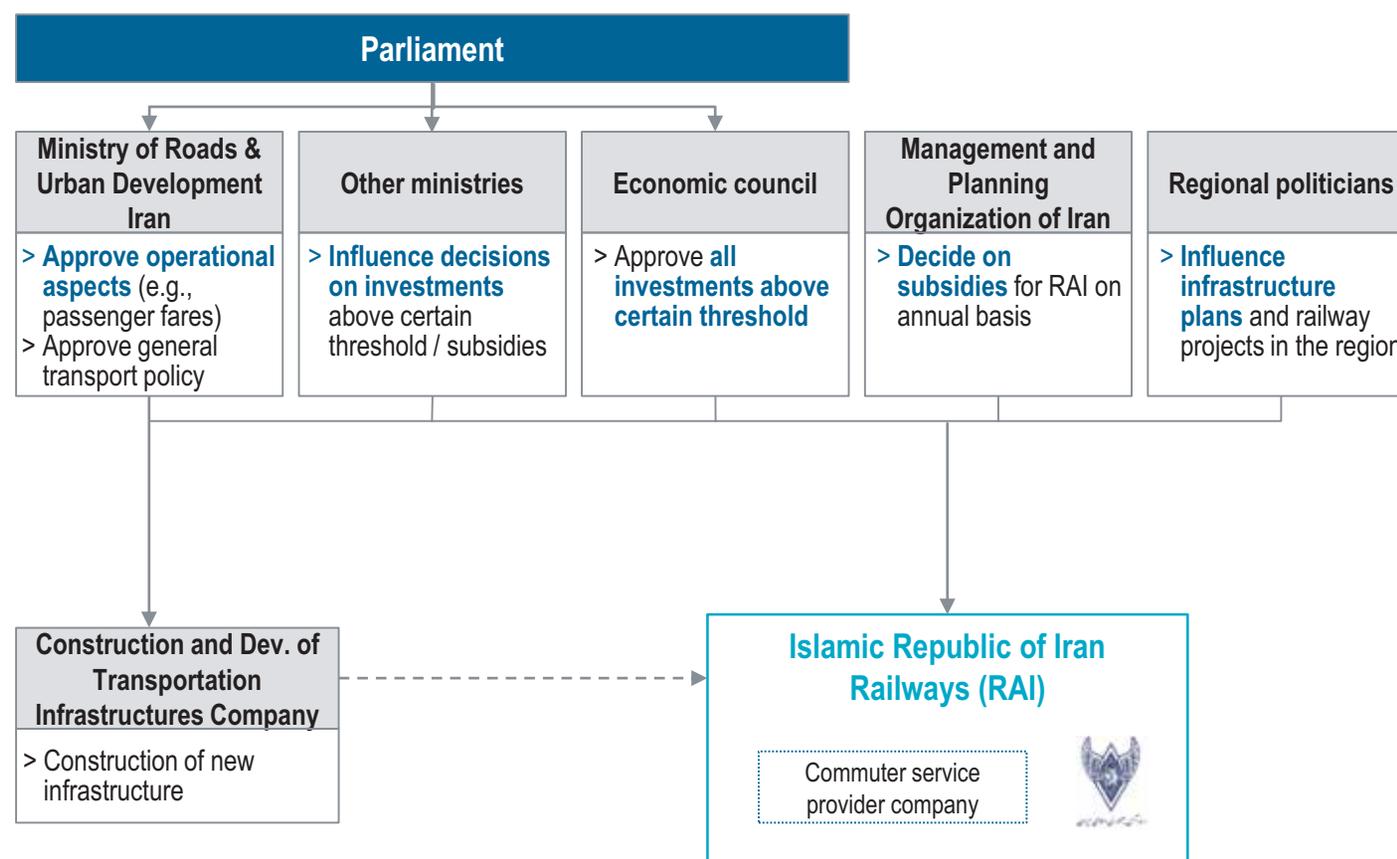
Influence of governmental actors on industry structure



- > Members of the General Assembly need to **approve many decisions related to Iran Rail**, including for example:
 - Changes to the company by-laws and organization charts
 - Balance sheet
 - Policies
 - Selection of the Board of Directors and company auditor
- > The **General Assembly** consists only of the following governmental actors:
 - Minister of Road and Urban Development
 - Minister of Economy and Finance
 - Minister of Planning and Budget
- > No member of Iran Rail has voting power in the decisions by the General Assembly

Many of RAI's decisions are influenced by the actions of political actors

Interaction of RAI with political stakeholders



Comments

- > Decisions on both budgeting and infrastructure are influenced by political stakeholders on different levels
- > For all investments above a certain threshold, RAI requires governmental approval
- > Many of RAI's tasks are focused on managing the political stakeholders
- > RAI has little freedom for taking decisions (e.g. regarding infrastructure, purchase of new wagons) on its own

→ Monitoring - -> Service provision

Key roles of political stakeholders involved in Iran's railway landscape (1/2)

Institutions in Iran's railway landscape

	Description of responsibilities	Key role for railways
Ministry of Roads & Urban Development Iran 	<ul style="list-style-type: none"> > Approve general transport policy and strategy > Adopt and implement policies promoting all transport modes > Incentivize competition and private sector participation (according to legal framework) > Approve operating tariffs for passenger > Oversee construction of transport infrastructure (including roads, aviation, railroads and maritime) and suggest new international transport routes 	<p>Regulate and approve all transport activities</p>
Other ministries 	<ul style="list-style-type: none"> > Indirectly influence Iran Railways' activities, mainly with regards to available budget > Relevant ministries include Ministry of Industry, Mine and Trade and Ministry of Petroleum 	<p>Influence RAI's budget and transport policy</p>
Economic Council 	<ul style="list-style-type: none"> > Pre-approve all railway investment plans above a certain threshold on an annual basis 	<p>Approve RAI investment plans</p>
Management and Planning Org. of Iran 	<ul style="list-style-type: none"> > Approve subsidies given to RAI for the following year on an annual basis > Approve civil plans and that their financial resources are provided by government 	<p>Influence RAI's budget</p>

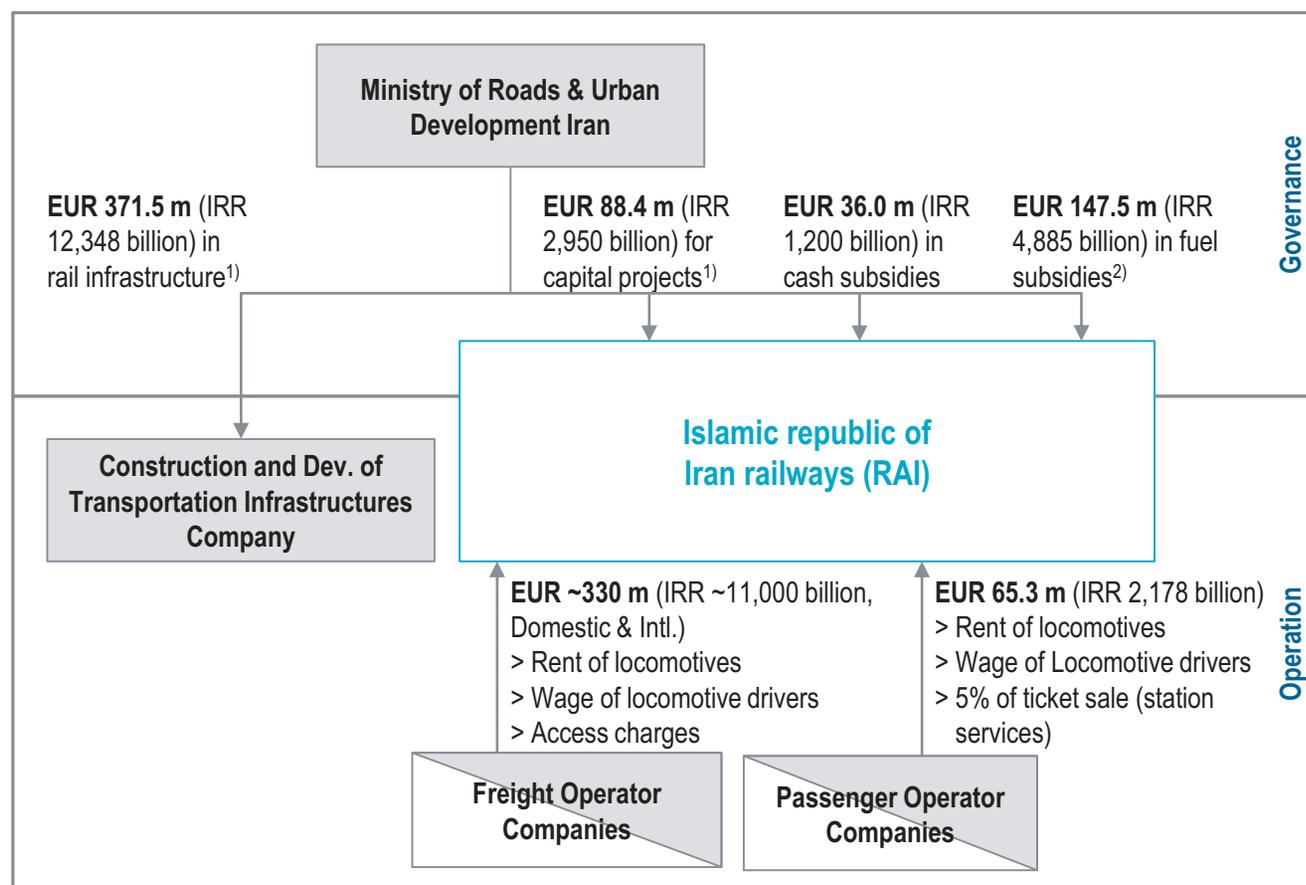
Key roles of political stakeholders involved in Iran's railway landscape (2/2)

Institutions in Iran's railway landscape

	Description of responsibilities	Key role for railways
Regional politicians (e.g., mayors) 	<ul style="list-style-type: none"> > Act as stakeholders in the planning of new railway infrastructure > Influence technical aspects of infrastructure plans (e.g., with respect to routes, station locations, slope, tunnels) > Influence plans for new infrastructure which is constructed in their sphere of influence 	Influence final infrastructure plans
Construction and Dev. of Transportation Infrastructures Company 	<ul style="list-style-type: none"> > Construct new railway infrastructure under the supervision of the Ministry of Roads and Urban Development > Follow infrastructure plans set jointly by RAI and involved political parties 	Construct planned infrastructure
Superior commission of accident investigation 	<ul style="list-style-type: none"> > Determine criminal and civil responsibility for railway accidents under the supervision of the Ministry of Roads and Urban Development > Decide on and impose fines for the parties found guilty of railway accidents 	Investigate railway accidents

A significant share of RAI's budget is dependent on governmental funding sources, preventing efficiency increases

RAI's funding sources



Comments

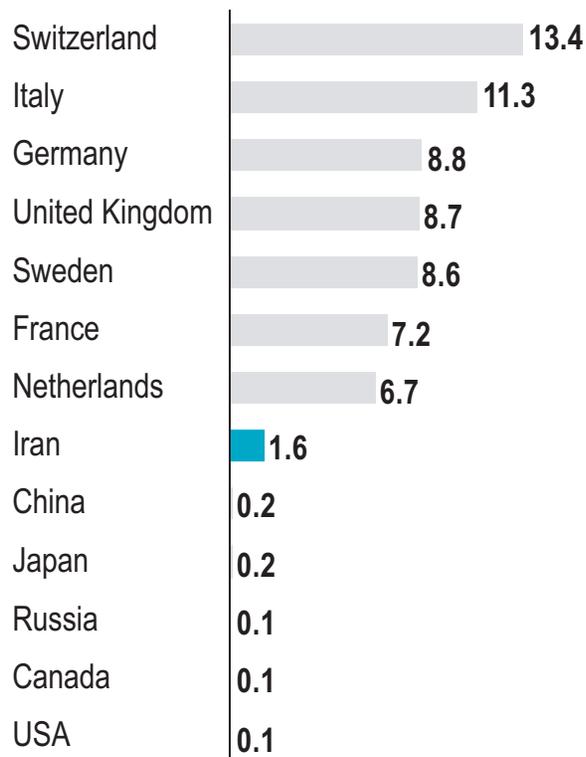
- > Funding from governmental sources is often more important than revenue received from traction and access charges
 - For instance, the promise of receiving 1% of oil income in the future is more significant to RAI than traction and access charges received
 - For this reason, RAI has to spend significant effort on interacting with government officials each year to receive sufficient subsidies each year
- > Current system of subsidies sets incentive to request higher subsidies rather than increase efficiency

1) Including enhancement, renewal and maintenance of fleet, tracks, stations and signaling; 2) Including settlement of debt originating from credit supply of fuel with cash subsidies

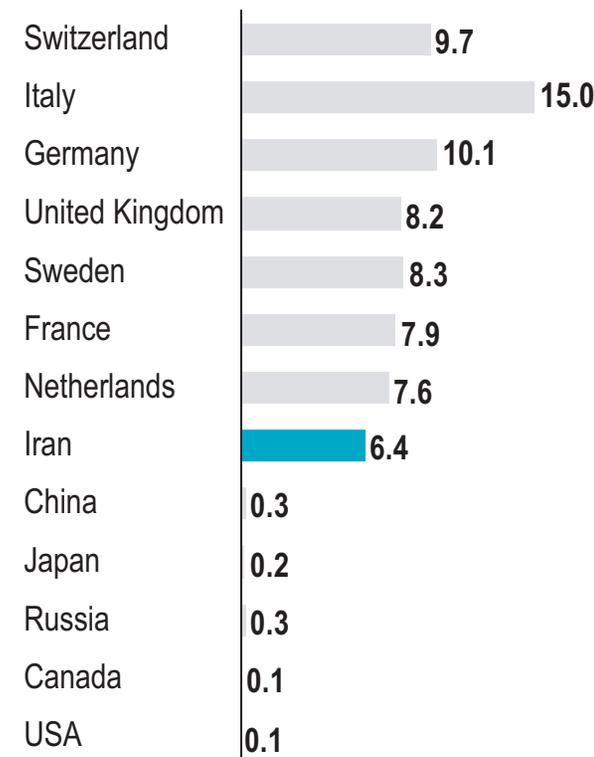
When adjusted for PPP, Iran receives a similar amount of subsidies as many European railways

Level of subsidies to RAI

Subsidies per ptkm [2015; EUR c]



Subsidies per ptkm PPP adjusted [2015; EUR c]



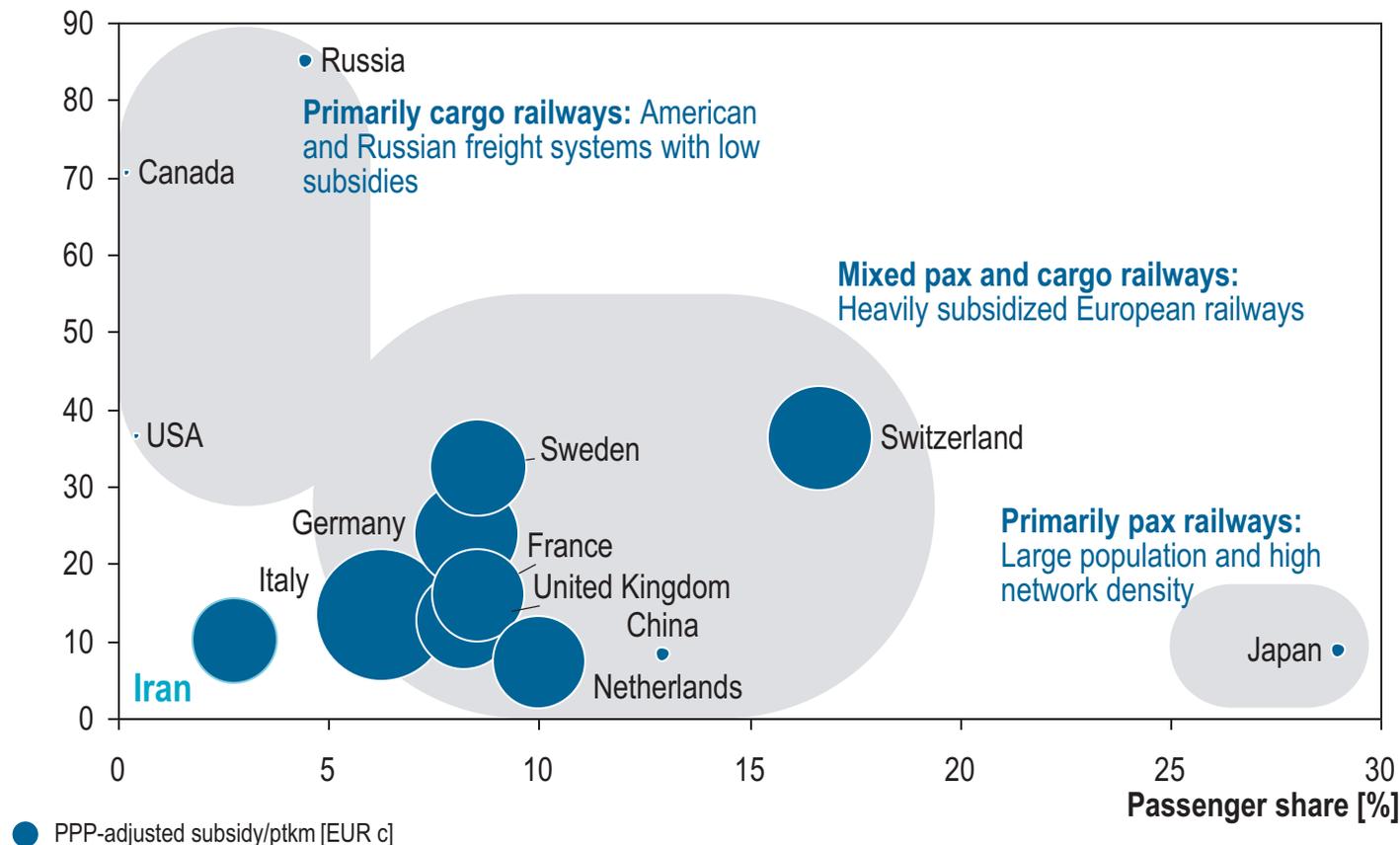
Comments

- > PPP-adjusted subsidies per ptkm in Iran are on a similar level as those in many European countries
- > However, Iran lags behind European countries in indicators including:
 - Intermodal passenger and cargo shares
 - Safety
 - Punctuality
- > 58% of subsidies in Iran are specifically given for infrastructure, lower than many EU countries
 - 16% for infrastructure in France
 - 26% for infrastructure in Germany
 - 48% for infrastructure in Italy
 - 83% for infrastructure in the United Kingdom

International comparison shows subsidies as a driver for intermodal market share in most countries, but Iran lags behind

Intermodal shares and PPP-adjusted subsidies, 2015 [%]

Cargo share [%]

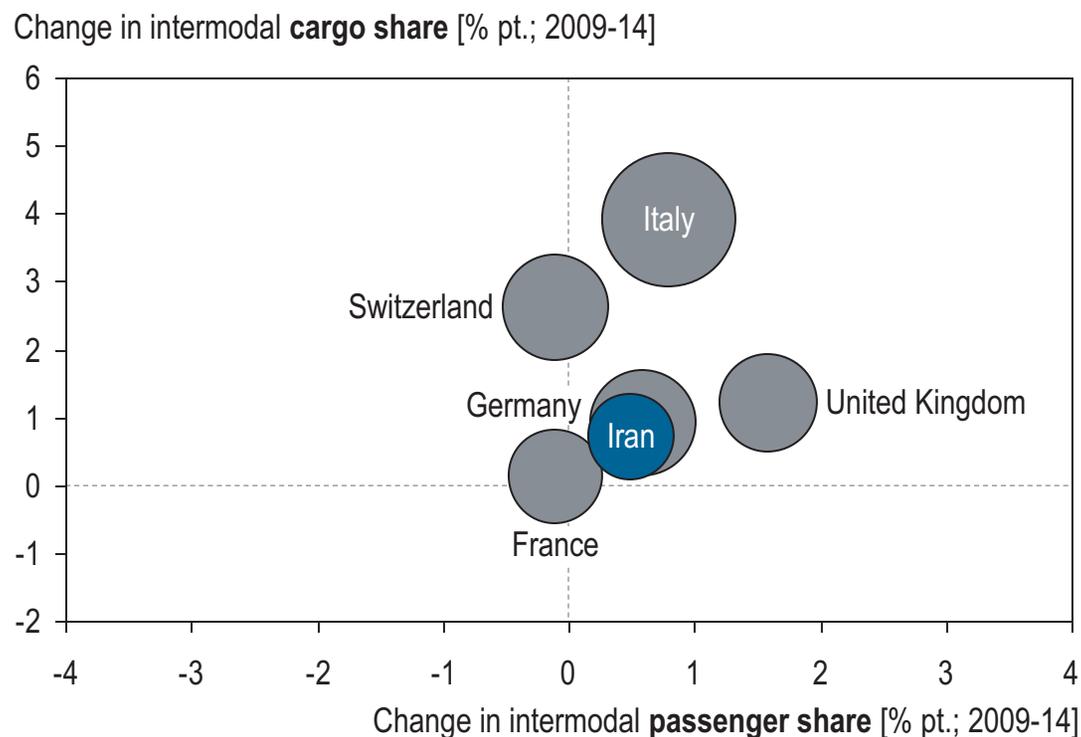


- > Iran lags behind countries with similar subsidy levels in intermodal shares
- > In addition, countries with similar subsidy levels have managed to increase their intermodal rail shares more strongly than Iran
- > Biggest increase in cargo intermodal shares was achieved by France with a growth of +3.9 ppts since 2009
- > The biggest increase in passenger intermodal shares was achieved by the UK with +1.6 ppts since 2009

Iran has not always been able to increase intermodal shares as strongly as countries with similar subsidy levels

Change in intermodal shares and PPP-adjusted subsidies

Cargo and passenger intermodal share development, 2009-2014



Remarks

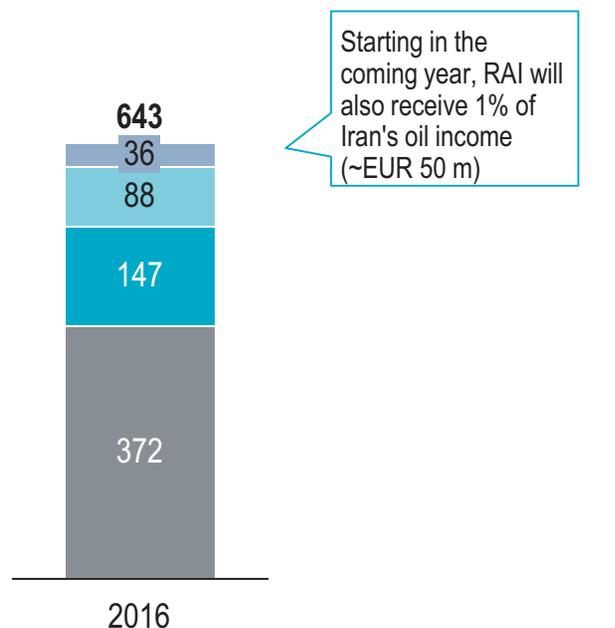
- > European countries with similar subsidy levels as Iran have sometimes managed to increase their intermodal rail shares more strongly than Iran
- > Biggest increase in cargo intermodal shares was achieved by Italy with +3.9 percentage points
- > Biggest increase in passenger intermodal shares was achieved by the UK with +1.6 percentage points

● PPP-adjusted subsidies/ptkm

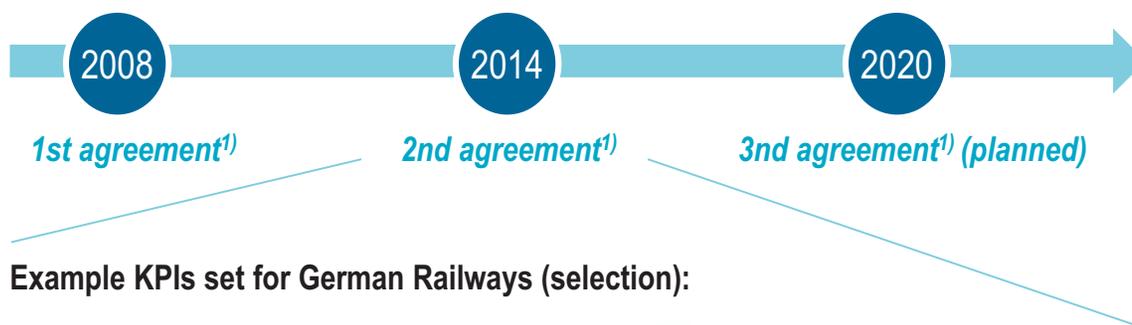
Subsidies are expected to increase further in the coming years, but should be tied to efficiency increases

Level of subsidies to RAI

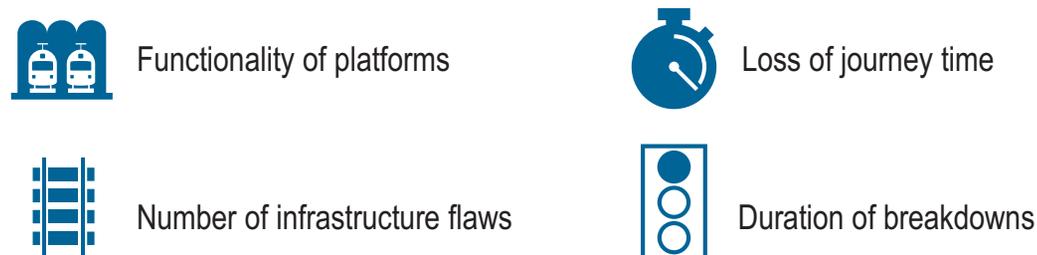
Composition of RAI subsidies [EUR m]



Example of subsidy process in Germany



Example KPIs set for German Railways (selection):



The German system **reduces required lobbying effort** (since subsidies are set for roughly 6 years) and **increases efficiency** (since sanctions are imposed for non-compliance with KPIs)

1) Referring to the "Leistungs- und Finanzierungsvereinbarung in which the German Railway and Government agree on the amount of subsidies to be given by the government for replacement investments, in exchange

In addition, the right approach to access charges needs to be found – Calculation is complex and differs highly between countries

Access charges of selected railways

Country	Network owner	Description	Charge components	
	DB Netz	<ul style="list-style-type: none"> > Access charges consist of a usage-based and performance-based component > Silent freight-trains profit from an exemption from the noise component 	<ul style="list-style-type: none"> > Route category > Train product > Delays 	<ul style="list-style-type: none"> > Low velocity > Noise > Other
	Network Rail	<ul style="list-style-type: none"> > Charges are determined for five years by Network Rail (subject to approval) > Variable usage charge shall cover incremental operating, maintenance & renewal costs 	<ul style="list-style-type: none"> > Variable usage > Electricity > Freight specific > Network access 	<ul style="list-style-type: none"> > Capacity > Base fee > Other
	SNCF Réseau	<ul style="list-style-type: none"> > SNCF imposes special charges for certain routes to recover investment costs > High-speed trains originating/terminating in Paris require the payment of an extra charge 	<ul style="list-style-type: none"> > Reservation > Train running > Network access 	<ul style="list-style-type: none"> > Electricity > Special infrastructure > Other
	Class I freight railways	<ul style="list-style-type: none"> > Most Northern American tracks are owned by rail freight companies > Amtrak has to pay only incremental usage costs to the infrastructure owners, other railways have to not market based 'freight access fee' 	<ul style="list-style-type: none"> > Incremental maintenance > Incremental service usage > Incentive for higher quality > Other 	

There have been different models of rail reforms across the world – Iran has adopted a model similar to Russia

Types of rail system models in different countries

	Majority privatized	Partly privatized	Majority state-owned ³⁾
Infrastructure separated	 (except infra)		
Hybrid, traction and infrastructure integrated		  ²⁾ 	
Infrastructure integrated¹⁾			

1) Also includes countries with a holding model for infrastructure and operations; 2) Russia is currently moving towards separating infrastructure; 3) We focus on the former incumbents

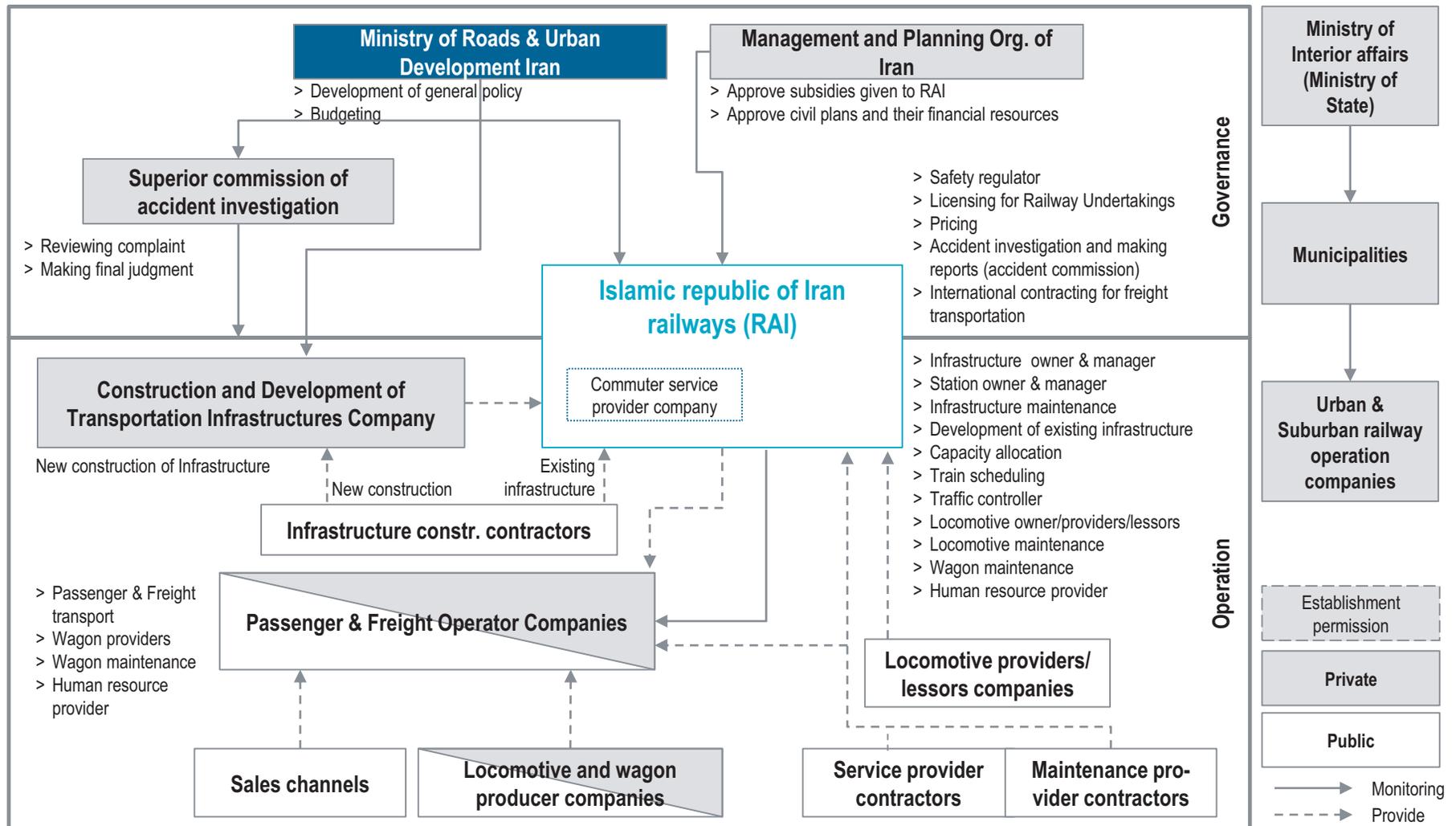
Description of main characteristics of rail system models applied in different countries

Types of rail system models in different countries

	Majority privatized	Partly privatized ²⁾	Majority state-owned ³⁾
Infrastructure separated	<p>Incumbent only retains control of infrastructure and sometimes regulatory tasks</p> <p>Both operations and traction are privatized and separated</p> <p>Many private companies compete to provide rail services</p>	<p>Infrastructure ownership separated from operations</p> <p>Network and operations managed mainly by state-owned companies, but some private operators exist</p> <p>Privatization only applied selectively (e.g., for subsidiary tracks)</p>	<p>Rail infrastructure ownership separated from operations, with rail network owned by government</p> <p>Operations mainly conducted by state-owned companies (especially for unprofitable routes), but some private operators exist</p>
Hybrid, traction and infrastructure integrated		<p>Infrastructure and operations are separated from each other, but incumbent retains control of traction</p> <p>Privatization only applied to select activities</p> <p>Operators rely strongly on actions of incumbent</p>	
Infrastructure integrated¹⁾	<p>Many private companies compete to provide rail services</p> <p>Tracks usually owned by private operators</p> <p>Governmental role limited to oversight and some regulatory tasks</p>		<p>Infrastructure and operations are integrated or within the same holding company</p> <p>Operations and traction are state owned, with high market shares (e.g., Deutsche Bahn 99% for long-distance passenger and 61% for cargo)</p>

1) Also includes countries with a holding model for infrastructure and operations 2) Russia is currently moving towards separating infrastructure; 3) We focus on the former incumbents

The privatization initiatives so far led to a rather complex environment of the Iranian railway system



Due to the lack of holistic responsibility for railway infrastructure, projects are changed significantly during their development

Infrastructure project development

Illustrative

Responsibilities of RAI

- > Initiate development of new infrastructure projects with the goal of providing transport opportunities
- > Consideration based on:
 - Customer reach
 - Required technology for project
 - Available funds
 - Etc.



Responsibilities of government

- > Review proposed infrastructure development projects – Consideration based strongly on budget limits
- > Change technical aspects of project if required
- > Approve modified version of project

Final approval given to modified version of original infrastructure project; differences occur for example in:



Location of stations (cheaper property outside of cities)



Slope of tracks



Traction used



Route of tracks (e.g. use of tunnels on routes)

Privatization efforts in Iran have often not led to desired increases in private sector participation and competition

Privatization level in railway activities

Railway-related activities		Legal target share of private sector	Actual share of private sector	Competition level
Wagons	 Passenger and service wagons (incl. operation)	100%	100%	●
	 Freight wagons and operation of freight trains	100%	90% ¹⁾	●
	 Locomotives, self-tracks and operation of locomotives	100%	20%	◐
Tracks	 Maintenance of fleets and supply of spare parts	100%	100% ²⁾	◐
	 Traffic management and operation of rail networks	100%	0%	○
	 Machineries to build, maintain and operate rail tracks	100%	50%	◐
	 Maintenance of track and technical buildings	100%	100%	●
Buildings	 Ownership of subsidiary tracks	100%	N/A ³⁾	N/A ³⁾
	 Repair shops and maintenance depots of fleets	100%	20%	◐
	 Factories, material supply halls and machinery	100%	0%	○
	 Halls for repairing and rebuilding tracks and buildings	100%	0%	○
	 Maintenance of buildings (emergency and essential)	100%	100%	●
	 Terminals, Decks, Warehouses, Grounds, HVAC	30%	0%	○
Others	 Passenger and freight stations	20%	0%	○
	 Electrical signaling and communication maintenance	100%	100%	◐
	 Utilization of maneuver operation (shunting)	100%	70%	◐
	 Engineering services and consulting in research projects	80%	50-60%	◐
	 Information Technology	80%	25%	◐

Comments

- > Many rail-related activities have been privatized through the 2010 Executive regulation
- > However, in certain segments, privatization has not led to the desired increase in competition
- > Prices for track maintenance for example continue to be high due to the lack of competition
- > In practice, privatization often functions more as an outsourcing of tasks rather than true privatization

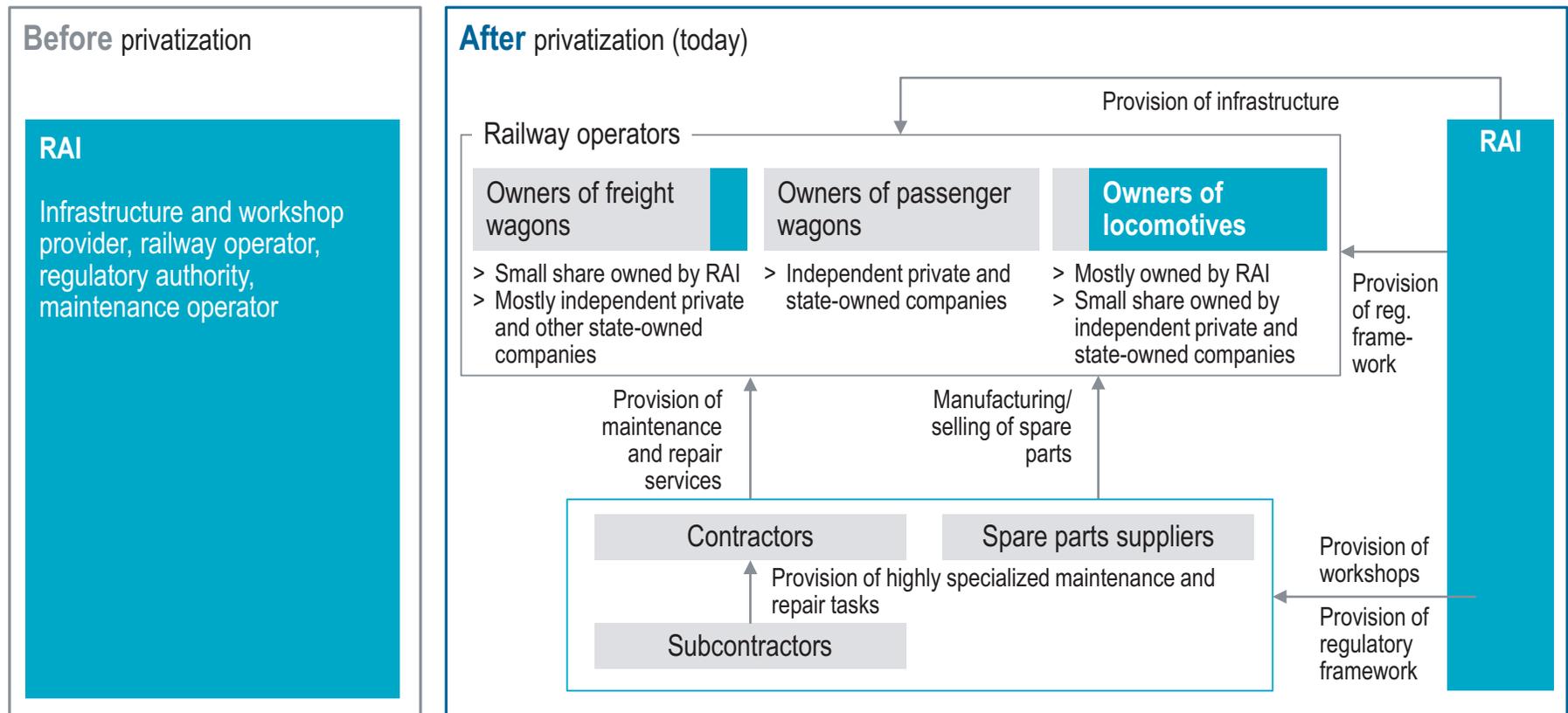
1) 50% for operation; 2) 30-40% for spare parts; 3) Subsidiary tracks are automatically transferred to government ownership after 10 – 20 years

● High level of competition ○ No competition

Source: 2010 Executive regulation for optimum share of public and private sectors of road and railway activities, Roland Berger analysis

For instance, despite the planned privatization of fleet maintenance, RAI still owns workshops and only partially outsources maintenance

Structure of Iranian railway system and maintenance and repair network



■ RAI or RAI-affiliated companies ■ Non RAI-affiliated companies

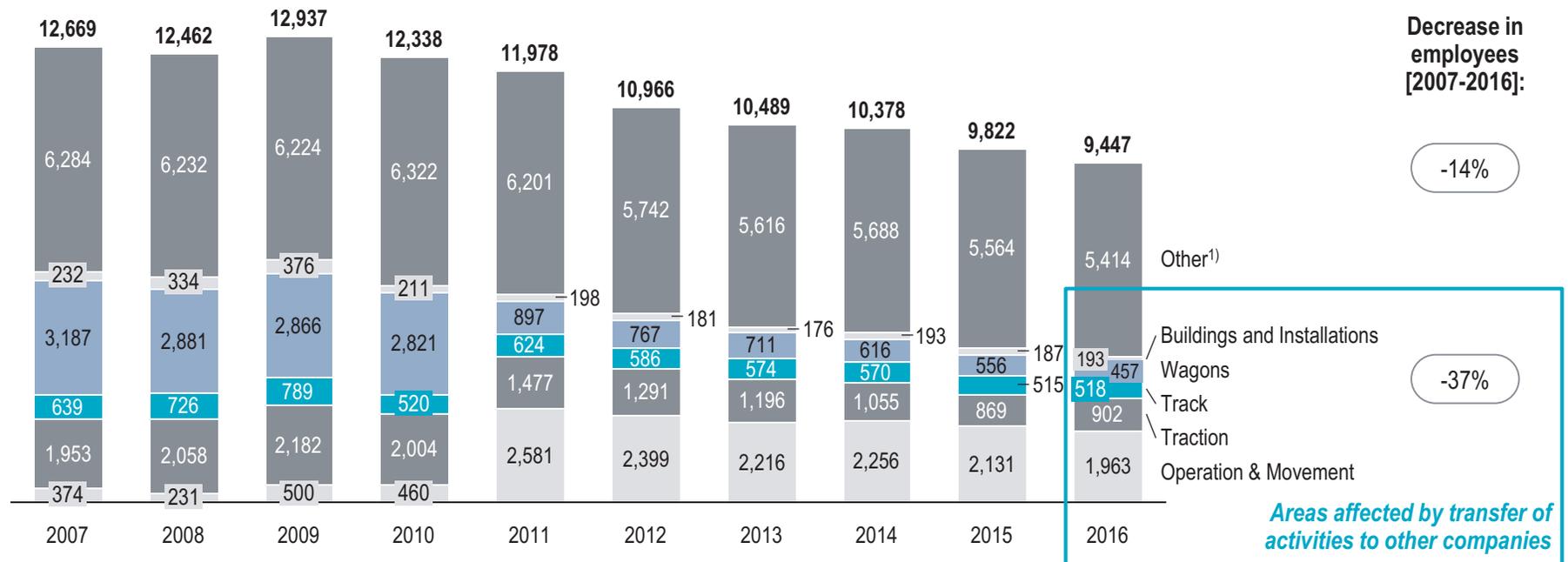
In response to changes in the railway industry, RAI has successfully reduced the number of employees in affected business areas

Employees by classification [#]

Employee share in HQ [%]

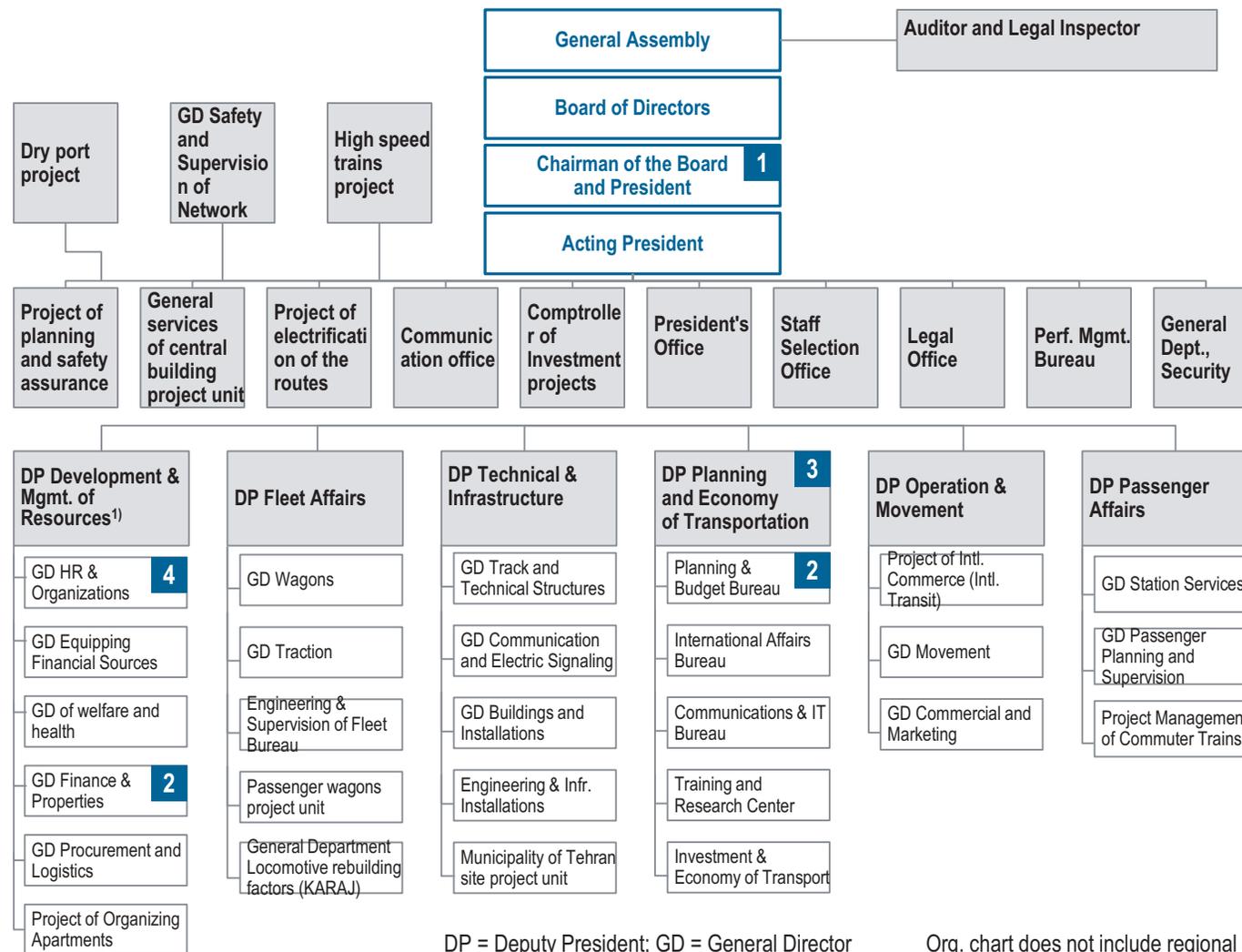


Employee share in inzones [%]



1) Includes safety and supervision, IT, training, admin, financial, commercial and marketing

Nevertheless, RAI's current organization structure still displays several deficiencies when compared with benchmarked countries



Status: May 2013

Observed deficiencies of current organization structure:

- 1 Centralistic structure with strong president
- 2 Lack of CFO (split of finance function)
- 3 No dedicated strategy department
- 4 Weak HR focused on financial tasks

DP = Deputy President; GD = General Director

Org. chart does not include regional offices

Comparison with other countries shows deviations in RAI's organization structure particularly regarding central functions, e.g., finance, HR

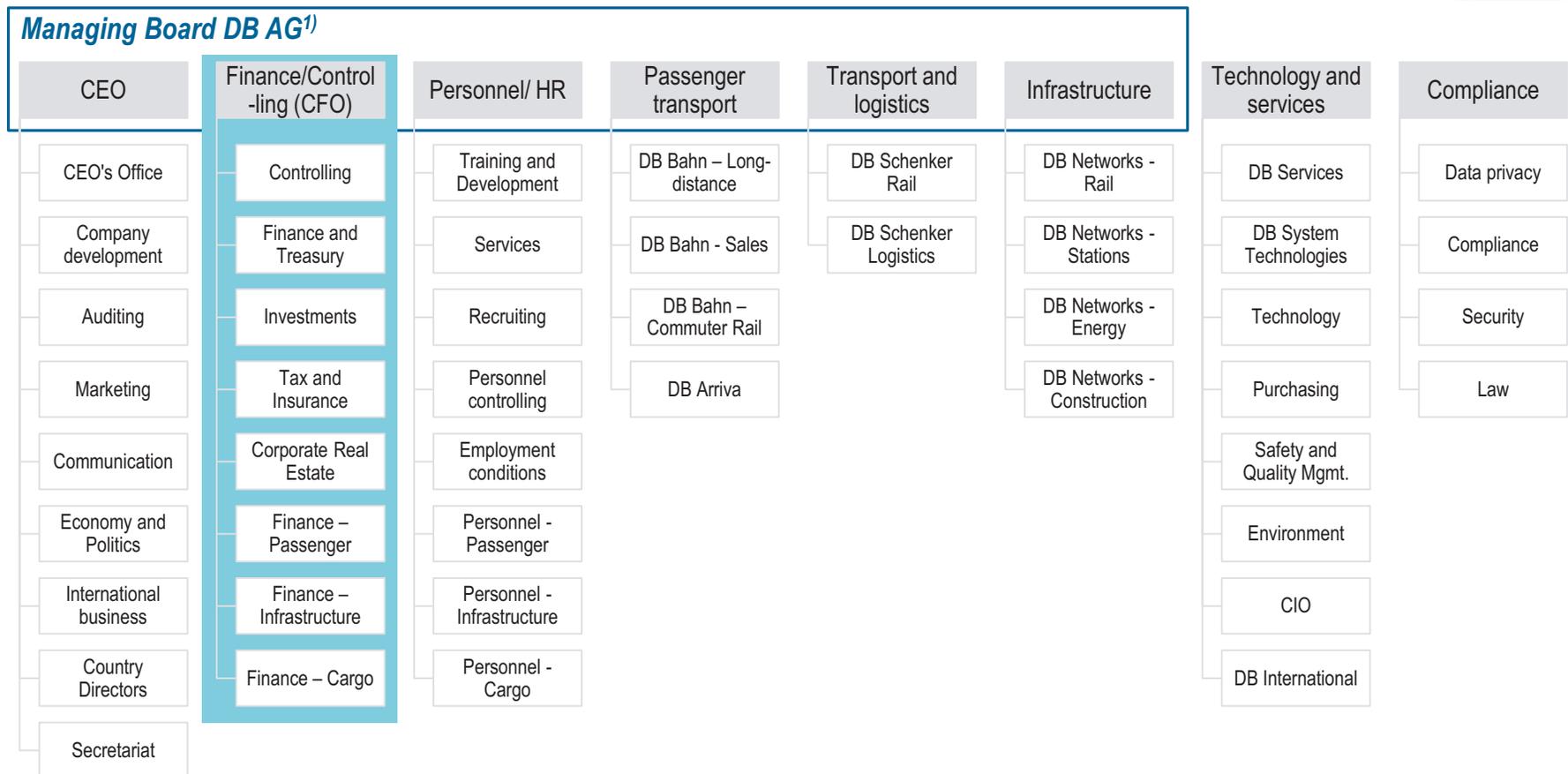
Organizational best practices

	RAI status	Best practice	Example countries with best practice ¹⁾
1 Centralistic structure with strong president	<ul style="list-style-type: none"> > Strong involvement of president with all departments and external stakeholders > Decision power concentrated in president 	<ul style="list-style-type: none"> > Separate leaders dealing with internal and external parties (e.g., in Russia) > Strong leadership positions to challenge CEO 	
2 Lack of clear CFO (split of finance function)	<ul style="list-style-type: none"> > Split of finance functions between two departments and HR > No clear CFO in organization 	<ul style="list-style-type: none"> > CFO as key position in organization working as internal counterpart to the CEO/president 	
3 No dedicated strategy department	<ul style="list-style-type: none"> > No long-term development plan for RAI > Planning unit mainly concerned with current affairs (up to the following year) 	<ul style="list-style-type: none"> > Separate strategy department reviewing long-term options for the company (e.g., new strategic direction, new business areas) 	
4 Weak HR focused on financial tasks	<ul style="list-style-type: none"> > HR focused solely on two tasks: <ul style="list-style-type: none"> – Sourcing of employees – Payment of salaries 	<ul style="list-style-type: none"> > HR as key manager of employee base that administers training and development, ensures compliance and manages employee relations 	

1) Not exhaustive

Typical rail organizations show a strong CFO as counterpart to the operational activities

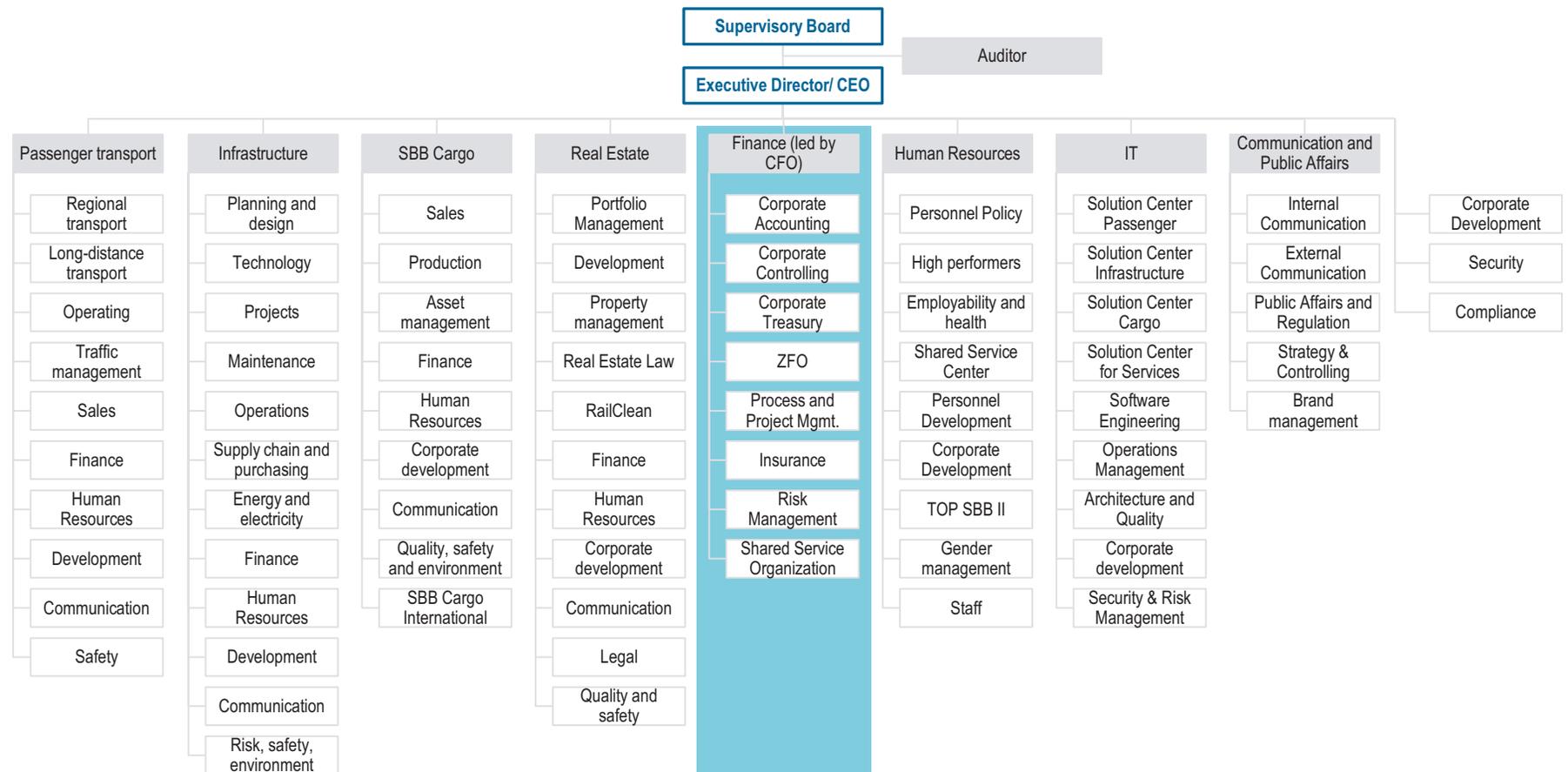
Deutsche Bahn organizational chart



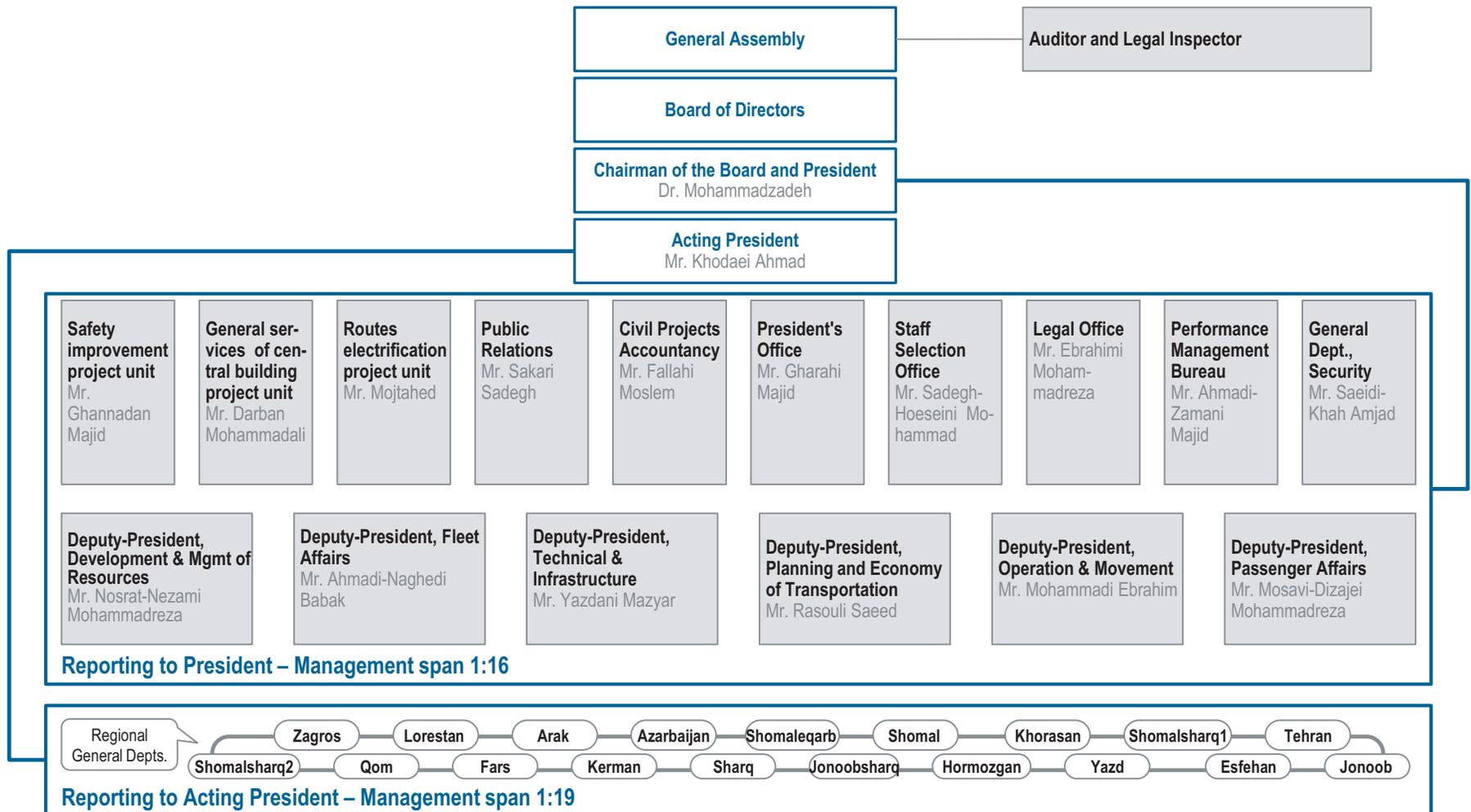
1) Managing Board consists of 4 members in total, since the departments Passenger transport and Transport and logistics, as well as CEO and Finance/Controlling are currently occupied by one person each

Example: Swiss Railways' organization chart contains a strong central Finance Department led by a CFO who is reporting directly to the CEO

Swiss Railways organization chart

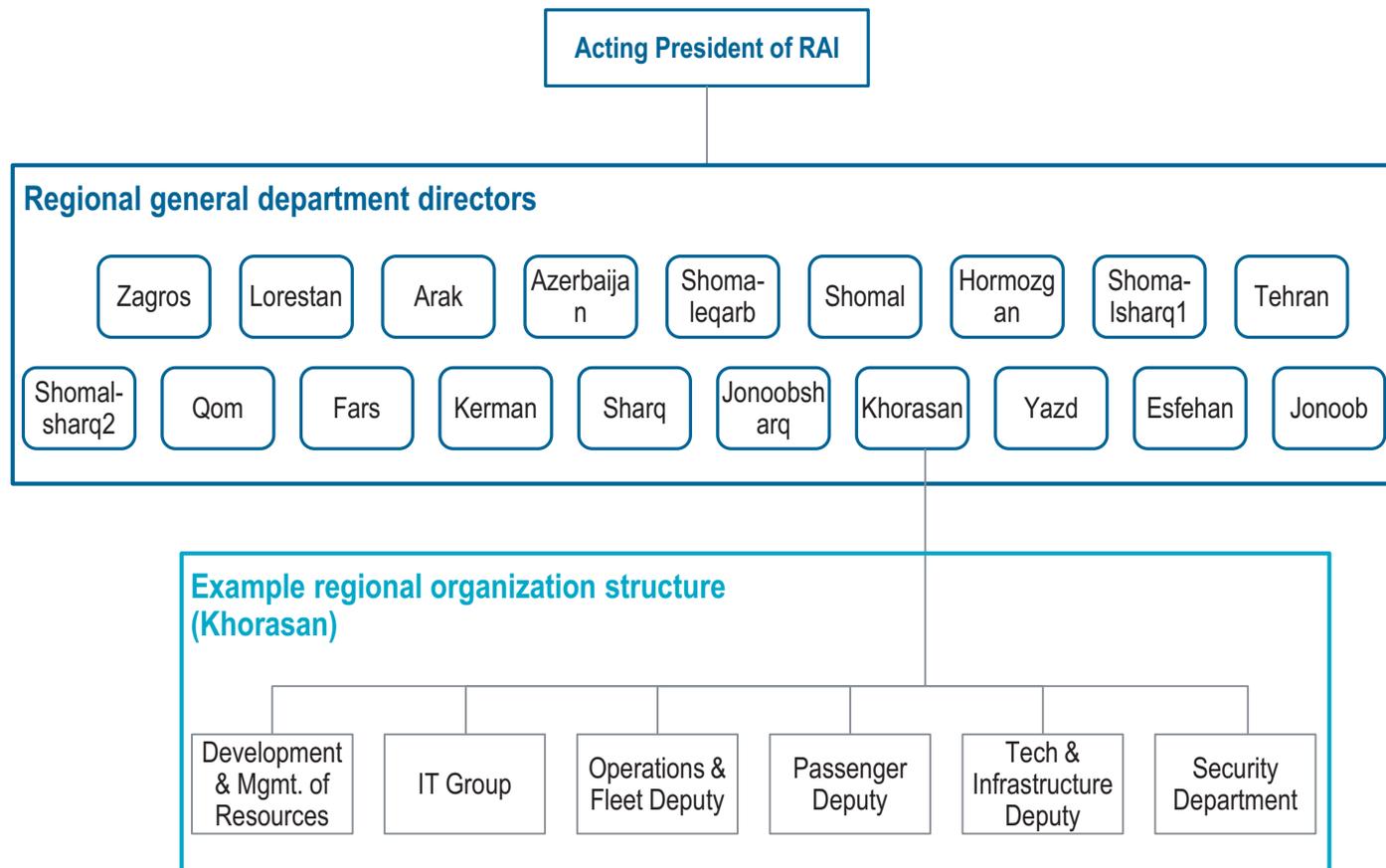


The high spans of control of RAI's president and acting president are another example of structural deficiencies



Furthermore, RAI currently has 19 regional offices which report directly to the Acting President

Organization chart – Regional departments and deep dive example (Khorasan region)

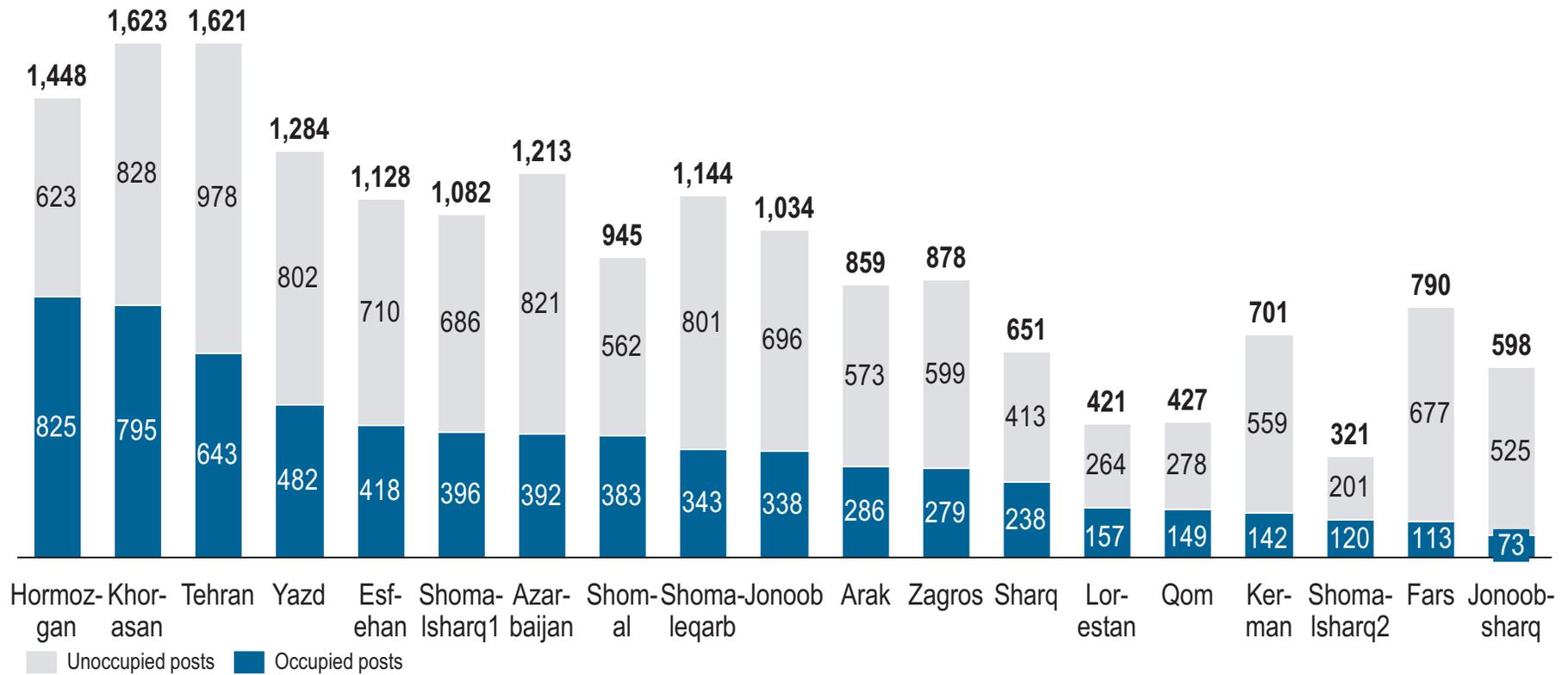


Comments

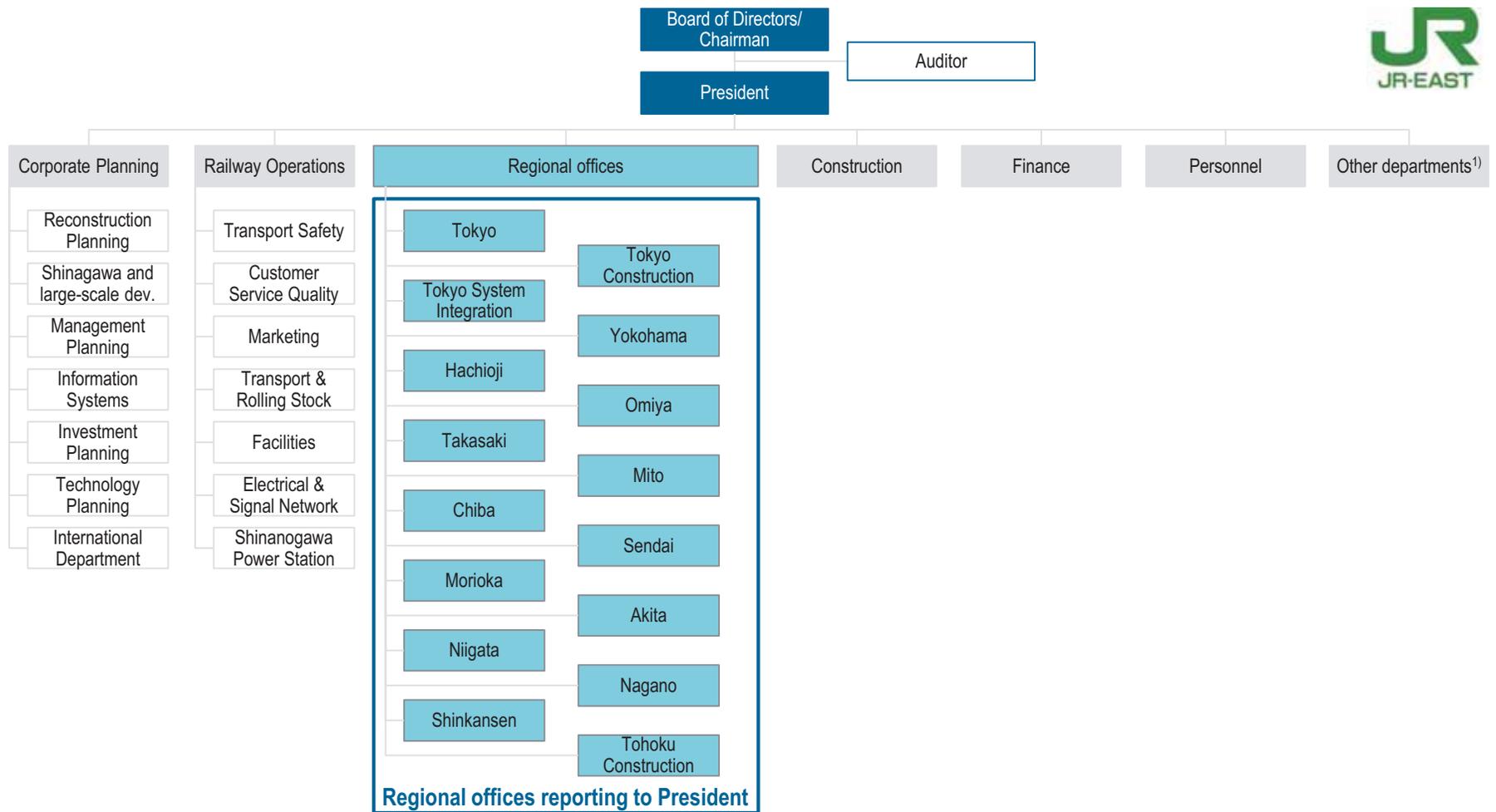
- > Decisions on RAI's strategic direction are made at HQ
- > Regional departments generally carry out operations based on instructions from HQ
- > However, the regional organization structure is unusual in that **regional offices report directly to RAI's acting president**
- > This type of organization structure **places more power in the hands of regional department directors**
- > In most European countries (e.g., Germany, Switzerland), regional heads coordinate railway activities with local and regional politicians, but do not get directly involving in strategic questions for the rail

6,572 posts are occupied in regional organizations – Higher than the number of employees in HQ

Headcount by regional organization

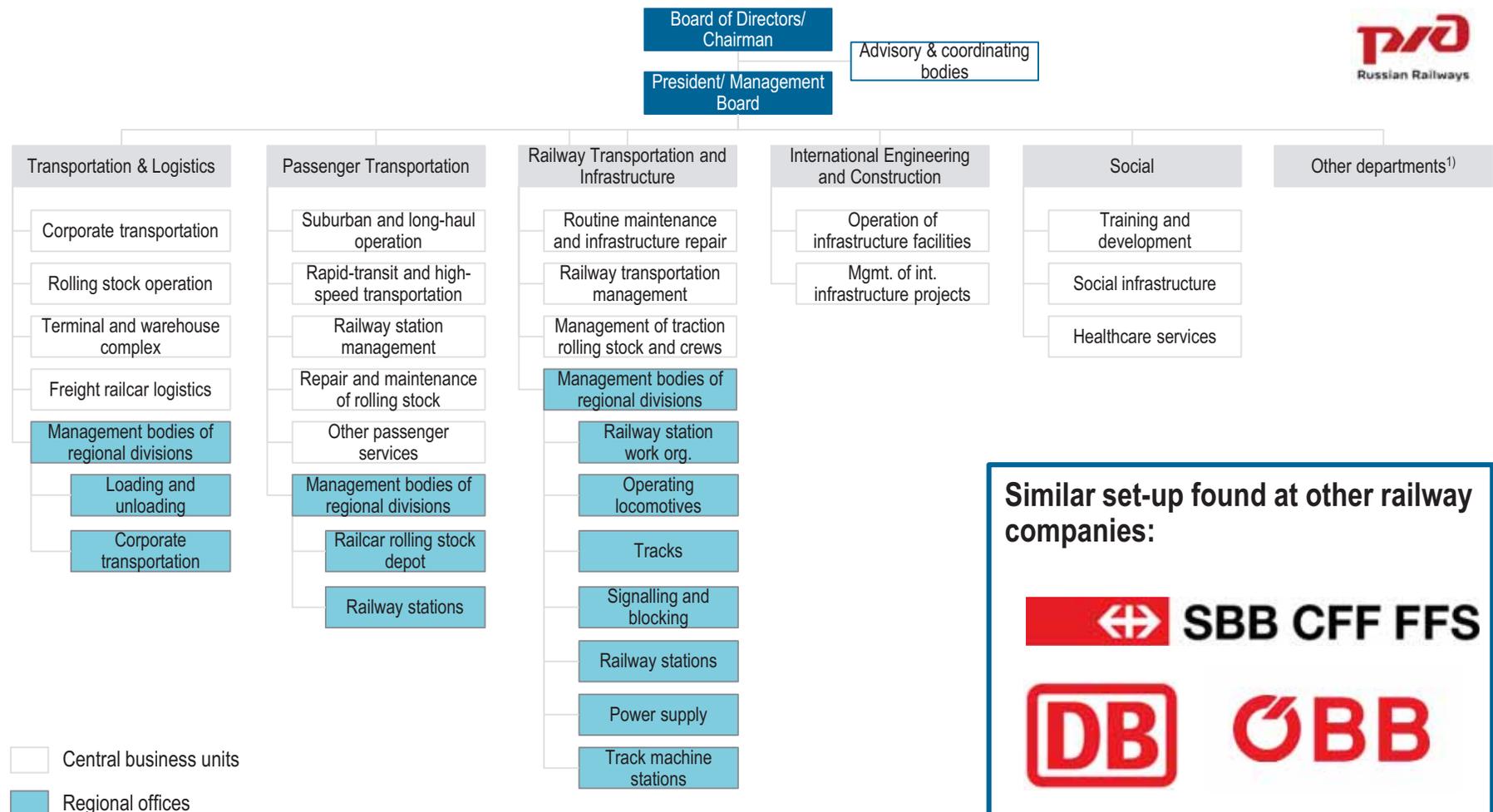


A similar structure for regional subunits is also used at JR East



1) Includes Inquiry & Audit, Business Development, IT, Public Relations, Health and Welfare, Legal, Administration, Overseas Offices, Energy Management, Research and Development and Structural Engineering

Example: In Russia, regional departments report to their counterparts in HQ instead to the CEO – Similar setup in most other countries

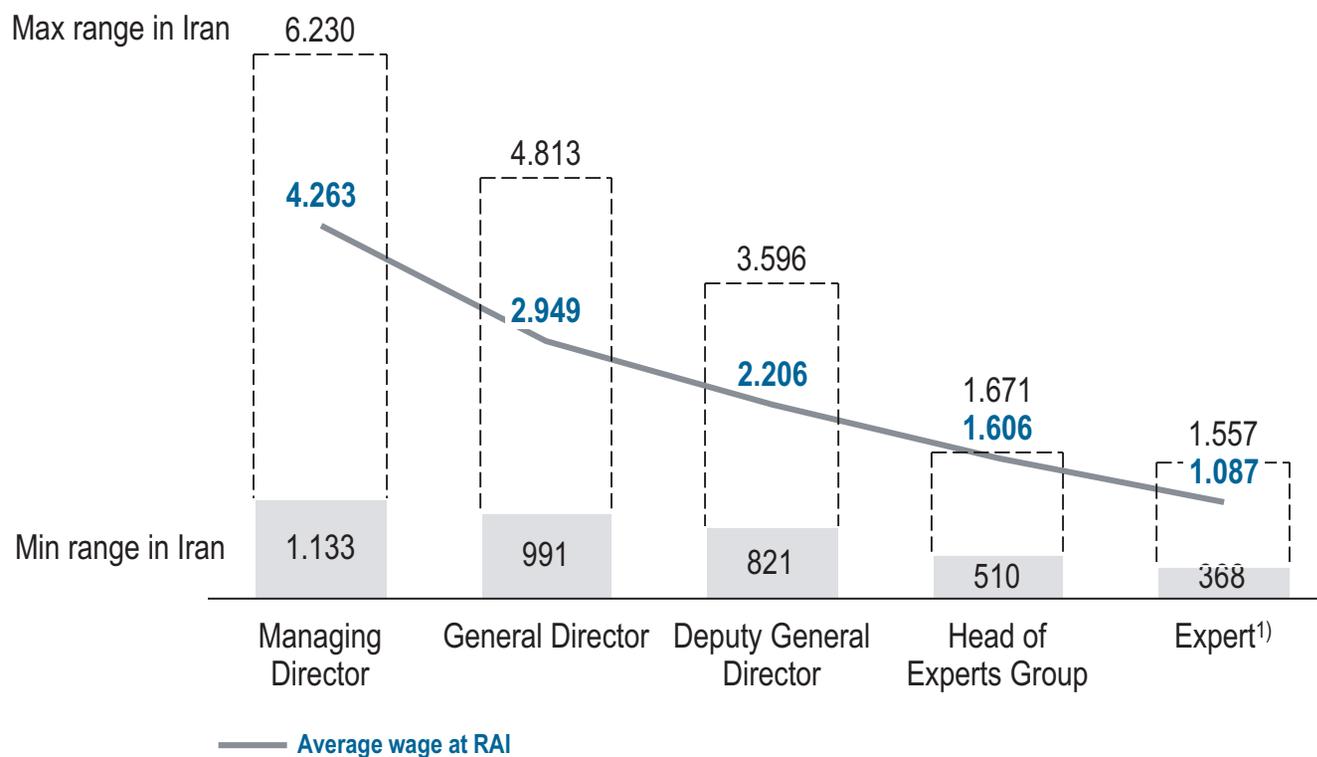


1) Includes for example strategy development, traffic safety, risk management, innovations, IT, external relations, etc.

Also, salary levels at RAI are generally at mid market level compared to other Iranian companies

Salary comparison

Average monthly salaries by position at RAI and salary ranges at other Iranian companies [EUR; 2015]



Comments:

- > Salaries at RAI are often lower than for comparable positions at other companies
- > Salaries are especially low at higher-level positions such as Deputy General Director and General Director

1) Includes Experts, Senior Experts and all other positions

Nevertheless, staff loyalty to RAI is high – However, there is a certain resistance to change and lack of new ideas in the organization

Contract standards at RAI



Governmental contract standards

Formerly used long-term contracts, **but no longer in use today**

Characteristics:

Currently includes ~70% of employees

30-year duration

Salaries 20-40% lower than for other type

No longer offered today, but preferred option¹⁾



Social contract standards

More **flexible** contract standards which are **offered to all new employees**

Characteristics:

Currently includes ~30% of all employees

1-year duration

Salaries 20-40% higher than for other type

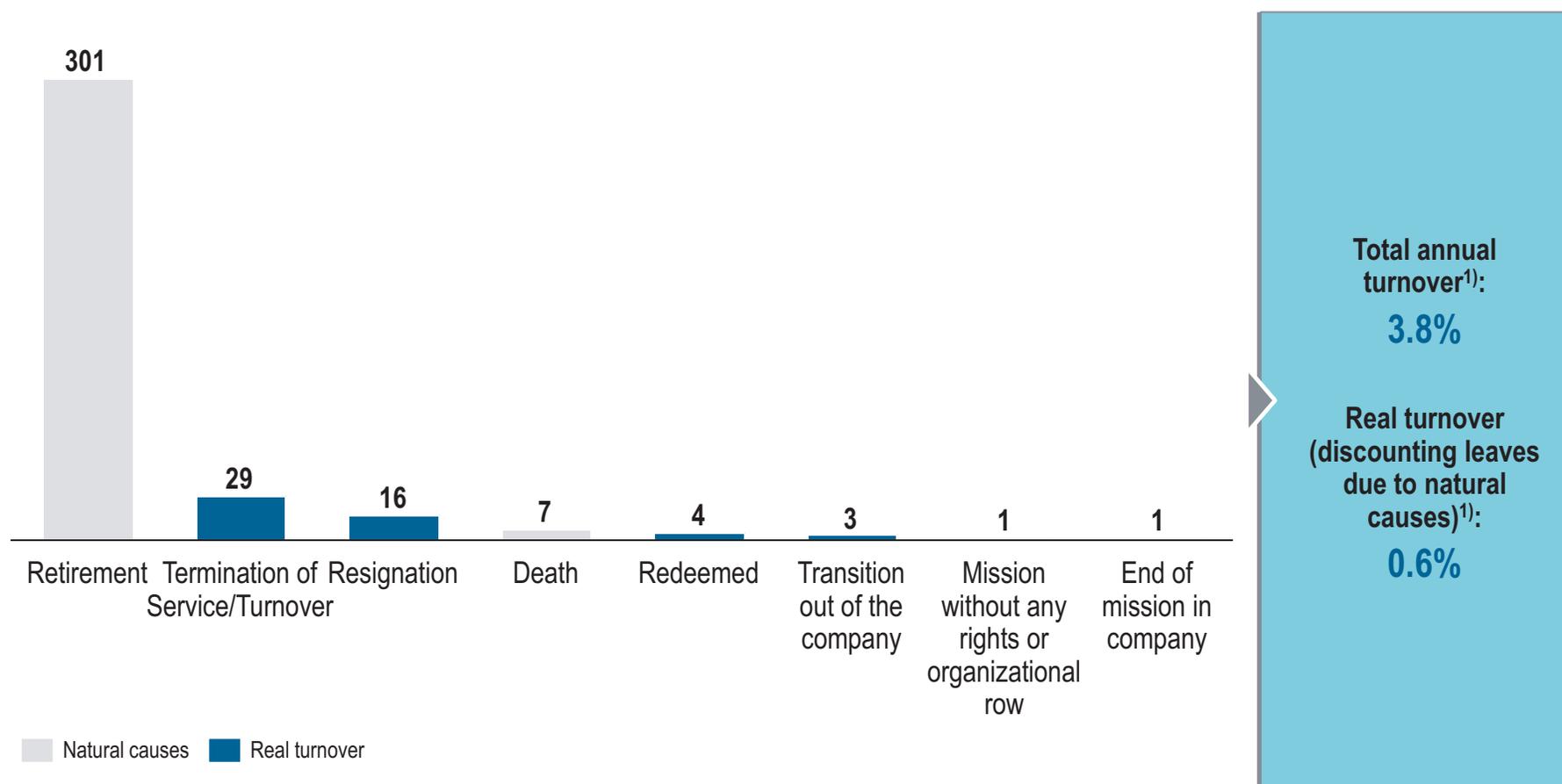
Only contract option offered today

- > Use of governmental contract standards in the past has led to **high employee loyalty** to RAI and **strong informal ties** between employees
- > As a result however, there is also a **resistance to change established methods**
- > **New leadership** joining from other (non-railway) companies often has **problems establishing itself at RAI**

1) Most current employees on government contracts prefer not to switch over to the higher-paid social contract standards

High staff loyalty can be seen in the low annual turnover rates

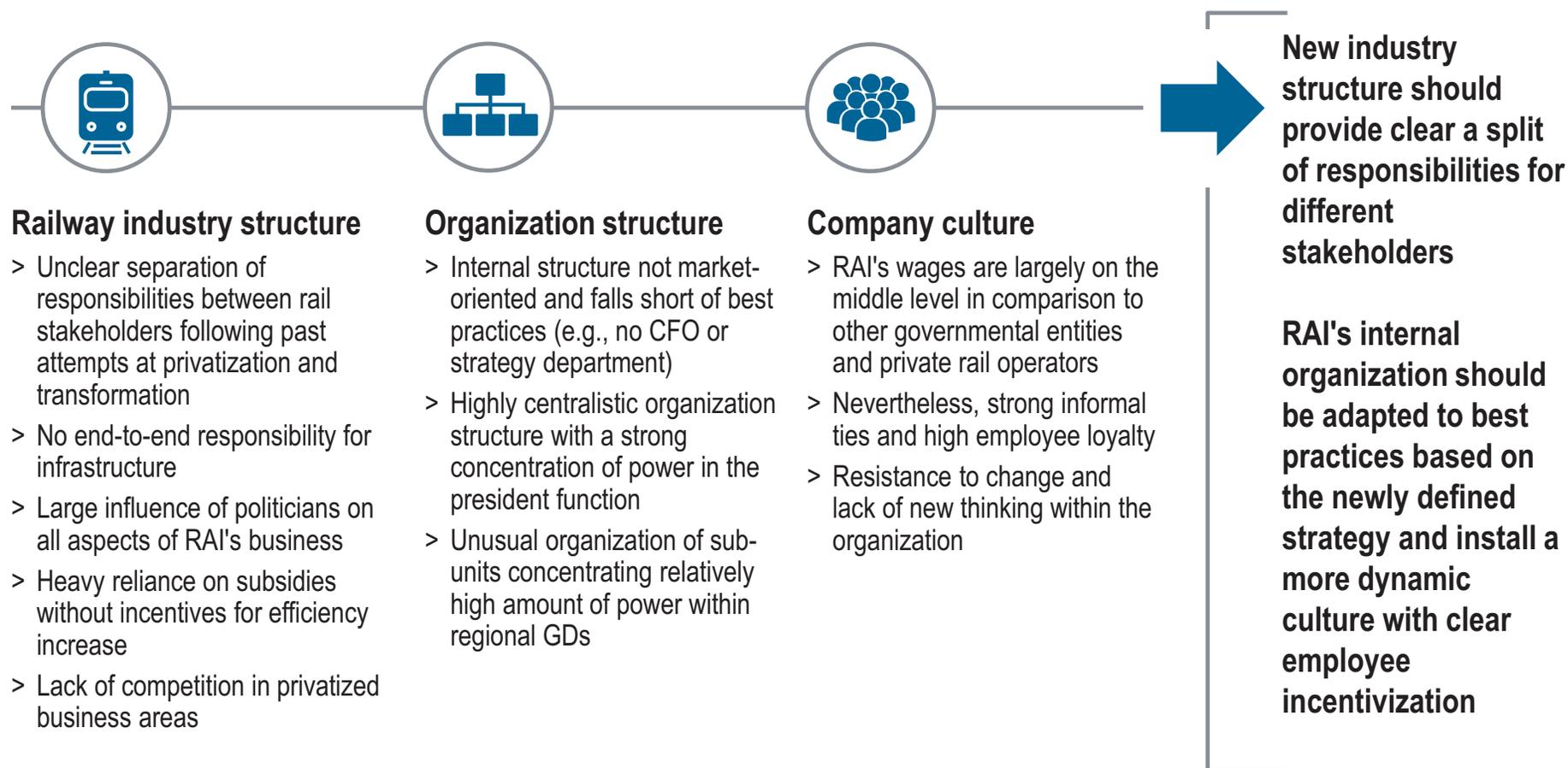
Annual number of employees leaving RAI by exit type [2016-2017]



1) Based on 9,447 employees during the year 2016

We identified multiple areas with need for action to improve the current industry structure and RAI's internal organizational setup and culture

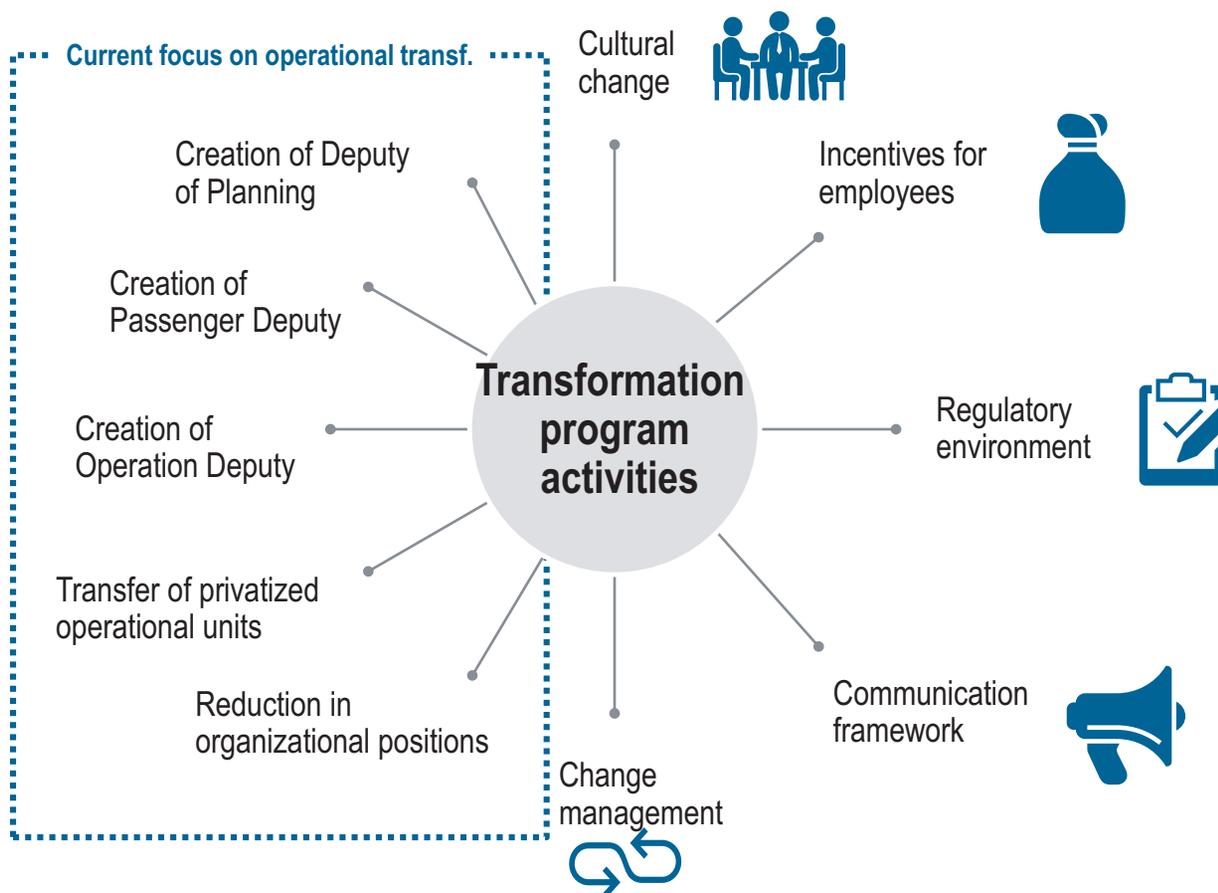
Structure – Main areas with need for action



For the future of the transformation program, RAI should ensure to cover both operational activities and "soft aspects"

Past transformation program activities

Exemplary



- > Changes done in RAI's transformation program have mainly focused on activities related to operations, e.g.:
 - Creation of new positions
 - Reduction of headcount in positions affected by privatization
- > However, cultural success factors for change also need to be taken into account in the future

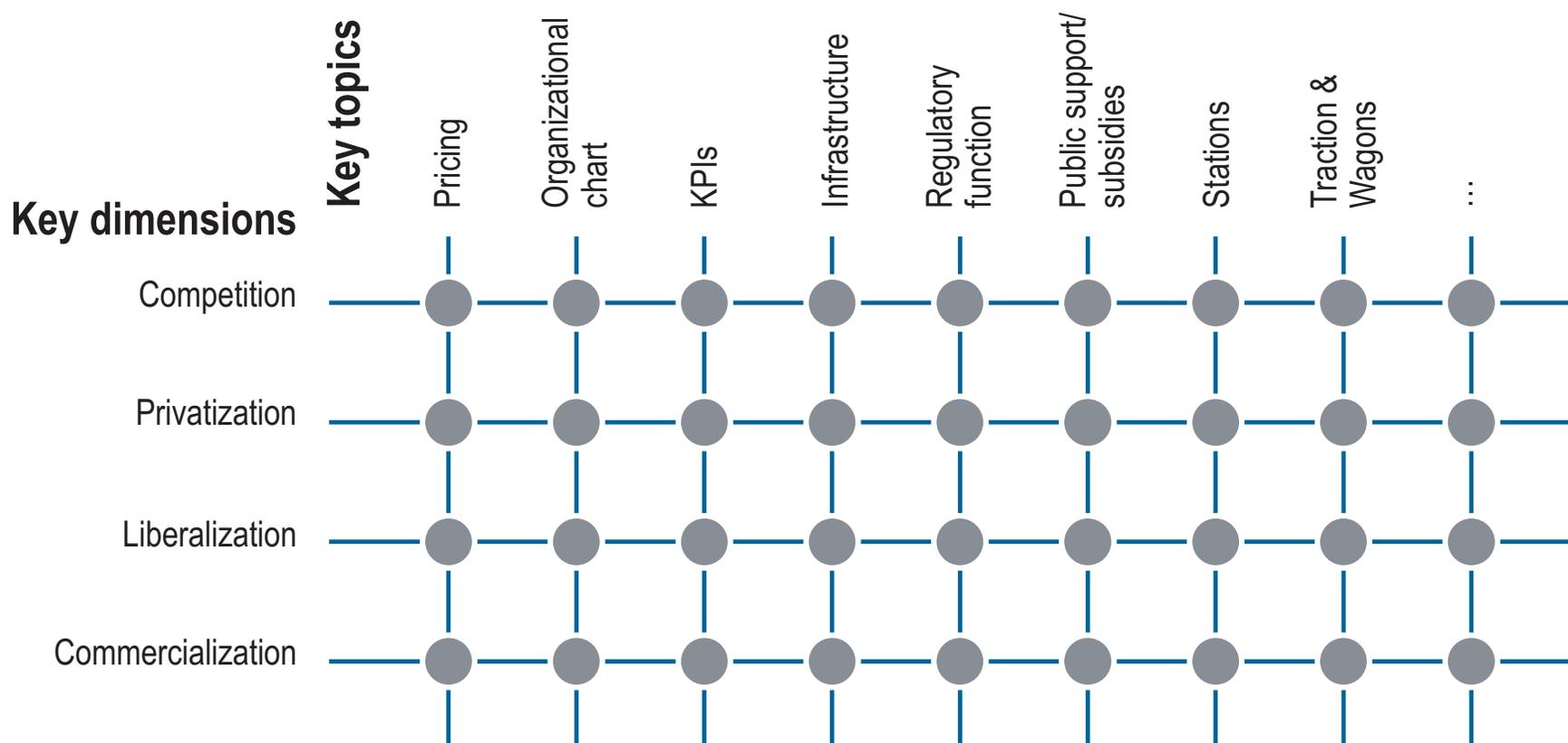
We have considered 5 different main criteria in evaluating possible strategic options for the rail industry structure

Decision criteria for RAI's industry structure

Impact on regulatory and legal framework	<ul style="list-style-type: none"> > Easy to build steady state organization and little changes required to current legal and regulatory structures > Low regulatory complexity as basis for facilitated future competition
Clear-cut interfaces	<ul style="list-style-type: none"> > Straightforward contractual relationships between individual railway actors > Responsibilities clearly distributed and delineated between different actors > Extent to which all railway actors are comfortable with their roles
Level of competition	<ul style="list-style-type: none"> > Effect of industry structure on level of competition in desired areas (e.g., passenger, cargo, geographical competition) > Ability of new competitors to operate on their own, without extreme dependence on the incumbent
Degree of commercialization	<ul style="list-style-type: none"> > Degree of commercial orientation of RAI as result of the industry structure (e.g. from operational profitability to capital market readiness) > Level of public support and subsidies required
Access to private capital	<ul style="list-style-type: none"> > Degree to which new railway structure provides incentives for private actors to invest in the railway

In addition, we consider the four dimension suggested by the Ministry in analyzing the key topics of the transformation

Key project dimensions and topics



We rated the ease of implementation of rail reform success factors at RAI and their possible impact

Organizational heatmap of RAI's current structural design

Success factors	RAI current status	Ease of implementation	Possible impact on transformation progress
Separation of regulator from ops.	Medium room for improvement / medium difficulty of implementation / medium impact	Strong room for improvement / easy implementation / high impact	Medium room for improvement / medium difficulty of implementation / medium impact
Limited involvement of politicians	Strong room for improvement / easy implementation / high impact	Little room for improvement / difficult implementation / low impact	Strong room for improvement / easy implementation / high impact
Sufficient subsidization	Medium room for improvement / medium difficulty of implementation / medium impact	Little room for improvement / difficult implementation / low impact	Strong room for improvement / easy implementation / high impact
Appropriate industry model	Medium room for improvement / medium difficulty of implementation / medium impact	Little room for improvement / difficult implementation / low impact	Strong room for improvement / easy implementation / high impact
End-to-end responsibility for infrastr.	Strong room for improvement / easy implementation / high impact	Little room for improvement / difficult implementation / low impact	Little room for improvement / difficult implementation / low impact
Introduction of competition	Medium room for improvement / medium difficulty of implementation / medium impact	Little room for improvement / difficult implementation / low impact	Medium room for improvement / medium difficulty of implementation / medium impact
Lean organization	Little room for improvement / difficult implementation / low impact	Strong room for improvement / easy implementation / high impact	Little room for improvement / difficult implementation / low impact
Market-oriented org. structure	Strong room for improvement / easy implementation / high impact	Medium room for improvement / medium difficulty of implementation / medium impact	Medium room for improvement / medium difficulty of implementation / medium impact
Limited span of control	Medium room for improvement / medium difficulty of implementation / medium impact	Strong room for improvement / easy implementation / high impact	Medium room for improvement / medium difficulty of implementation / medium impact
Adequate regional organization	Medium room for improvement / medium difficulty of implementation / medium impact	Medium room for improvement / medium difficulty of implementation / medium impact	Medium room for improvement / medium difficulty of implementation / medium impact
Competitive wages and staff loyalty	Little room for improvement / difficult implementation / low impact	Strong room for improvement / easy implementation / high impact	Strong room for improvement / easy implementation / high impact
Dynamic corporate culture	Medium room for improvement / medium difficulty of implementation / medium impact	Little room for improvement / difficult implementation / low impact	Little room for improvement / difficult implementation / low impact

 Strong room for improvement / easy implementation / high impact

 Medium room for improvement / medium difficulty of implementation / medium impact

 Little room for improvement / difficult implementation / low impact

A.2 Industry structure best practices across countries



To derive the target industry structure we conducted a comprehensive benchmarking of the railway industry setup in different countries

Approach to benchmarking

Target



Approach



Derive lessons learned from eight selected countries



USA



Canada



Japan



Russia



China



Germany



France



United Kingdom

Analyze setup

Shareholder structure and government financing



Type of railway regulation



Industry structure



Organization of intra-modal competition



Railway companies
(infrastructure, passenger, cargo)

Regulatory bodies

Assess performance

Traffic volumes



Level of investments



Quality of service



Asset and employee efficiency

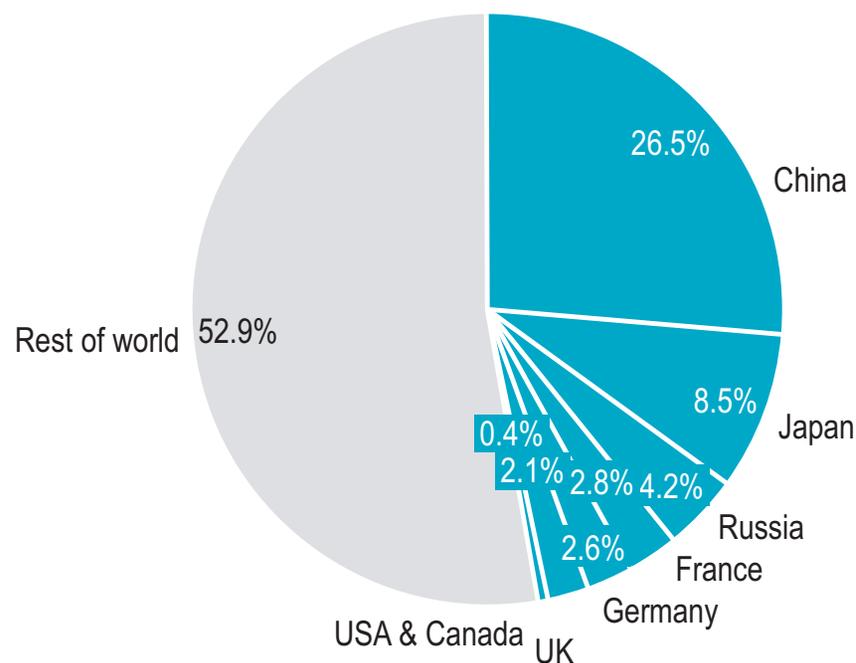
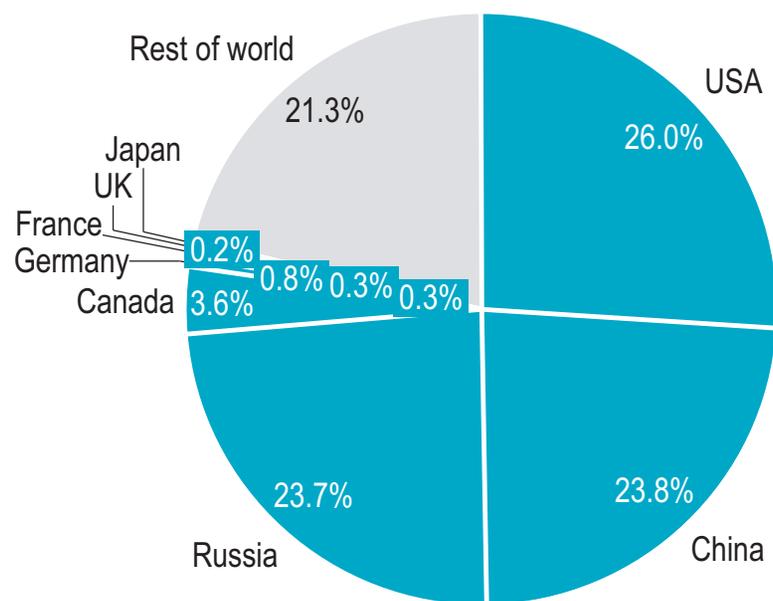


Countries under review account for ca. 80% of global cargo and 50% of passenger traffic volumes

Country selection approach

Global cargo rail traffic (2014): 9,703 bn tkm

Global passenger rail traffic (2014): 3,049 bn pkm



■ Countries under review
 ■ Rest of the world

Most countries under review currently have an integrated model, or recently moved back to one

Overview of structure models in different countries

Country	Structure model	Insights
 USA	Integrated	Separated train path allocation unit, other functions integrated
 Canada	Integrated	Organizational separation between construction and operations (recently re-integrated)
 Japan	Integrated	Prominent integrated system, especially JR East (listed company)
 Russia	Hybrid	Unusual hybrid system with private wagon ownership but integrated traction and infrastructure
 China	Integrated	Moved back to integrated model after negative experiences with separation
 Germany	Integrated	Holding-company model
 France	Integrated	Moved back to integrated model in 2016 after negative experiences with separation
 Great Britain	Separated	Failed privatization of the separate infrastructure company, renationalized in 2002,

This benchmarking reveals six key lessons learned concerning the set-up and performance of different railway industry structures

Overview of insights across countries

a. Set-up of railway industry structure

- 1 Main railways in all countries under review are **large, vertically integrated** companies – China and France experimented with vertical separation, but had negative experiences and reversed
- 2 A **clear separation** of duties and responsibilities between the railway and the regulatory body can be observed in countries under review
- 3 All countries under review have either initiated **privatization** or granted access to private capital

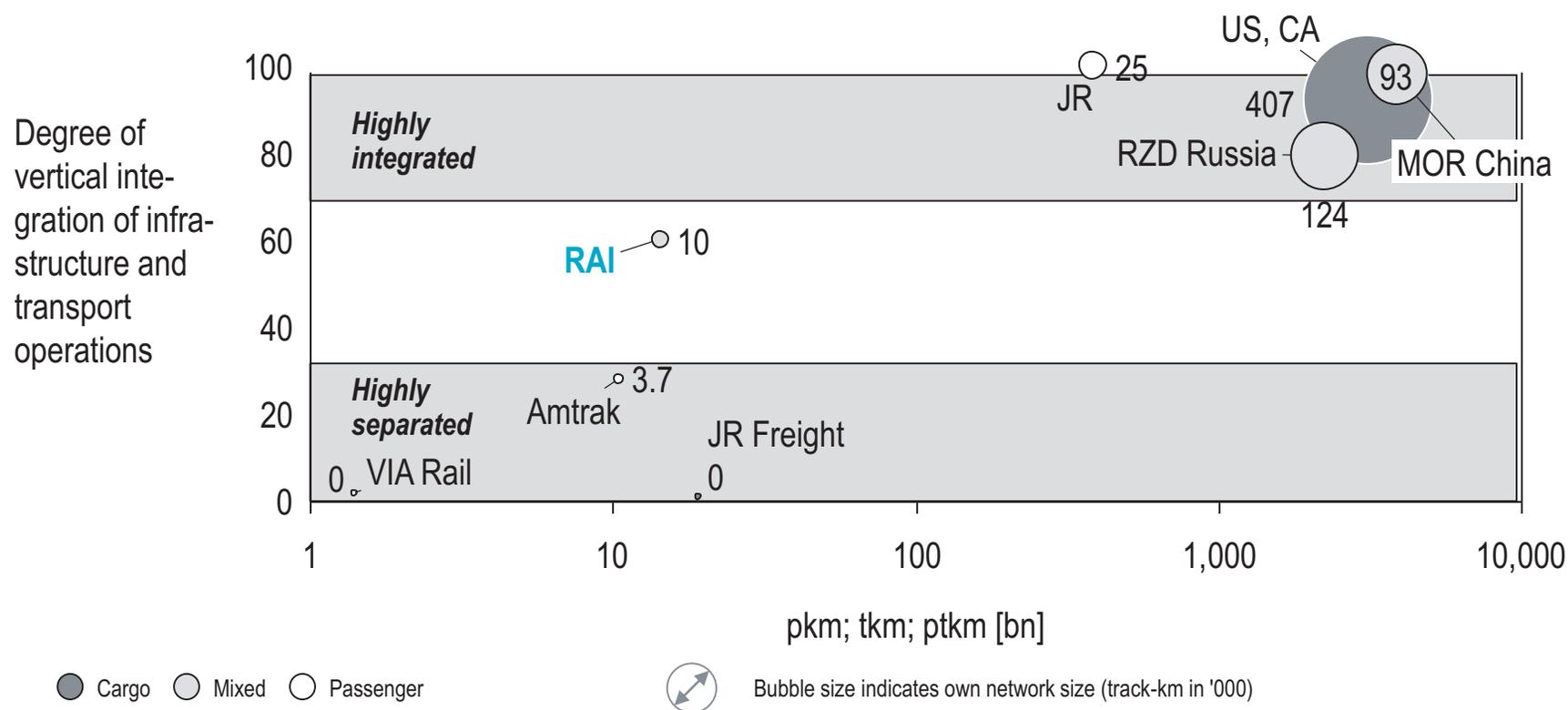
b. Performance of railway industry structure

- 1 Movements towards vertical separation of infrastructure led to **negative consequences** in different countries, including conflicts of interest, cost increases and efficiency decreases
- 2 Most railways in the countries under review were able to enhance their **employee and asset efficiency** through productivity increases
- 3 Railways in the study are focused on **customer satisfaction**, and show high levels of **punctuality**

The main railways in all countries under review are large, vertically integrated companies

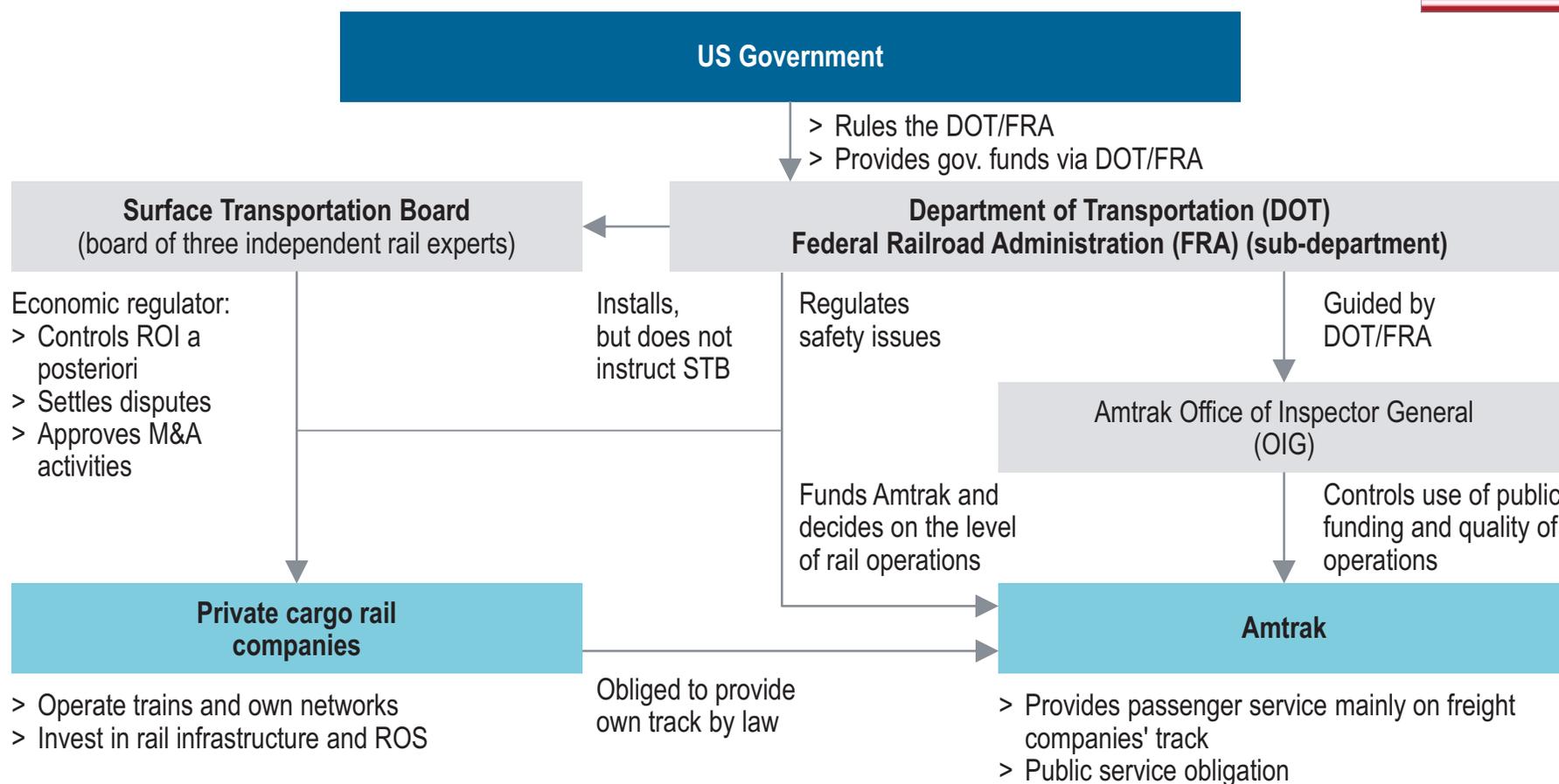
Degree of vertical integration

Illustrative

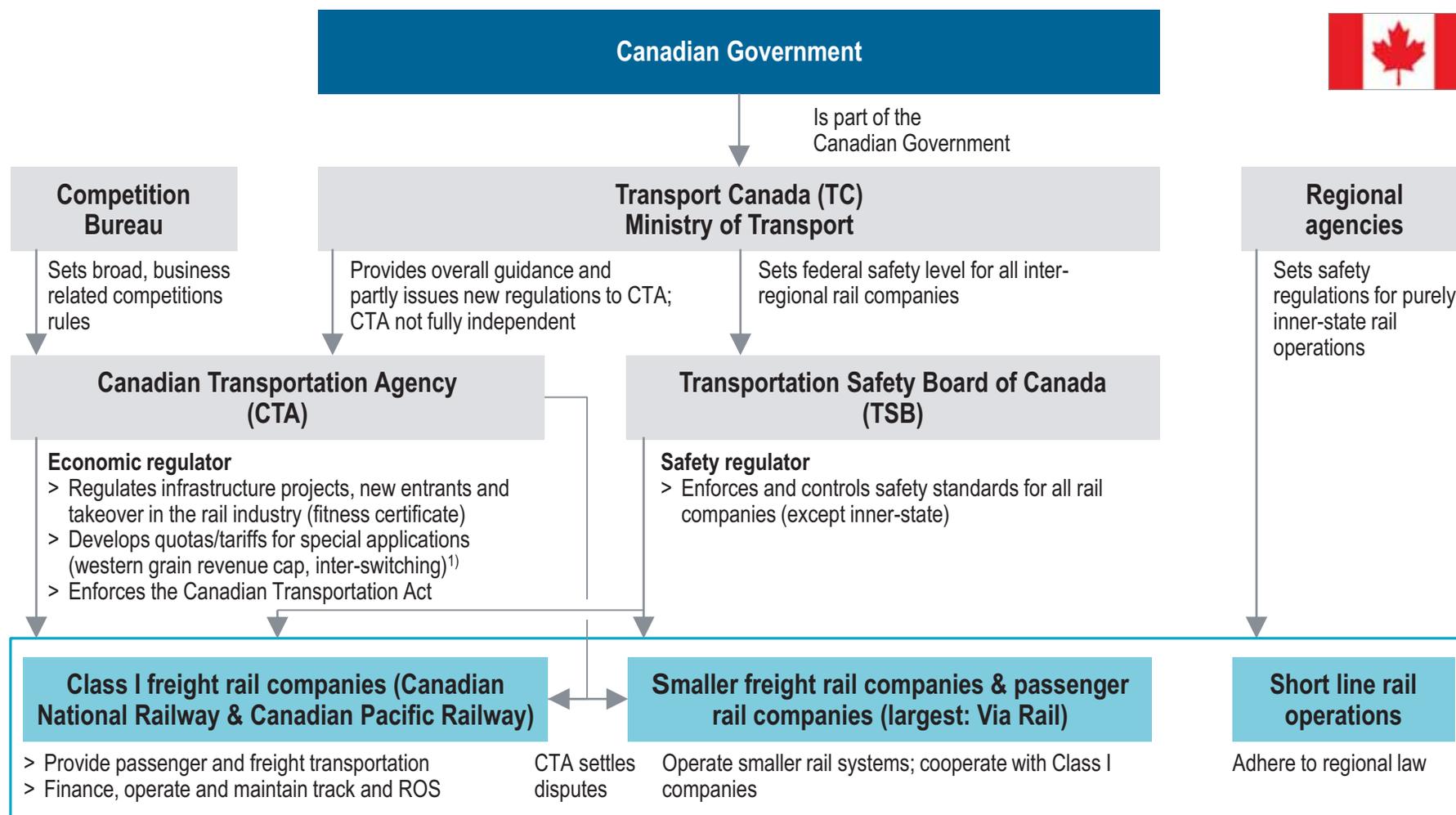


1)Y-axis: Share of transport operation on own track: Cargo tkm, Passenger pkm, Mixed ptkm US/CA: Railways operating partly on other railways' tracks RU (RZD): Approx. 50% of cargo wagons operated by private companies but locomotives operated by RZD: tkm of private wagons split (50% RZD, 50% cargo wagon operator)
 Source: Annual Reports of corresponding railways.

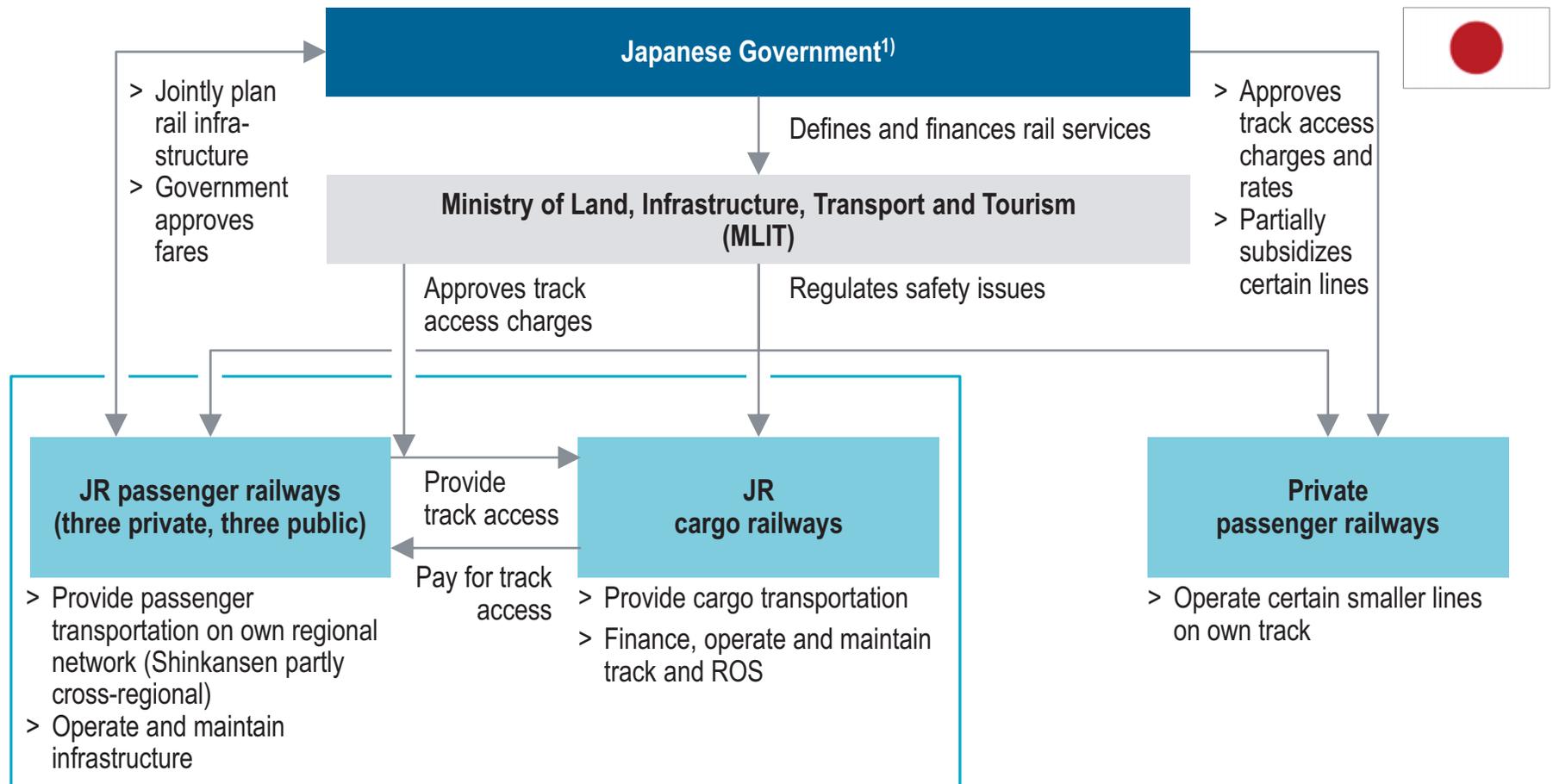
Railway system of the USA in 2017



Railway system of Canada in 2017

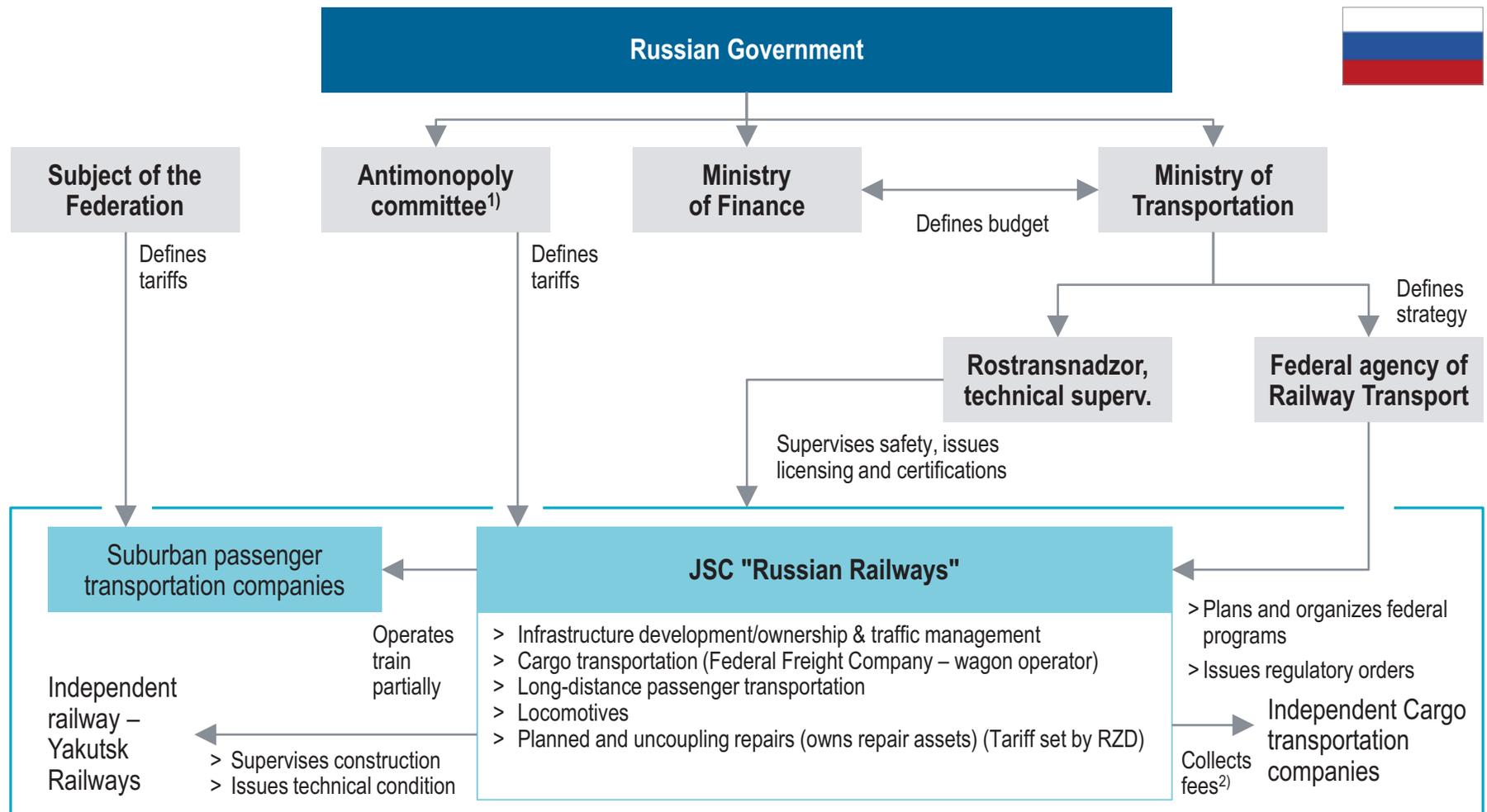


Railway system of Japan in 2017 – Focus on major JR companies



1) Consisting of the legislative, executive and judicial branches of government, including the Cabinet which governs all ministries

Railway system of Russia in 2017



1) Federal Antimonopoly Committee has taken over responsibilities of Federal Tariff Agency since July 2015 2) Infra + loco fees

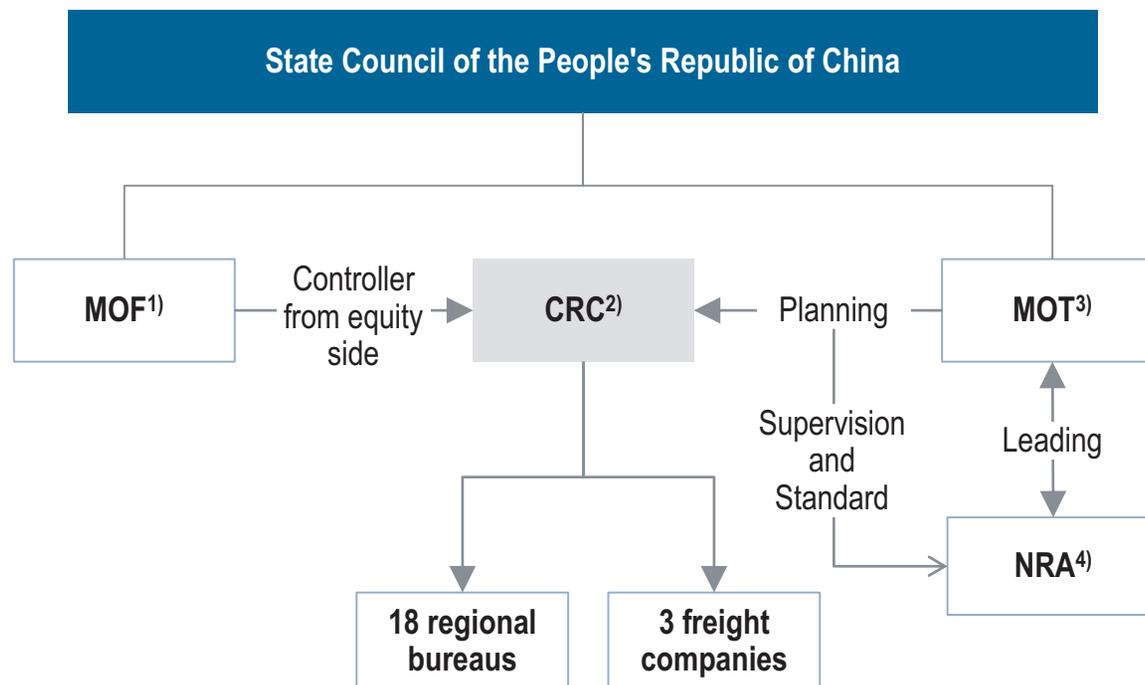
Railway system of China in 2017

Hierarchy

National

Ministerial

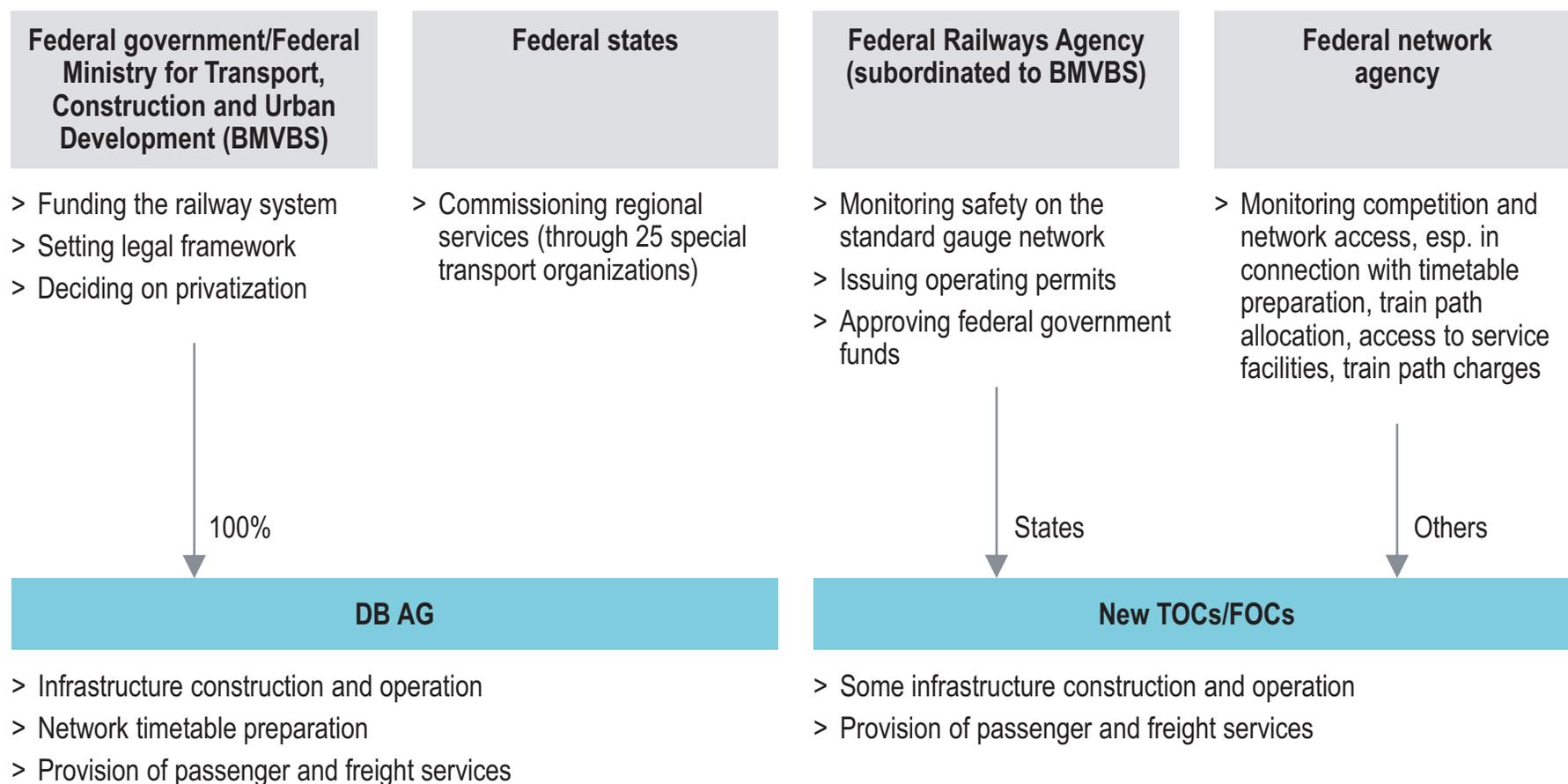
Sub-Ministerial



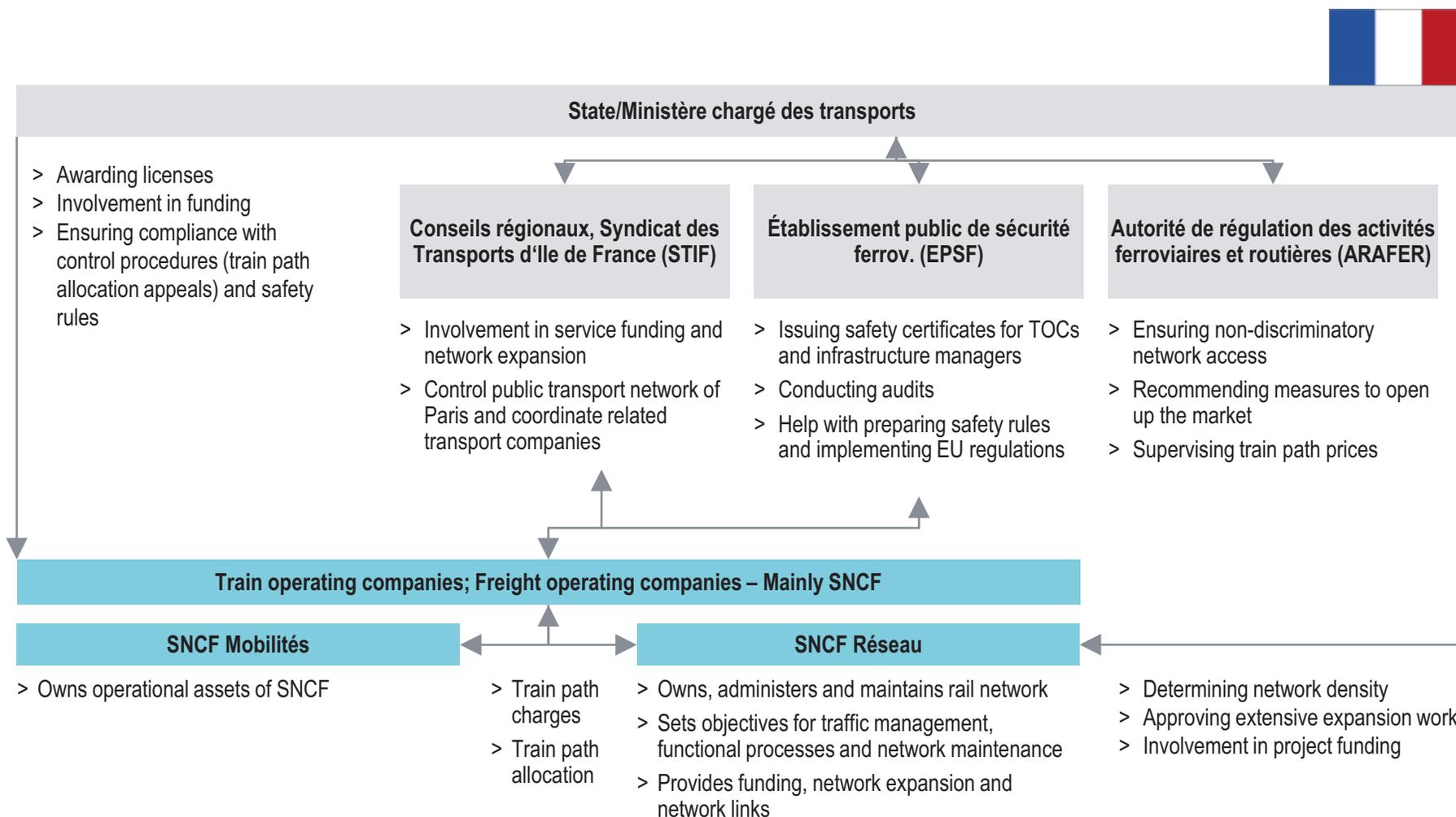
- > CRC is responsible for central command of the mainline rail transport sector in China, passenger operations and freight transport, planning of investment and preliminary work
- > Established in 2013, CRC is actually controlled by the Ministry of Finance as a Chinese State Solely Owned Enterprise

1) Ministry of Finance 2) China Railways Corporation 3) Ministry of Transport 4) National Railway Administration

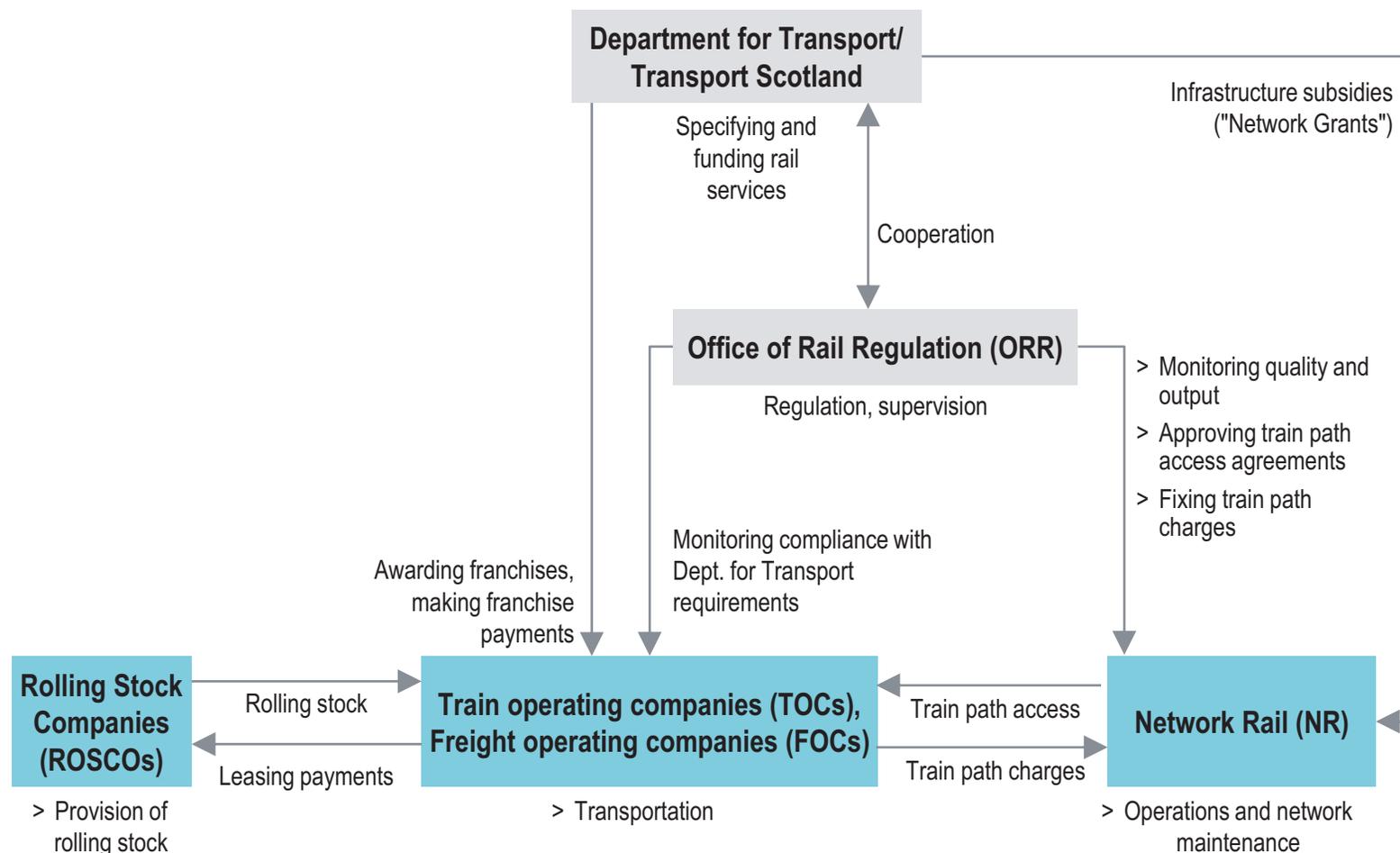
Railway system of Germany in 2017



Railway system of France in 2017



Railway system of the United Kingdom in 2017



We found strong arguments in favor of vertical integration

Key arguments for vertical integration

VERTICAL INTEGRATION



- > An integrated railway allows best for optimum resource allocation
- > Investment decisions usually involve infrastructure and rolling stock, and therefore the economically rational decision can be made only if both areas are considered jointly and in an unbiased manner



Vertical separation leads to high additional costs, integrated railways can operate much more cost efficiently and can react to the market for transportation services much more effectively than can railways that separated infrastructure and operations



- > Integrated railways balance operation and maintenance toward optimum scheduling and service level
- > Track maintenance heavily influences train delays and costs. Train operation heavily influences track maintenance requirements. An optimum can best be reached at an integrated railway



Integrated railways generate superior **customer service** due to much higher speed of internal decision-making at integrated railways

China experimented with vertical separation, but made negative experiences and switched back

Experience in China 1998-2002 after vertical separation at pilot railways¹⁾



Cost increase

due to duplication of functions

> Example: Operations

- Scheduling was performed centrally at Ministry of Railways²⁾ (MOR); However, passenger rail operators decided to establish in-house departments, thereby duplicating some existing MOR functions

> Example: Administration

- Safety control, public control, labor unions, etc. duplicated similarly

Conflict of interest

between railways and infrastructure operator

- > **Example:** Passenger railways encouraged passengers to **buy tickets on the train** rather than at the station in order to reduce infrastructure access fees (adverse effect for overall system)³⁾ – **Missing system integrator** to correct adverse effects (no head of integrated railway)

Reduced staff motivation

due to unaligned remuneration systems

- > **Example:** **Gap in salary package** between passenger train operators and infrastructure operators after the reform, which increased the safety and reliability risks (e.g. safety guards in station and some railway crossing personnel refused to work) – **Missing system integrator** to correct adverse effects



Result:

State Council reintegrated infrastructure and train operators, 1998-2002

1) Zhengzhou, Kunming and Nanchang Passenger Railway; 2) Now defunct, with responsibilities integrated within the Ministries of Transport and China Railway C; 3) Infrastructure fee based on passenger sales as recorded by ticket sales at stations

Source: Caijing; Dong Daily; People's Daily

France also made negative experiences regarding the cooperation of the two responsible rail parties during vertical separation

Experience in France during vertical separation of rail



Network problems

due to unclear separation of responsibilities

- > Network **maintenance and extension was sluggish** due to unclear split of responsibilities between the infrastructure owner and rail operator
- > Contradictory views on infrastructure projects led to costly delays
- > Network dysfunctions affected **quality of service** provided to users

Increase in debt burden

of both responsible parties

- > Before the reforms, SNCF was responsible for operating the train network, while RFF was the infrastructure manager
- > SNCF was generally **unable to pay back its debts** while focusing on improving the service quality of operations
- > RFF on the other hand had to take on a larger debt burden than initially planned, which has increased steadily since 1997

Dysfunctional cooperation

between the two responsible companies

- > The railway suffered from **contradictory network philosophies** between the two parties (e.g., RFF wanted to focus on getting more from the existing network rather than extend it), leading to **finger pointing** between the two parties

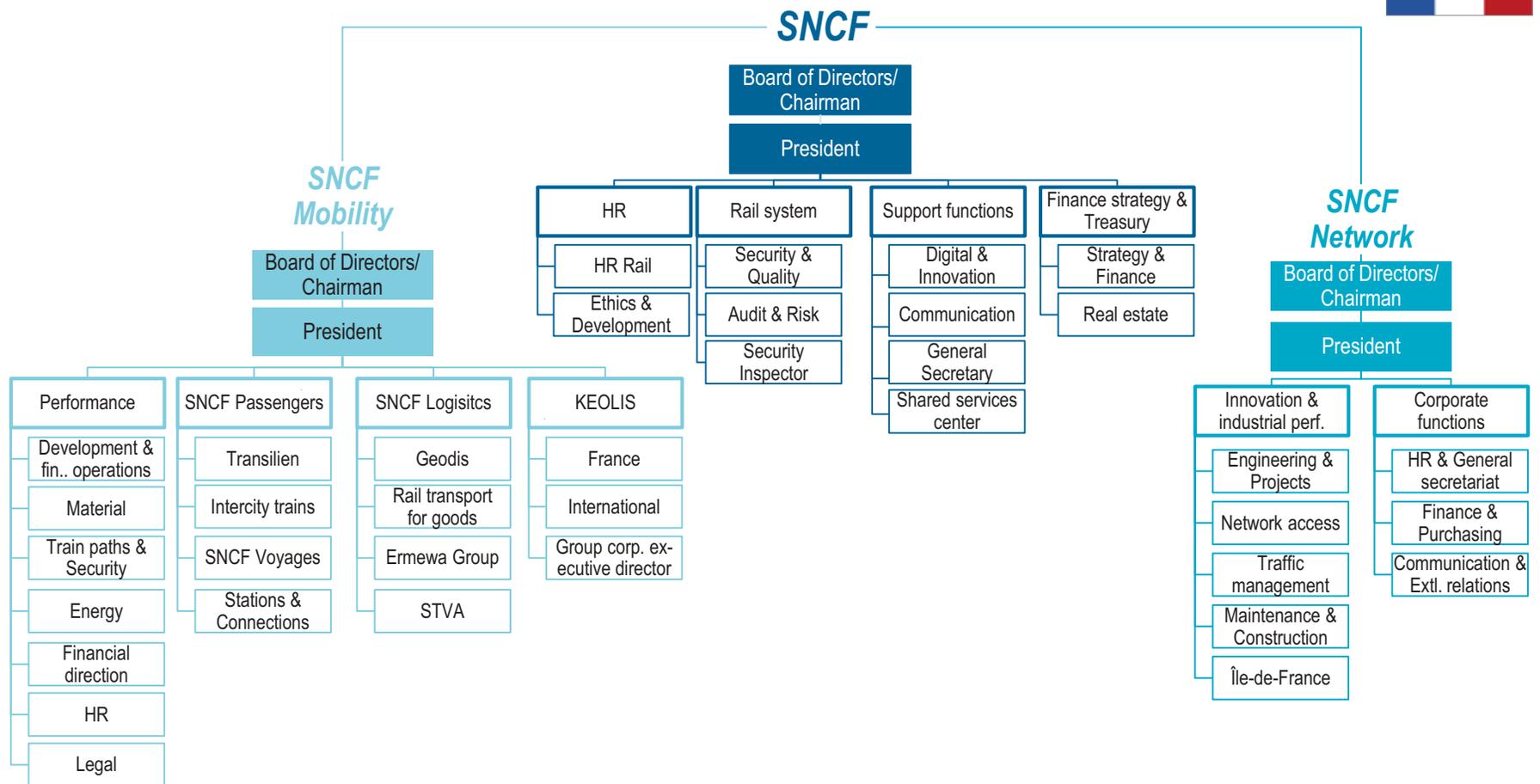


Result:

Creation of a parent public establishment responsible for both infrastructure and railway operation

Due to negative experiences, SNCF switched back to a semi-integrated model

SNCF organization structure



UK experimented with vertical separation, but made negative experiences and slightly revising the model for certain franchises

Experience in UK during vertical separation of railway



Limited competition due to franchise model

- > The bidding process for franchises gave TOCs¹⁾ the possibility for overly optimistic projections
- > During the franchise period there was **almost no competition**
- > Open access applications were complicated and time-consuming

High prices despite privatization

- > The lack of continuous competition allowed for quasi-monopolistic pricing, contributing to inefficient allocation of funds
- > Privatization & vertical separation did not result in lower fares; **today, prices are higher (in real terms) than before the separation**

Rise of public subsidies for rail network

- > **Public subsidies doubled** since privatization
- > TOCs were only incentivized to undertake investments which paid off during their franchise period
- > Fixed franchise specifications resulted in allocation inefficiency, TOCs extracted profits without bearing the corresponding risks



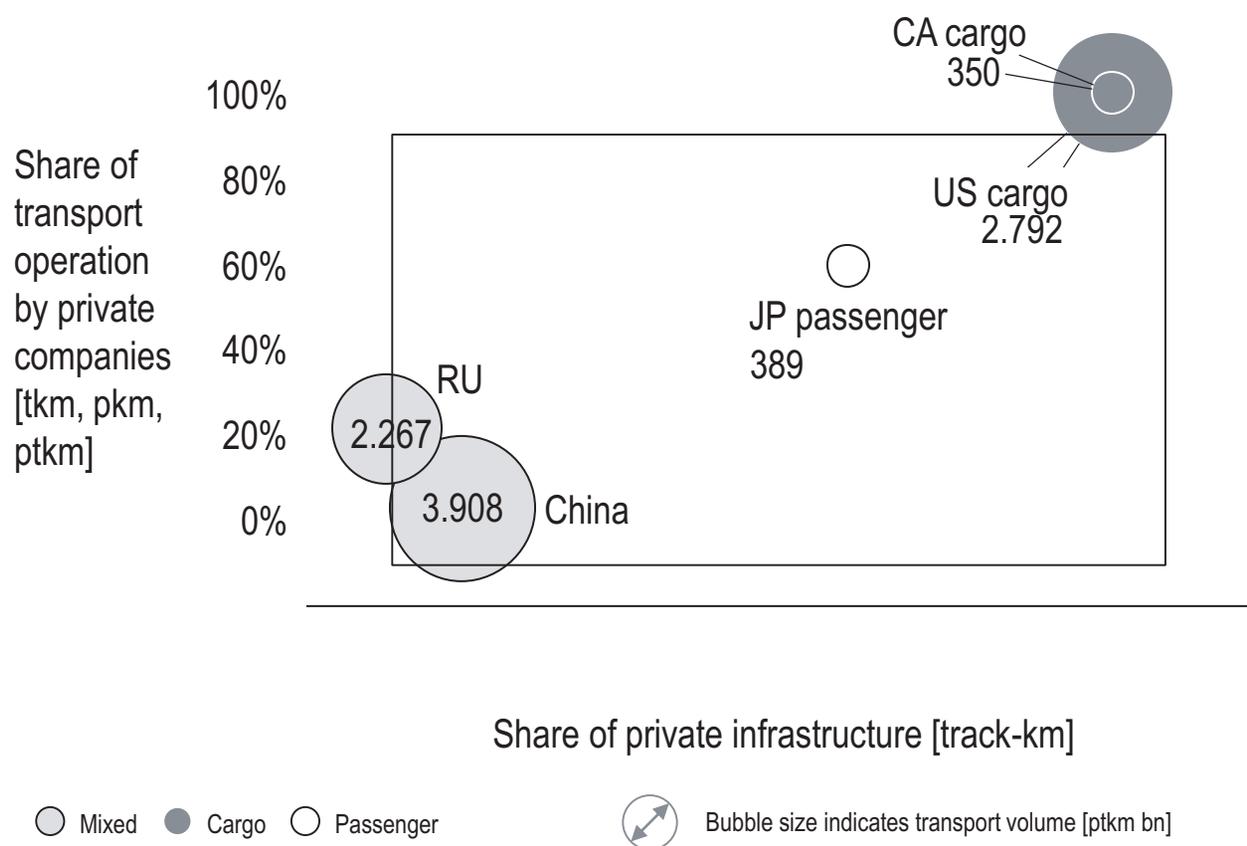
Result:

Successive re-introduction of a vertically integrated railway on a regional level, where TOCs are also responsible for their network

1) TOC – train operation companies

All countries under review have either initiated privatization or granted operators access to private capital

Ownership of train operator and infrastructure operator



Key findings

- > USA & CA: All cargo operations fully privatized
- > JP: Three major passenger railways privatized (incl. share of regional transportation)
- > RU: Around 50% of freight wagons privately owned
- > China: Joint ventures allowing private financing

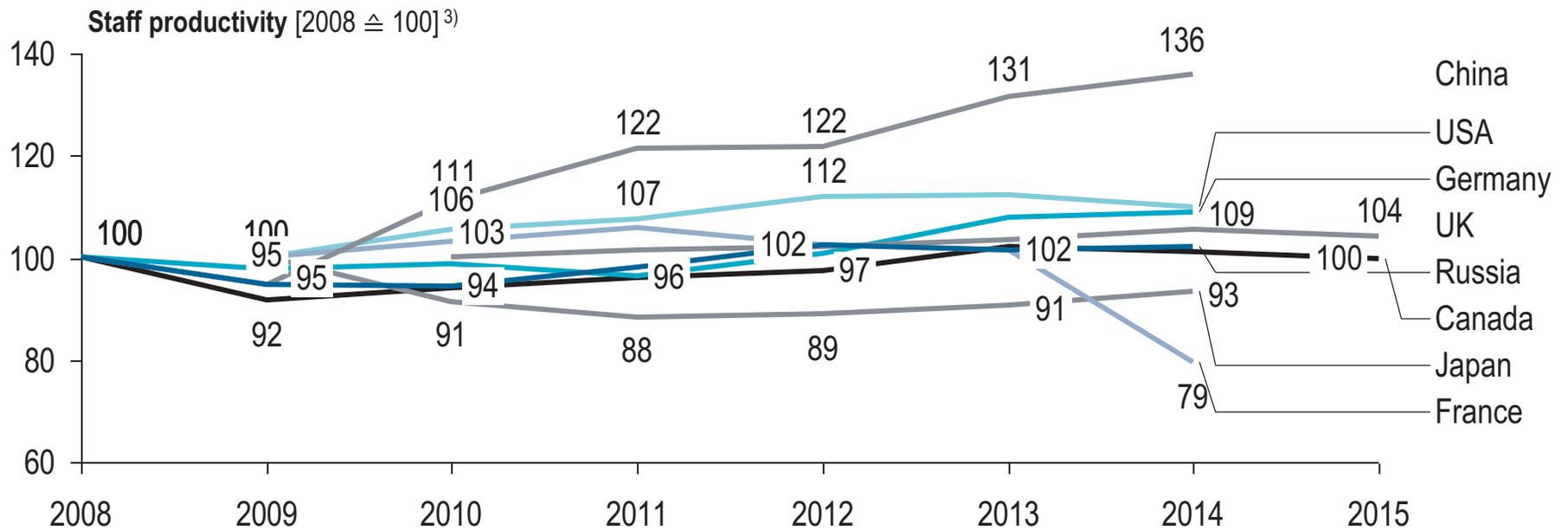
1) RU: Approx. 50% of cargo wagons operated privately, but locomotives operated by RZD – tkm of private wagons split (50% RZD, 50% cargo wagon operator)

Staff productivity and its development in the last decade show large differences across reviewed countries

Development of passenger operational efficiency, 2008-2014/15

2014

Passenger traffic [m pkm]	10,742	1,300	58,102	1,160,480	128,800	88,407	83,914	62,732
Total Staff [#] ²⁾	20,000	2,608	18,223	1,902,500	835,800	44,349	54,450	54,194
Staff productivity [m pkm/empl.] ²⁾	0.5	0.5	3.2	0.6	0.2	2.0	1.5	1.2



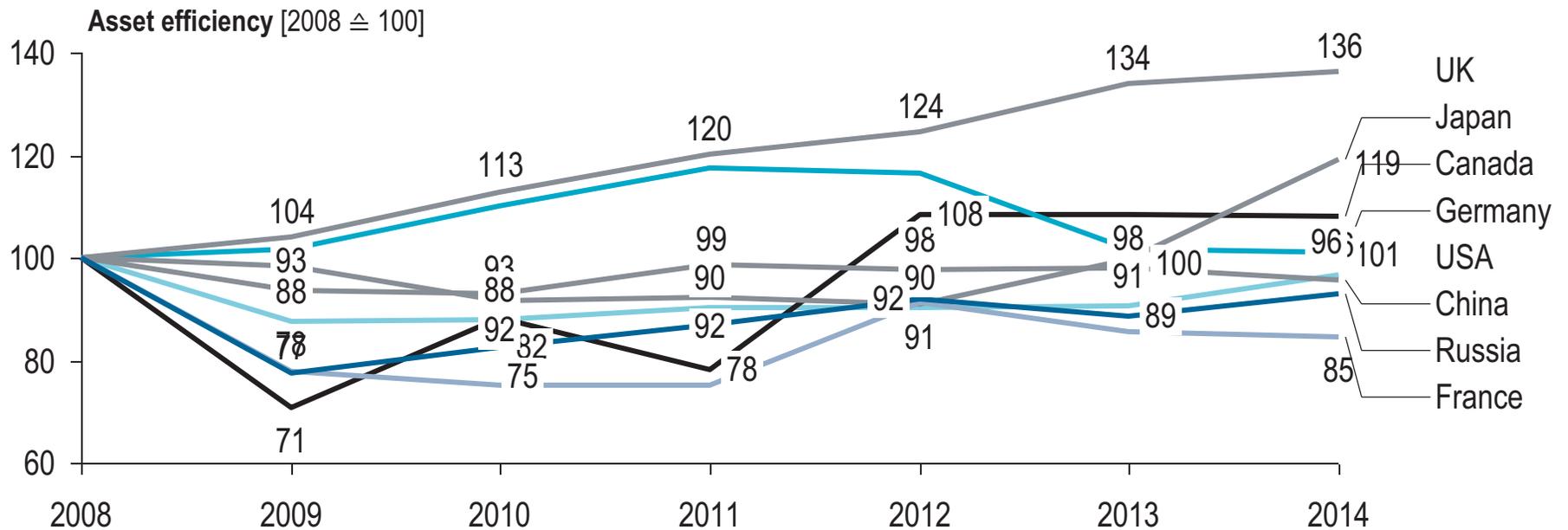
1) JR Central for Japan 2) FTE in all organizational areas for Germany, Canada (after 2010) 3) 2009 = 100 for USA, Japan, France; 2010 = 100 for UK

Asset efficiency increased most in UK and Japan; China and Russia have the highest level of asset efficiency

Development of asset efficiency

2014

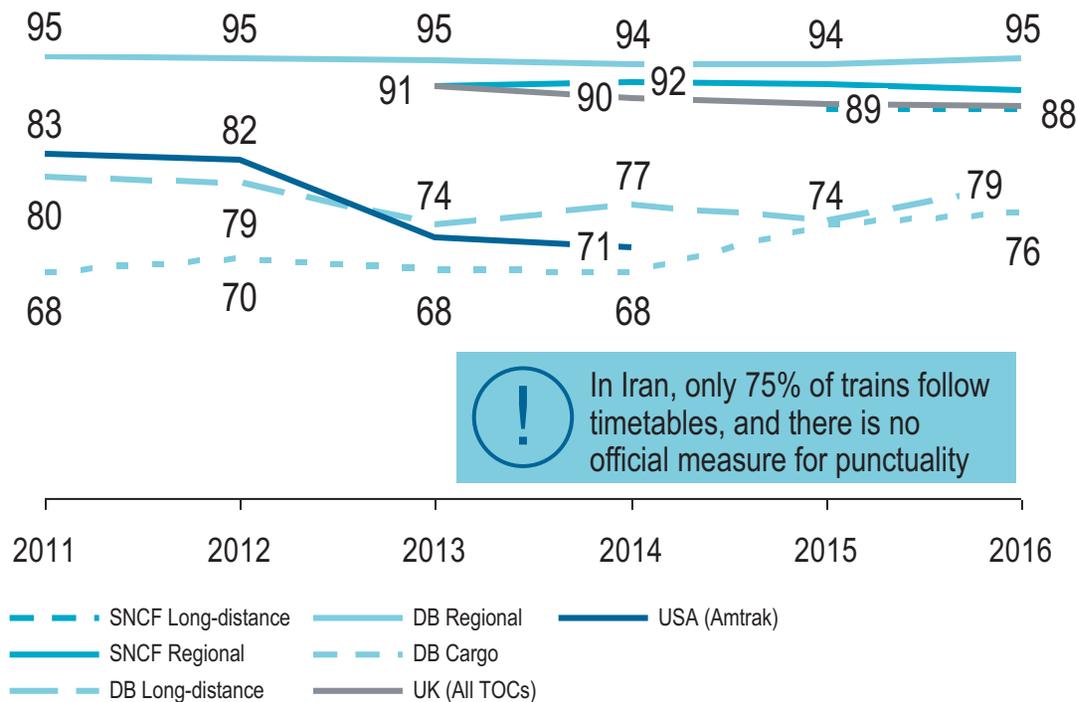
Total traffic [m ptkm]	2,713,478	353,835	78,357	3,469,149	2427,364	163,225	108,512	87,132
Network length [km]	228,218	52,131	16,703	66,989	85,266	33,426	30,013	16,530
Asset efficiency [in m tpmk/route-km]	11.89	6.79	4.69	51.79	28.47	4.88	3.62	5.27



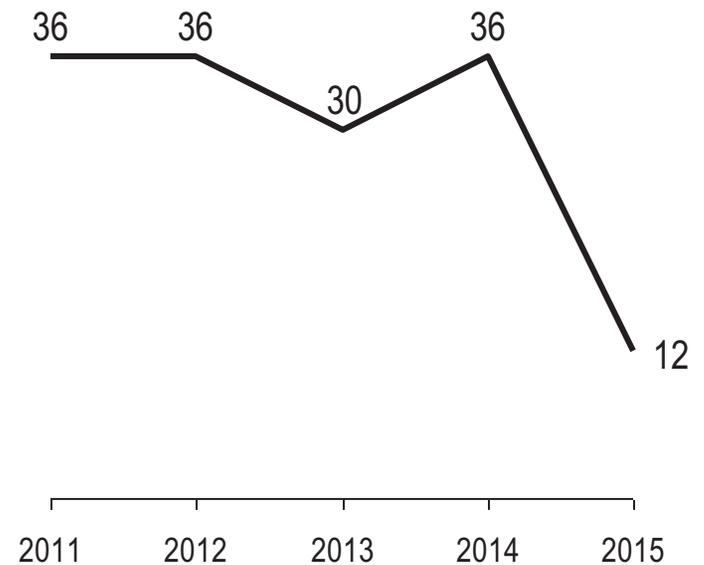
Most railways under review have improved or maintained very high rates of punctuality

Punctuality development¹⁾

Share of trains considered as punctual [%]



Average delay per train for JR Central [seconds]



1) Punctuality: France/SNCF: <5 min late at destination; Germany/DB: <6 min late (for every stop); UK: delay <5min/<10min for regional/long distance trains; USA/Amtrak: Buffer 10 min < 250 miles – 30 min >550 miles; Japan/JR Central: multiples of 6 sec.

Source: SNCF, DB, JR Central, Amtrak, ORR, Roland Berger

Based on the organizational need for action and gap to best practices, we identified four structural design principles for RAI

Structural design principles for RAI and industry

Regulatory responsibilities

- > Should the regulator be split from the infrastructure owner?
- > Who should take over regulatory responsibilities for the railway in each area, e.g.:
 - Safety
 - Economy
 - Competition

Commercialization and subsidies

- > Which areas of the rail industry should receive subsidies?
- > How should subsidies be structured to encourage efficiency increases
- > How can RAI ensure the optimal degree of commercialization?

Key questions to be answered for structural design principles in next phase

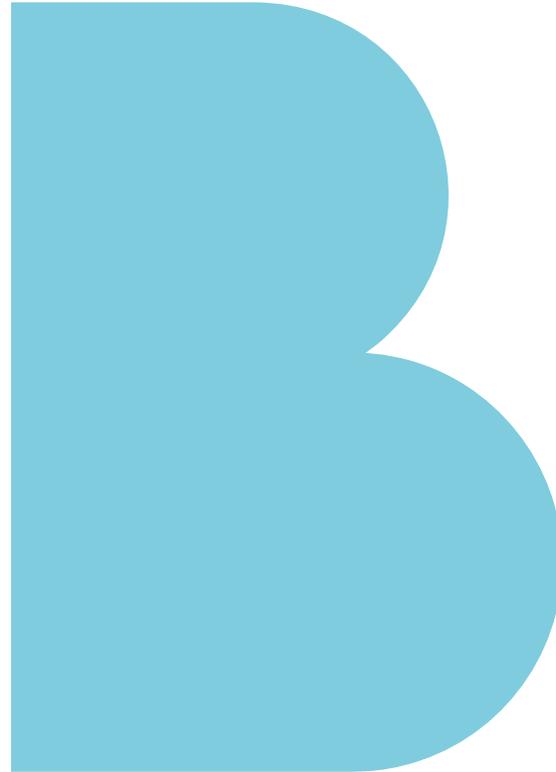
- > How should RAI approach the possibility of privatization?
- > Which parts of the business can or should be privatized?
- > What are quick win areas to increase the influx of private capital (e.g., "lighthouse" station projects)

Privatization

- > Should infrastructure be integrated with operations?
- > What should the competitive environment be for each part of the rail industry, e.g.:
 - Passenger (high speed, commuter...)
 - Cargo
 - Wagons

Integration of infrastructure

A.3 Definition of Iranian railway industry structure



The target structure for the railway industry in Iran was defined by following key four guiding questions

Framework for developing target railway structure of Iran

		Privatization	Commercialization	Liberalization	Competition
1	Target role split and regulatory responsibilities What is the role of each entity for the railway system and who should take over regulatory responsibility?				
2	Integration of infrastructure and competition What is the degree of integration between infrastructure and operations? What is the right level of competition?				
3	Privatization How can private capital be injected into the railway system, and should RAI target (partial) privatization to do so?				
4	Commercialization and subsidies What degree of commercialization do we envision, which business areas of rail should receive subsidies, and how can they be structured?				

The target structure for the railway industry in Iran was defined by following key four guiding questions

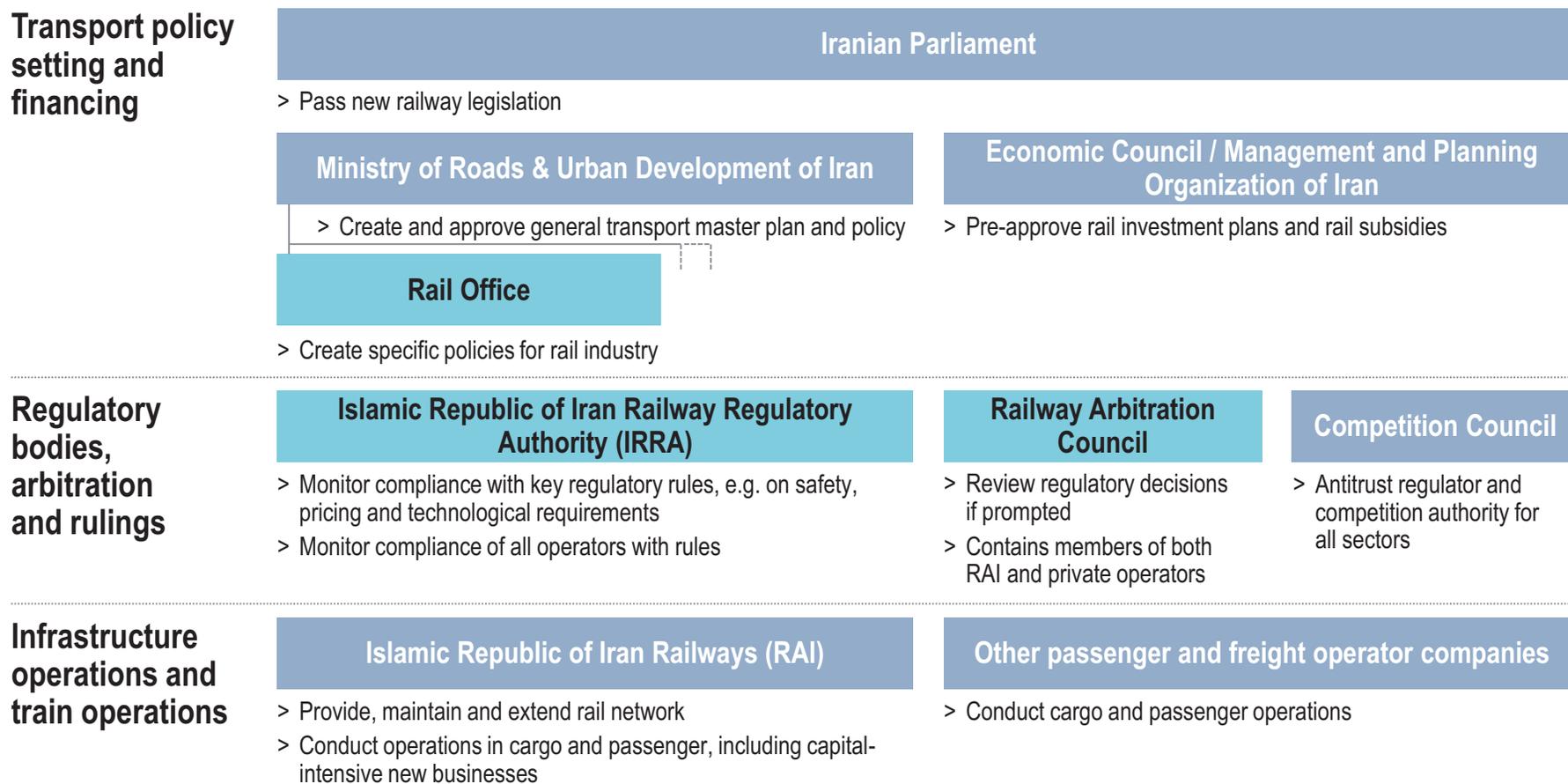
Framework for developing target railway structure of Iran

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1 Target role split and regulatory responsibilities

Based on best practices, the future railway industry structure for Iran should consist of three main levels, rail office should be

Proposed railway industry structure for Iran – Not exhaustive



 Existing entity  New entity

1 Target role split and regulatory responsibilities

According to RAI top manager’s decision, in the target model rail office is a subsidiary of a deputy of transportation in the Ministry

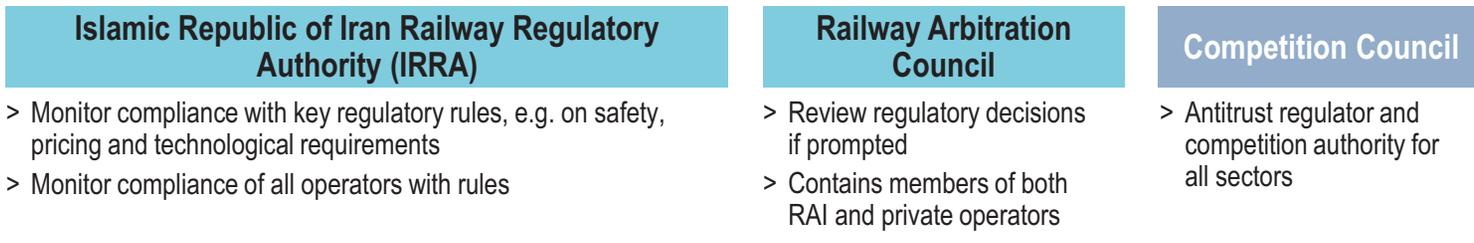
Proposed railway industry structure for Iran – Not exhaustive

RAI decision

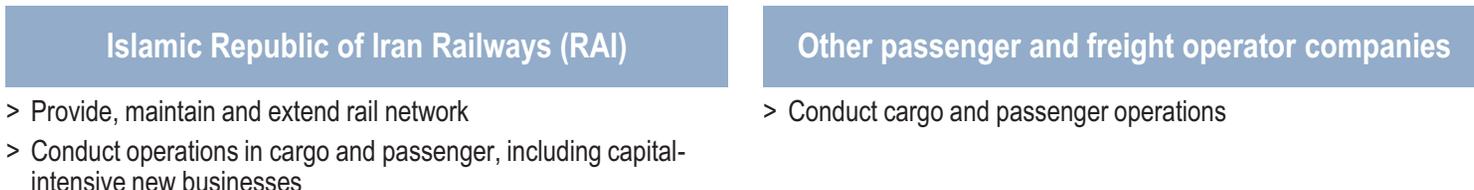
Transport policy setting and financing



Regulatory bodies, arbitration and rulings



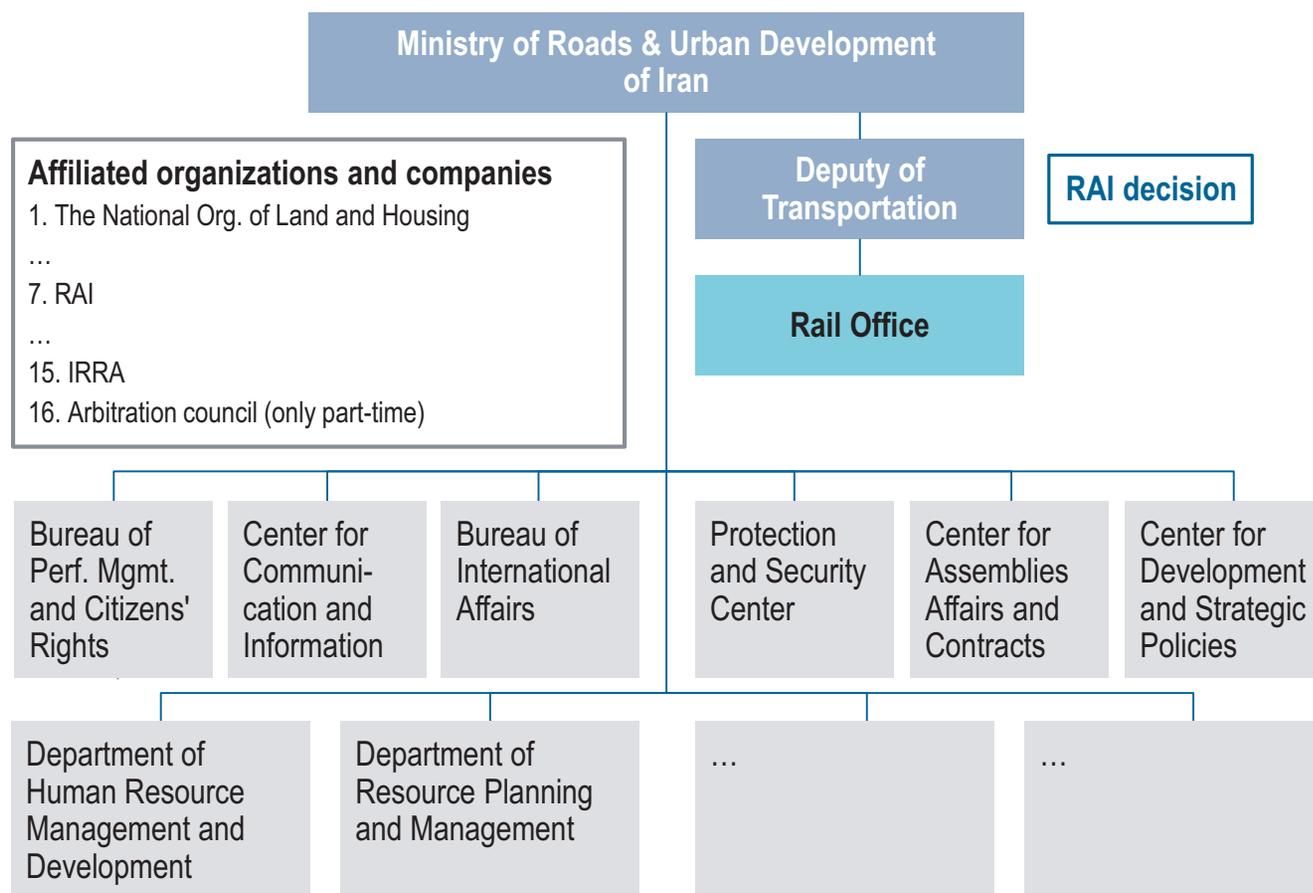
Infrastructure operations and train operations



1 Target role split and regulatory responsibilities

We suggest establishing a strong, separate 'Rail Office' within the Ministry of Roads & Urban Development

Proposed transport policy landscape for railways in Iran



Recommendations

- > Create **separate Rail Office** under Deputy of Transportation as lean but powerful unit with <20 FTE (analogous to Civil Aviation Authority)
- > Rail Office **responsibilities** should include specific rail related issues and policy-making and planning in rail transportation
- > Department of Transport **responsibilities** include general transport policy and overseeing all transport modes based on country's overall transport needs

Summary of responsibilities of entities involved in Iran's railway landscape

<p>Iranian Parliament</p>	<ul style="list-style-type: none"> > Approve legislation regarding Iran's railway environment > Approve amount of subsidies given to railway > Pass legislation based on decisions taken by regulatory body 	<p>Ministry of Roads & Urban Development of Iran</p>	<ul style="list-style-type: none"> > Approve national transport strategy to govern how railways will be developed and operated > Oversee rail industry structure and approve changes to participating entities > Supervise state-owned railway entities
<p>Islamic Republic of Iran Railway Regulatory Authority (IRRA)</p>	<ul style="list-style-type: none"> > Administer economic, technical, safety and environmental regulation for railways > Monitor compliance of all operators with regulation > Launch investigations into railway incidents to determine if regulations were followed 	<p>Arbitration committee</p>	<ul style="list-style-type: none"> > Ensure that passed regulation does not unduly favor specific operators > Arbitrate claims by operators that believe they have been unfairly treated by the regulator
<p>RAI General Assembly</p>	<ul style="list-style-type: none"> > Consider and approve changes to company bylaws > Decide on strategic direction of RAI > Approve balance sheet, P&L and budget of RAI > Select members of the board and CEO 	<p>RAI CEO</p>	<ul style="list-style-type: none"> > Carry out decisions taken by General Assembly > Manage operational company affairs > Appoint and dismiss employees of the company and define scope of their jobs

Separation of regulatory responsibilities is essential to focus RAI on operational business and facilitating a competitive market

Role of regulator in different environment

A Regulatory power with incumbent railways

Market Environment



- > Railways run by ministries or as governmental companies
- > Occurs in many formerly planned economies such as India, China and Russia¹⁾

Role of regulator



- > Aid railway in achieving **targets set by governmental actors**
- > Often **results in conflicts of interest** and difficulties for new operators to work under ideal conditions, e.g.:
 - Regulator wants lower tariffs while operator wants higher tariffs
 - Profitable business can be reserved for the incumbent operator by the regulator
- > **Disfavors the entrance of new competitors**

Business focus

- > **Business focus diluted** by fulfilment of governmental tasks
- > Decision making blurred due to **conflicting interests**

1) Russia currently moving towards limiting regulator

B Regulatory power split into separate entity

- > Countries **wishing to increase third-party access** to railway tracks **and business focus** of railway companies
- > Applied in USA, Japan, and most EU countries since railway reform was passed

- > Control behavior of monopolistic infrastructure provider
- > **Promote healthy competition between incumbent and new entrants** by:
 - Ensuring non-discriminatory rules and access charges and aiding appeals of different operators
 - Taking action against market distortions
 - Preventing unfair advantages of new entrants

- > Remove governmental mindset from railways and introduce **business-oriented culture**

1 Target role split and regulatory responsibilities

Most regulators take over tasks in four different areas – Same scope suggested for Iran's regulator

Usual scope of regulatory body

Illustrative

Economic



- > Rules on industry entry and competitive environment
- > Pricing of rail services
- > Access to infrastructure, including track access charges
- > Decision on subsidization levels (together with Management and Planning Organization of Iran)

Safety



- > Preparation of safety requirements and supervision of their adherence
- > Issuance of safety certificate
- > Compliance and incident investigation

Technical



- > Technical norms and standards to ensure an integrated and safe rail infrastructure
- > Licensing of train operators and other technical jobs
- > Setting of technical and maintenance standards for wagons and locomotives

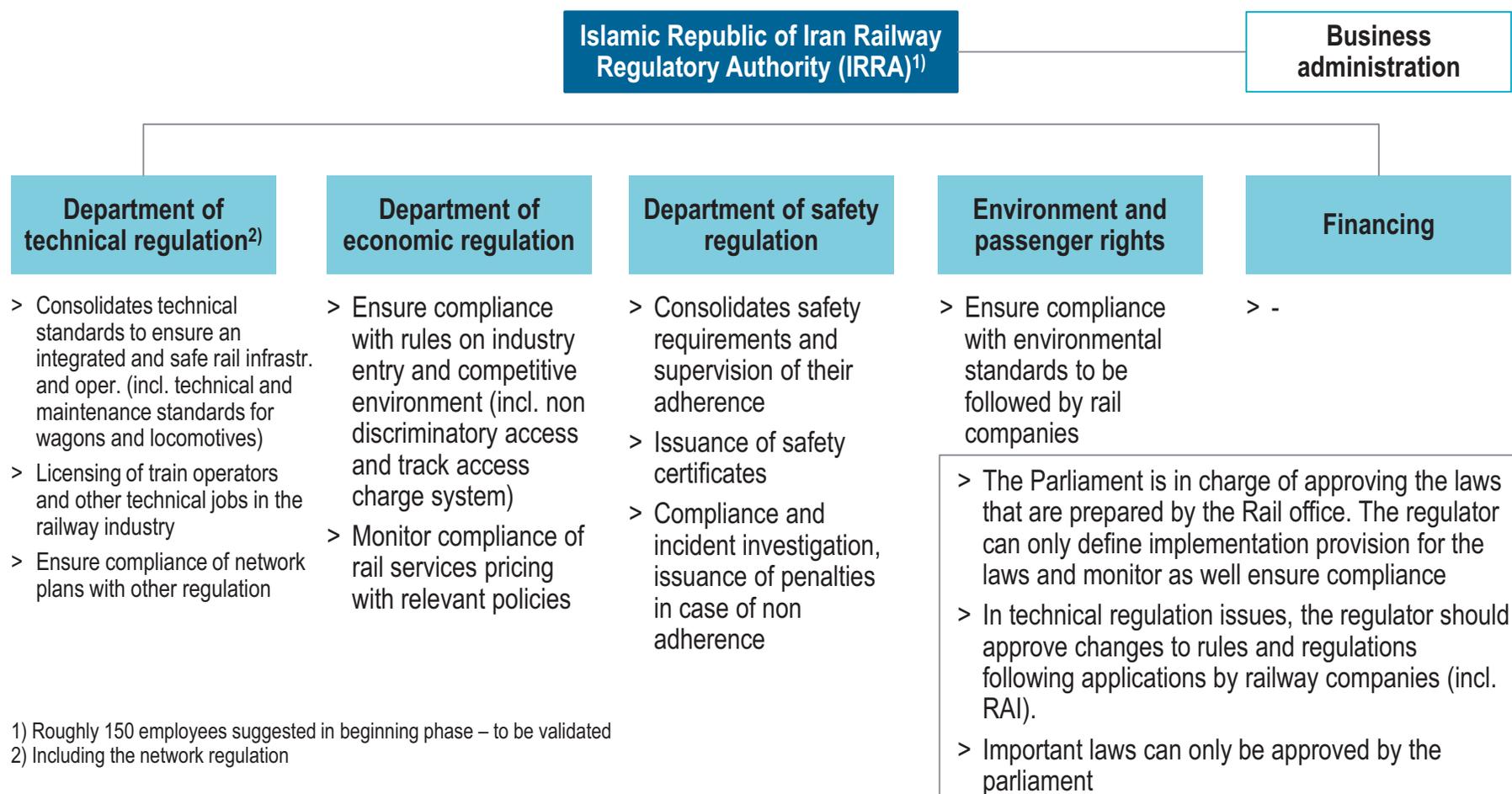
Environmental



- > Assess impact of rail transport on rail corridor communities and other impacts such as carbon emissions
- > Set environmental standards to be followed by rail industry companies

A new regulator should be established with departments split by their regulatory function

Proposed high-level organization chart for IRRA

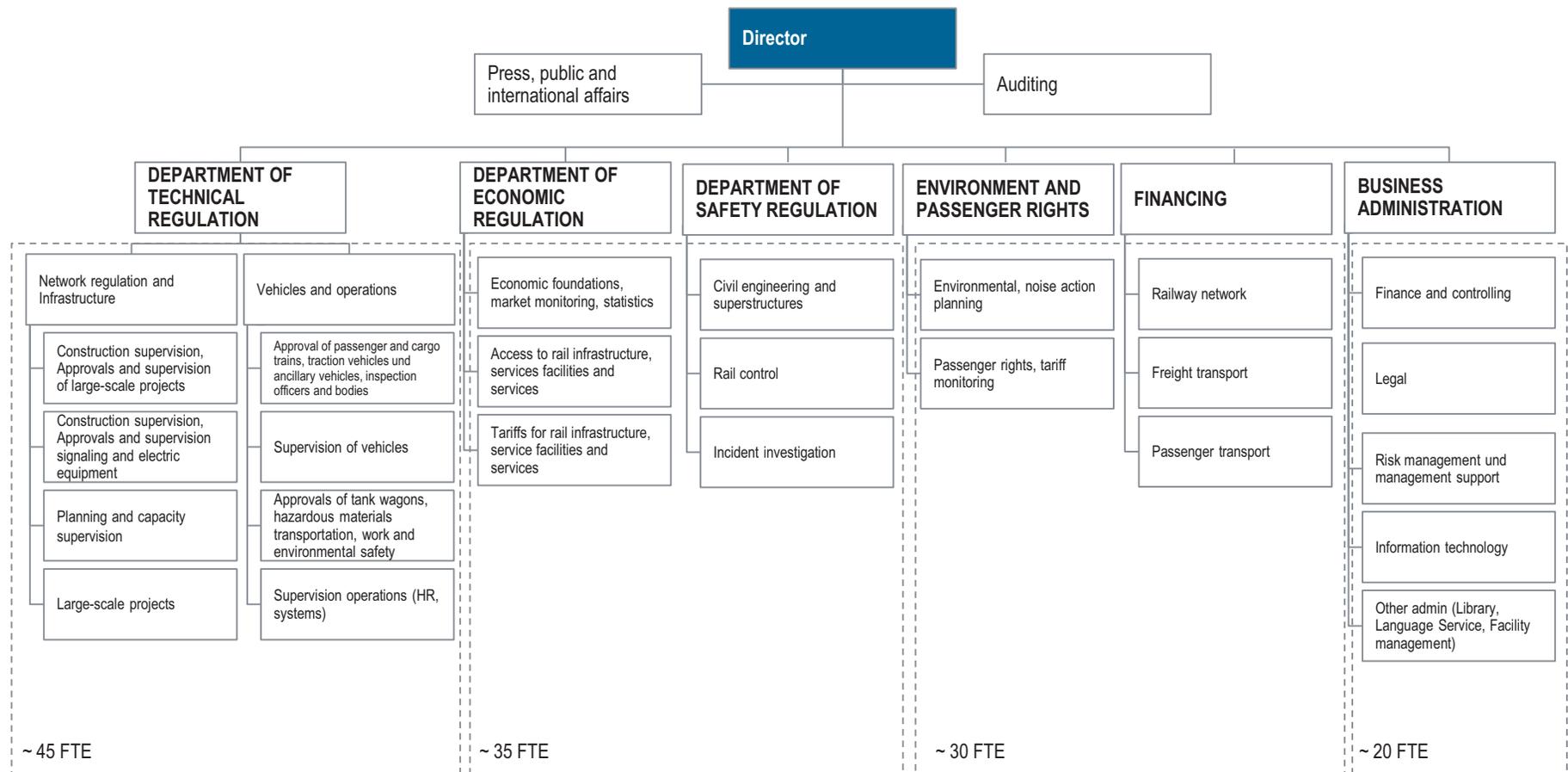


1) Roughly 150 employees suggested in beginning phase – to be validated

2) Including the network regulation

Islamic Republic of Iran Railway Regulatory Authority (IRRA) organization structure will consist of 6 main departments

Detailed organization chart for IRRA



The activities of the new regulator will complement those of the existing competition council

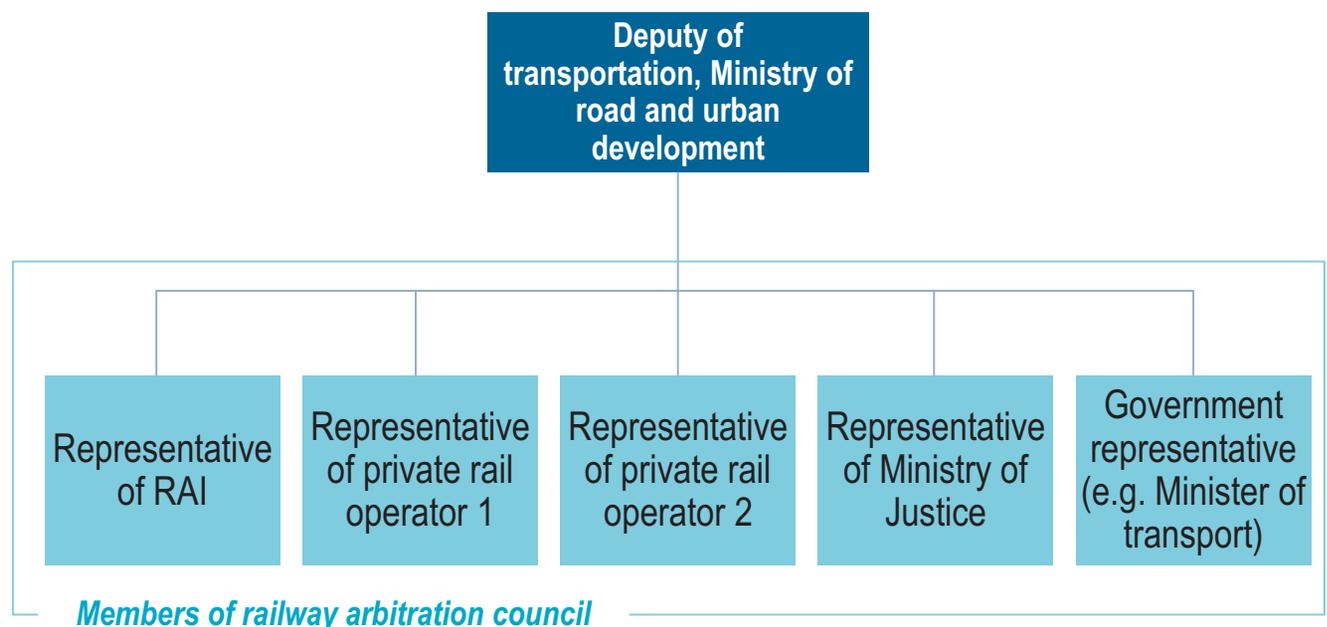
Responsibilities of IRRA, Competition council and Administrative Justice Court

Responsibilities of IRRA	Responsibilities of Administrative Justice Court	Responsibilities of Competition council
<ul style="list-style-type: none"> > Define general rules on how private operators can enter the railway system > Analyze competitive situation within the rail sector with regards to: <ul style="list-style-type: none"> – Market shares of rail competitors – Cartel formation – Biased regulation favoring one competitor over others – Scheduling of routes – Determination of track access charges – Etc. 	<ul style="list-style-type: none"> > Addressing complaints, grievances, and protests by people against officials and governmental departments and governmental regulations > The complaints and protests of government units are in no way subject to the jurisdiction by the Administrative Justice Divisions > Administrative Justice Court, consist of the primary branches (currently 50 primitive branches in the Supreme Court exist), The Appeals Committee, The General Board and Specialized delegations 	<ul style="list-style-type: none"> > Act as competent authority for examining and ruling on general anti-competitive practices across sectors > Analyze competitive situation in all sectors of the economy with regards to: <ul style="list-style-type: none"> – Market shares – Cartel formation – Price collusion and anti-trust issues > Conduct investigations into anti-competitive practices based on private complains or on its own initiative > Approve competition guidelines and instructions > Advise government on bills concerning competition issues

1 Target role split and regulatory responsibilities

Due to the nature of Iran's government, we also recommend the installation of a separate regulatory arbitration council

Rationale for establishment of Railway Arbitration Council¹⁾



Recommendations

- > Separate arbitration council necessary in regulatory environment as under Iranian law, **government entities cannot file suit against each other** – Existing arbitration chambers²⁾ would not allow RAI to file suit against governmental entities
- > Both private operators and RAI can **file complaints against regulatory decisions** that they consider unfair
- > Railway Arbitration Council comes together **to decide on new regulation** only in case a complaint has been filed
- > Railway Arbitration Council to be located under responsibility of Deputy of transportation, but without direct influence of Minister on decisions

- > Railway Arbitration Council gathered only a few times a year
- > Secretariat of the Railway Arbitration Council could be located in the Rail office
- > Size of the secretariat is 2-3 people

1) Non-permanent body that does not consist of full-time employees 2) Administrative Justice Court and Arbitration Center of Iran Chamber (ACIC)

In general, countries follow one of three different regulatory approaches

Options for regulatory models

	Operator as regulator	Single distinct regulator	Several distinct regulators
Description	<ul style="list-style-type: none"> > Railway operator also acts as a regulatory body > Generally only used for emerging railways before full maturity > Beneficial for quick set-up of a new railway 	<ul style="list-style-type: none"> > One distinct entity is set up (separately from the operator) to take care of regulatory responsibilities > However, setting of regulations and inspections may still be separate 	<ul style="list-style-type: none"> > Several distinct entities are set up (separately from the operator) to take care of regulatory responsibilities > For example, split between safety and economic regulator common – In Canada, Transportation Safety Board acts as safety regulator, and Canada Transportation Agency as economic regulator
Example countries			

In Switzerland, the Federal Office of Transport is the sole responsible for regulating the railway system

Rail regulation – Switzerland



Setting of regulatory framework

Federal Office for Transport (FOT) (part of Department for the Environment, Transport, Energy and Communication)

- > Fixing train path prices and approving network access (economic regulation)
- > Safety certification (SiBe) (safety regulation)
- > Concession authority
- > Licensing of train operators

Arbitration and rulings

Railway Arbitration Commission (SKE)

- > Ruling on network-access disputes

Competition Commission (WEKO)/ price watchdog

- > Competition watchdog
- > Pricing-abuse watchdog

Federal Administrative Court

- > Hearing appeals against SKE rulings

Infrastructure operations and train operations

Train operations (including Swiss Federal Railways SBB, BLS AG and other TOCs)

- > Provision of passenger and freight services
- > Infrastructure construction and operations
- > Preparing network timetable¹⁾

1) Done by the Trassenvergabeabestelle, a not-for-profit company owned by SBB, BLS, SOB and VöV

Advantages

- > Creates clear interfaces and contact authority for all players in railway industry
- > Regulator can act as one-stop-shop for all regulatory needs
- > Easier set-up of regulatory landscape

Disadvantages

- > Concentrates significant decision power in the hands of a single authority

In Germany on the other hand, multiple entities take care of different regulatory tasks

Rail regulation – Germany



Regulatory responsibilities

Federal Ministry for Transport and Digital Infrastructure (BMVI)

- > Joint decision on funding of railway system with Ministry of Finance
- > Decision on privatization
- > Setting legal framework



Federal Railway Authority (EBA – subordinated to BMVI)

- > Definition and supervision of technical standards and safety regulations

Federal network agency (Bundesnetzagentur)

- > Monitoring of competition, path charges and network access

Advantages

- > Allows stronger focus of each regulator on its area of expertise

Disadvantages

- > Additional difficulty of properly dividing regulatory areas into different entities
- > May lead to disputes and conflicting decisions between different authorities

Infrastructure operations and train operations

DB AG and other TOCs/FOCs

- > Infrastructure construction and operation
- > Network timetable preparation
- > Provision of passenger and freight services

The second question addresses the integration of infrastructure operations and train operations as well as the competitive environment

Framework for developing target railway structure of Iran

		Privatization	Commercialization	Liberalization	Competition
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Three high-level options exist for the decision on integrating infrastructure operations and train operations

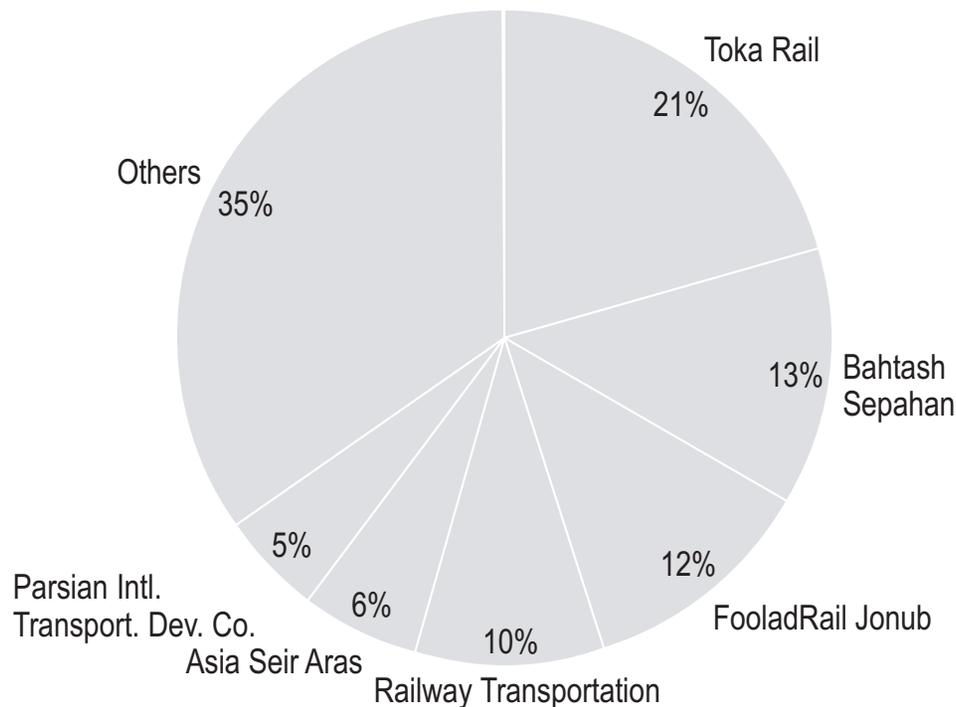
Infrastructure options – Overview

	Full integration/Holding	Hybrid model	Separation
Definition	<ul style="list-style-type: none"> > Railway with integrated infrastructure and operations business (including holding models) > P&Ls for infrastructure and operations can be separate or integrated > Infrastructure can be a cost center or a profit center 	<ul style="list-style-type: none"> > Railway with separate infrastructure and operations business > Traction and infrastructure integrated within the same business 	<ul style="list-style-type: none"> > Infrastructure as fully independent business without any direct link to operators > Main objective often to create on-track competition, with several operating companies competing on the network
Usual environment	<ul style="list-style-type: none"> > Railways with two sophisticated entities for operations and network 	<ul style="list-style-type: none"> > Railways attempting to inject private capital into the system 	<ul style="list-style-type: none"> > Contexts where main objective is to enable on-track competition and drive down prices
Example countries			

Cargo competition in Iran is healthy, but operators are suffering from low number of locomotives in the network

Current competitive landscape for Iran – Cargo

Cargo rail – Share of ton kilometers [%, 2005-2016]



Comments

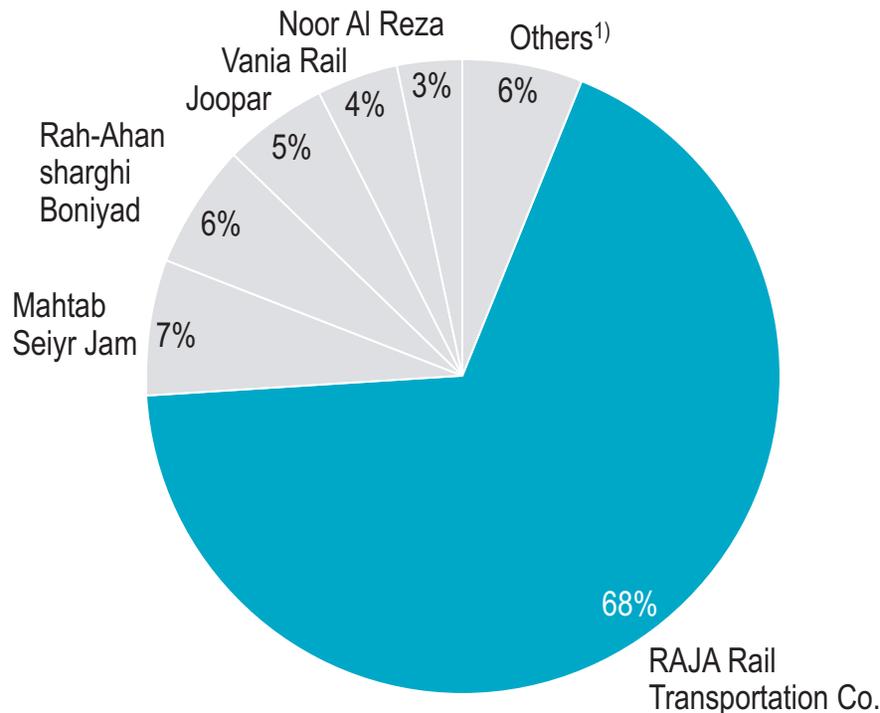
- > An open access model is currently used for cargo operations in Iran
- > Competition for cargo operations in Iran is healthy
- > However, cargo operators are stunted by RAI's ownership of locomotives
 - Overall locomotive capacity is too low, with long wait times
 - There are no timetables for locomotives, making it impossible to plan ahead

Current hybrid model is decreasing competitiveness of rail cargo sector

RAJA is currently the main passenger rail provider, but the market is fragmented, complicating the decision on the right industry structure

Current competitive landscape for Iran – Passenger

Passenger rail – Share of passengers transported [% , 2015-2016]



Comments

- > After being spun off from RAI, RAJA is still responsible for the great majority of passengers transported in Iran
- > Due to the large number of passenger transport companies, quality of travel differs highly with respect to:
 - Travel times
 - Punctuality
 - Modernity of train and travel comfort
- > As a result, it is difficult to properly market the advantages of rail transportation, and rail passenger transport suffers from a poor image

Competitive landscape for passenger transport is too scattered to be efficient

1) Includes Rail Tarabar-e Saba, Raad Tabriz, Rai Seiyar Kosar, Rah-Ahan Haml-o-Naghl, Hastia and Rail Pardaz

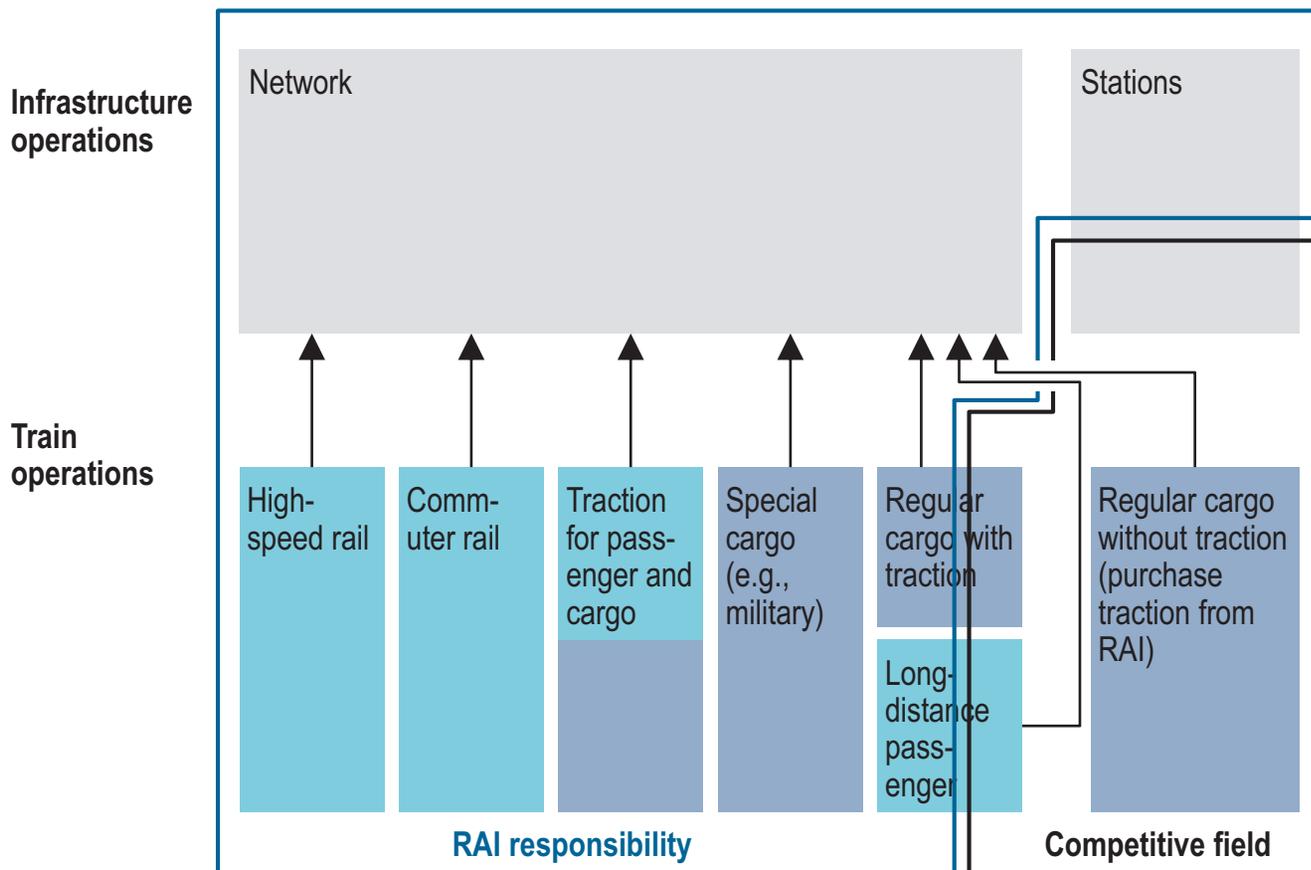
We recommend that Iran Rail move at least partially towards an integrated model

Infrastructure options – Advantages and disadvantages

	Integration	Hybrid model	Separation
Advantages	<ul style="list-style-type: none"> > Network maintenance, extensions and operations managed by one party > Reduced costs and fewer interfaces required > Strong, united company culture > Optimal scheduling and service level 	<ul style="list-style-type: none"> > Avoids pitfalls of extreme models > Low ramp-up costs for RAI > Provides way to quickly inject private capital while maintaining flexibility for future changes 	<ul style="list-style-type: none"> > High performance transparency for stand-alone companies > Allows targeted allocation of subsidies > Positive effect on competition in ideal cases
Disadvantages	<ul style="list-style-type: none"> > Danger of bureaucracy and dependence on single company > Fewer incentives for competition > Limited access of private capital 	<ul style="list-style-type: none"> > Limited (although positive) effect on competition due to large dependency of operators on incumbent > Operation of multiple units not possible (trend towards MUs) 	<ul style="list-style-type: none"> > Rail companies with strong capital base required to increase competition > Complex regulatory environment due to the set-up of separate companies
Meaning for RAI and conclusion	Possible option; degree of integration of infrastructure operations and train operations to be determined	Possible option, but unlikely to bring strong positive change in the railway industry as it is RAI's current model	Not recommended, as it turns RAI into a pure infrastructure provider, and is unlikely to promote competition

Going forward, the private sector will have more weight in operations – RAI to focus on infrastructure, high-speed and commuter rail

Target operational and competitive landscape for Iran



Comments

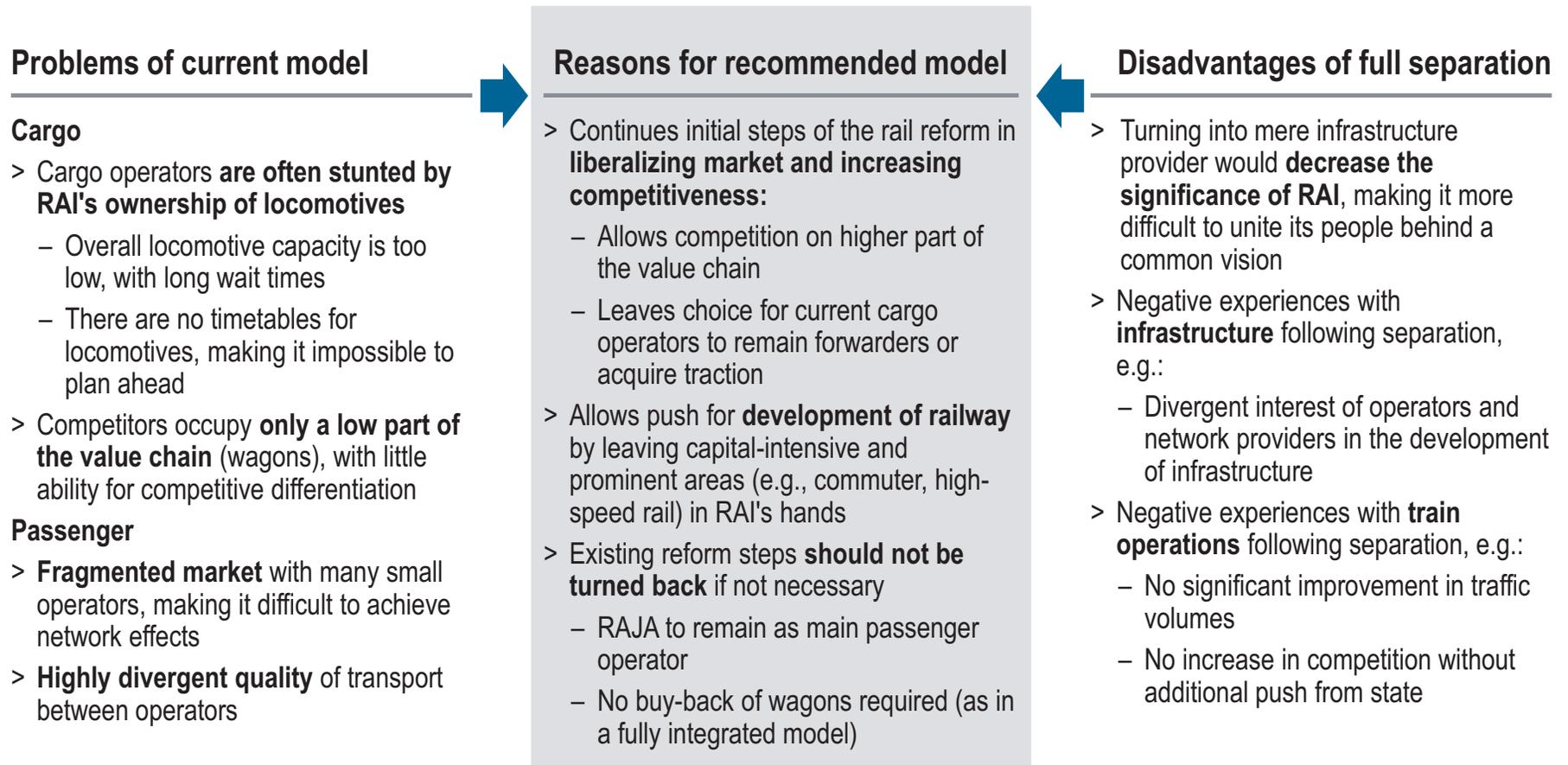
- > RAI will act as infrastructure provider and develop operations that **require large upfront investments** (high-speed rail, commuter rail)
- > In addition, RAI will take the lead on developing **potential new rail businesses** (dry ports, innovative mobility)
- > Regular passenger operations and cargo operations **conducted also by companies other than RAI** (except for special cargo)
- > **Private cargo operators** to have a **choice** between purchasing locomotives or forwarding cargo with RAI's traction (as in current model)

Infrastructure operations
 Passenger operations and traction
 Cargo operations and traction

➔ Access charge payments

The proposed target model avoids operational problems of the current model as well as disadvantages of a fully separated model

Assessment of different target models



We suggest an integrated operational model for passenger business, while leaving multiple competitive options for cargo operators

Operational options for private competitors to RAI

	Full operator	Wagon renters	Forwarders (current model in Iran)
Description	<ul style="list-style-type: none"> > Private operators own both traction and wagons/coaches > Would allow private operators to become full-fledged competitors > However, higher capital base and technical knowledge required to start operations 	<ul style="list-style-type: none"> > Companies specializing in renting out their wagons to industry clients or rail operators > Wagon renters often own specialized wagon for cargo operations (e.g., minerals, chemicals) 	<ul style="list-style-type: none"> > Private operators that only own wagons/coaches > Operators rent traction from different railway company > Not typically practiced in passenger rail settings, but viable option that is used worldwide in specialized cargo
Examples	Numerous passenger new entrants in Europe (e.g., BLS in Switzerland) and most US cargo railways	GATX and VTG Rail  	Transfesa and STVA (both specialized in automotive)  
Conclusion	Recommended for LD passenger operators and as a possible option for cargo operators	Recommended as a possible option for private cargo operators	Recommended as a possible option for private cargo operators

We recommend to quickly move away from the current hybrid model to an integrated passenger model and a flexible operating model in cargo

Key actions required

Action	Description
<p>1 Don't separate infrastructure from operations</p>	<p>A fully separated model is not recommended for Iran due to the importance of a strong railway company and negative international experiences from its implementation (e.g., lack of infrastructure maintenance, neutral effect on operational metrics)</p> 
<p>2 Move away from current form of hybrid model</p>	<p>The currently used hybrid model (in which private operators cannot own traction) leads to operational problems and facilitates competition only on a low part of the value chain, leaving competitors with few possibilities to differentiate themselves</p> 
<p>3 Establish different models for cargo and passenger operations</p>	<p>Cargo and passenger businesses in rail have different requirements (e.g., with regards to required support) and there should be differentiated models of traction ownership between the two</p> 
<p>4 Allow competitive train operations wherever possible</p>	<p>While RAI retains capital-intensive business lines to push modernization of the railway, private operators should have freedom to take over most competitive operations, including long-distance passenger and most cargo operations (with a choice between owning traction or acting as forwarders)</p> 

The third question addresses the different options and timelines for a potential privatization of RAI

Framework for developing target railway structure of Iran

		Privati- zation	Commer- cialization	Libera- lization	Compe- tition
1	Target role split and regulatory responsibilities What is the role of each entity for the railway system and who should take over regulatory responsibility?				
2	Integration of infrastructure and competition What is the degree of integration between infrastructure and operations? What is the right level of competition?				
3	Privatization How can private capital be injected into the railway system, and should RAI target (partial) privatization to do so?				
4	Commercialization and subsidies What degree of commercialization do we envision, which business areas of rail should receive subsidies, and how can they be structured?				

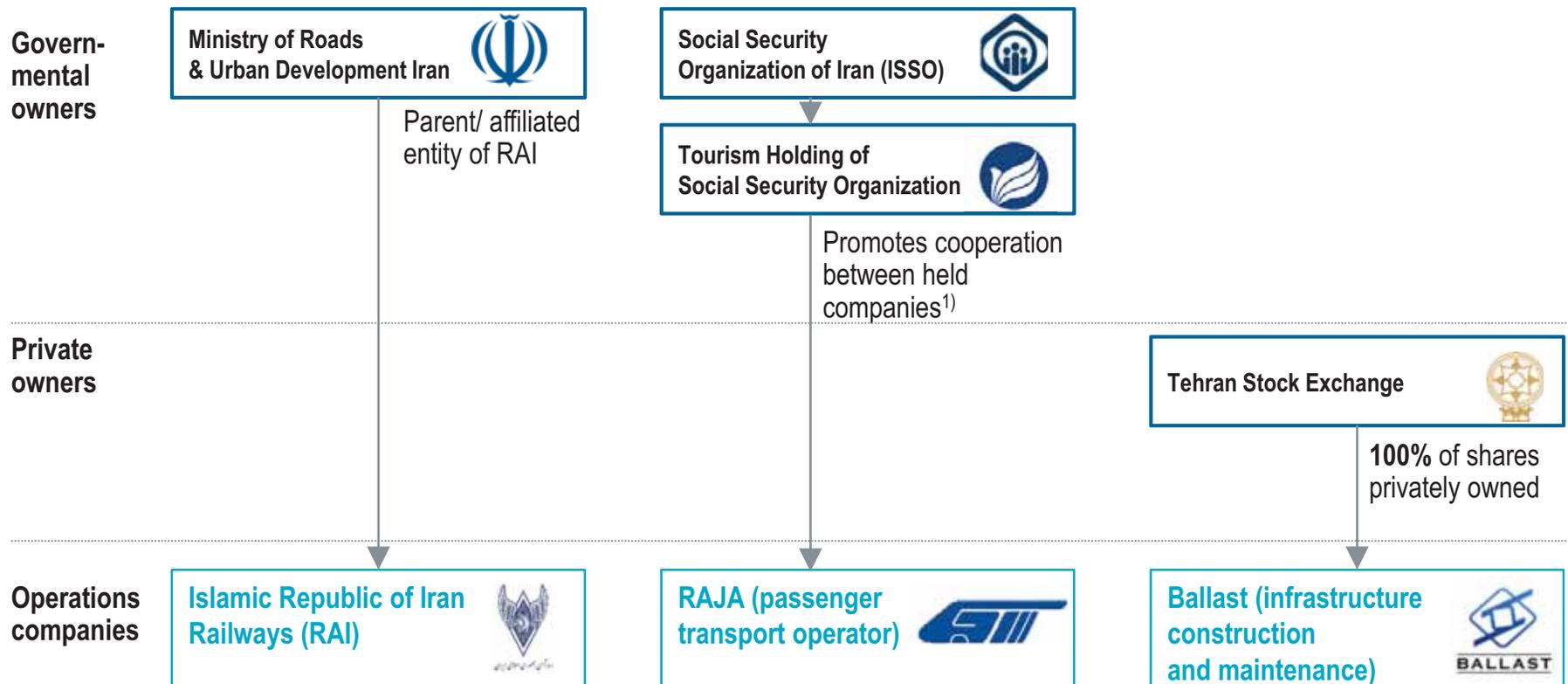
We recommend to aim at increasing the amount of private competition and further privatizing specific functions of RAI

Options for privatization

	Private competition	Outsourcing and spin-off of functions	Full privatization of RAI
Description	<ul style="list-style-type: none"> > Enabling private competitors to participate in new rail sectors or parts of the value chain > Increases competitive pressure and share of wallet of private operators 	<ul style="list-style-type: none"> > Targeted outsourcing of selected business lines > Can be used as measure to inject private capital in generally profitable business areas 	<ul style="list-style-type: none"> > Full privatization of RAI (including operations and infrastructure) and listing on the stock market > In theory highest potential for efficiency gains and competitive pressures > However, difficult to establish in subsidized railway system
Example	<ul style="list-style-type: none"> > Allowing private operators to own traction > Liberalizing areas formerly dominated by RAI 	<ul style="list-style-type: none"> > Building stations through PPP > Outsourcing of commuter rail operations in the future 	<ul style="list-style-type: none"> > Sale of RAI shares on the public stock market
Conclusion	Positive consequence of past actions; expected to improve the position of private players on the value chain	Recommended to implement for selected high-impact functions which can increase the amount of private capital in rail	Not recommended for the time being, as railway industry needs to be developed further first

RAI and RAJA are currently government-owned, along with major infrastructure construction company Ballast

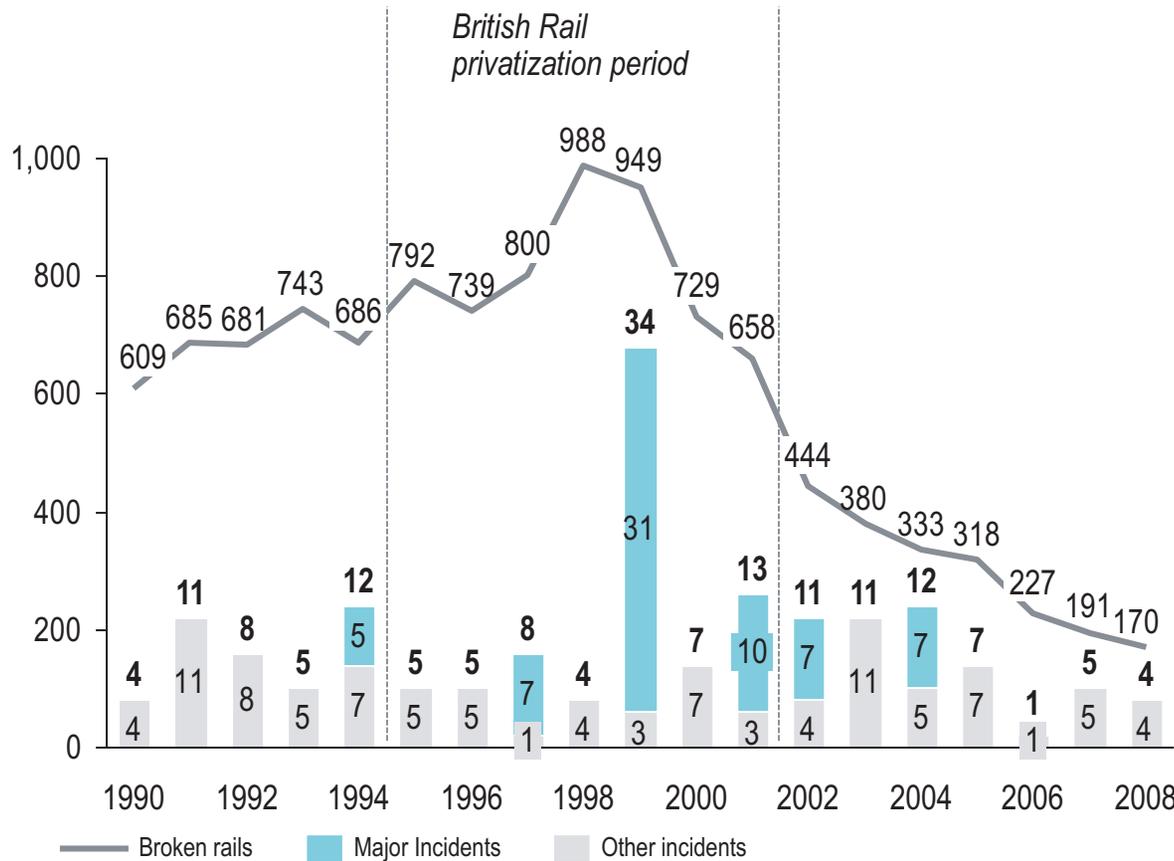
Current legal status of railway companies



1) Held companies include RAJA, Homa Hotel Group, Abadgaran Iran Tourism & Welfare Complex, Anzali Dehkadeh Saheli Residential Complex, Refah Gostar of Social Security Organization, Iran Touring and Tourism Investment Company and Tamin International Travel Tourist Services Company
 Source: Entity websites, Iranian Privatization Organization, RAI, Roland Berger

Britain previously attempted privatization of infrastructure operations with negative results

Results of privatization of British Rail in the UK



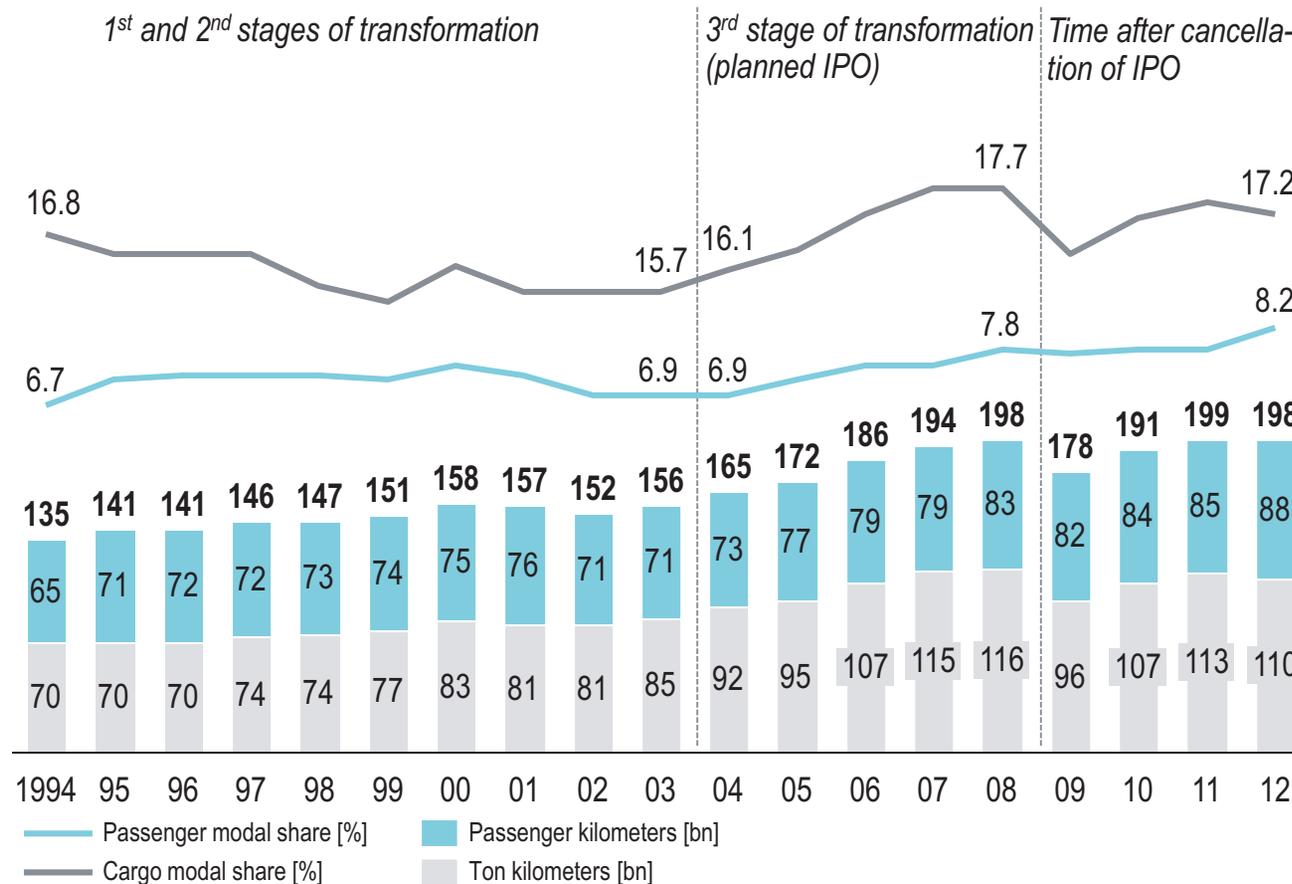
Railtrack's problems

- > Failure to control costs and keep to schedule on major structural projects
- > Lack of investment in rail networks due to the perception that there was not a growing public demand for railway usage, which was later proven false
- > Ongoing public dissatisfaction due to increasingly complex pricing system and four serious accidents post-privatization (e.g., Hatfield and Selby train crashes)
- > Attrition of skilled labor force and increase in use of subcontractors
- > Subsidies nearly doubled between 1994-1997, exceeding pre-privatization levels

Result: Railtrack put back into forced government administration in 2001, before being transferred to Network Rail, a not-for-profit body in charge of rail infrastructure, in 2002

On the other hand, a privatization of operations can be a feasible and powerful tool to mobilize the employee base

Effects of planned privatization at Deutsche Bahn



Comments

- > Deutsche Bahn embarked on a long-term transformation process in 1994
- > From 2004-2009, there were plans for an IPO in which 49% of shares would be sold on the stock market
- > During this time period, EBIT, ptkm and modal shares of passenger and cargo transport increased significantly due to the high motivation of employees
- > Ultimately, privatization efforts were stopped due to the financial crisis
- > Once the objective was dismissed, Deutsche Bahn was not able to continue the increases in performance from the previous years

In addition, RAI should focus on high-impact and low-effort possibilities for privatization for now

Privatization possibilities

	Description	Assessment
 PPP for construction of stations	<ul style="list-style-type: none"> > Building new stations through joint financing by RAI and private investors 	<ul style="list-style-type: none"> > Recommended option; private investors can offset building costs in exchange for land provided by RAI > Stations can be visible lighthouse projects to communicate RAI's transformation to the world
 Leasing of wagons/ locomotives	<ul style="list-style-type: none"> > Sale of wagons and locomotives to other operators > Operating needs to be covered by leased rolling stock 	<ul style="list-style-type: none"> > Optional measure, but should be taken if an opportunity presents itself
 Commuter rail privatization	<ul style="list-style-type: none"> > Offering operations on RAI's commuter rail network to different competitors 	<ul style="list-style-type: none"> > Currently not feasible, as commuter rail is still in early stages > Can be considered as a long-term option (in 10-20 years), once the required investments have been made

Key actions for privatization should aim at allowing further competition and leave full privatization only as long-term option

Key actions required

Action	Description
1 Unite railway behind common vision	For the railway transformation it will be important to unite all employees behind a specific vision – privatization efforts can provide a possibility for such a vision 
2 Allow competition on a more value-adding parts of the value chain	Current cargo operators occupy a low value-adding position on the rail value chain since they are only allowed to own wagons; competition in further areas (e.g., traction) is needed to fully reap the benefits of higher competitive pressure 
3 Privatize partial functions when applicable	Certain functions of RAI can be outsourced or privatized for a high impact on visibility of the transformation program and influx of private capital (e.g., stations built through PPP) 
4 Consider full privatization only in the very long run	At some point in the future, RAI could consider a full privatization to further contribute to the goals of liberalization and competition 

The fourth question addresses the right degree of commercialization and subsidies for the railway system in Iran

Framework for developing target railway structure of Iran

		Privatization	Commercialization	Liberalization	Competition
1	Target role split and regulatory responsibilities What is the role of each entity for the railway system and who should take over regulatory responsibility?				
2	Integration of infrastructure and competition What is the degree of integration between infrastructure and operations? What is the right level of competition?				
3	Privatization How can private capital be injected into the railway system, and should RAI target (partial) privatization to do so?				
4	Commercialization and subsidies What degree of commercialization do we envision, which business areas of rail should receive subsidies, and how can they be structured?				

There are different financial sustainability strategies with a different degree of commercial orientation exist

Financial sustainability strategies

Entity	Financial sustainability definition & strategies	Degree of commercial orientation	
	<ul style="list-style-type: none"> > "Primary objective in capital management is to maintain a capital base and commensurate with the group's scale of operations to sustain future development of the business and to provide adequate returns to shareholders" > "Intention to migrate the rail business to an asset-light model to facilitate the future expansion of the rapid transit system network in a financially sustainable manner" 		Capital Market
	<ul style="list-style-type: none"> > "We use a number of proven financing models such as the rail plus property model, public-private partnerships and operating franchises to support delivery of high quality railway services over the long term" 		
	<ul style="list-style-type: none"> > "We will use lifecycle costing and value optimization techniques and models to support our asset management decision making" > "Recover the asset condition to a 'steady state' position whereby a lower level of annual renewal is required to sustain a consistent asset condition" 		Total Cost Profitability
	<ul style="list-style-type: none"> > "BVG defines financial sustainability as main pillar of its claim for sustainability" 		
	<ul style="list-style-type: none"> > "Building a better capital program via alternative delivery methods (increase design-build contracts and private-sector partnering), component replacement (target investments to quickly reach more locations) and better business partners (coordinate with our business partners and labor unions to achieve better results)" 		Operational Profitability

In railway systems around the world, infrastructure and passenger operations are often subsidised

Recommended subsidies per rail business area

	Reasoning for subsidies	Example countries with subsidies
Infrastructure operations, maintenance and renewal	<ul style="list-style-type: none"> > Subsidies often necessary to incentivize construction and maintenance, especially if train operations are competitive > In the UK for example, 97% of government subsidies for rail in 2014 were designated to Network Rail for infrastructure 	
Passenger operations – Long-distance	<ul style="list-style-type: none"> > Subsidies may be necessary depending on the market environment, but less likely if there is a large incumbent > For example, Deutsche Bahn has a share of 99% in long-distance passenger rail and receives no subsidies in that business 	
Passenger operations - Commuter	<ul style="list-style-type: none"> > Commuter rail operations almost never profitable due to low seat load factors > Subsidies often necessary if commuter rail operations are desired (e.g., to support mobility or economic development) 	
Cargo operations	<ul style="list-style-type: none"> > Subsidies sometimes given to support cargo operations in immature markets or to promote intermodal share of rail > However, cargo operations often financially feasible even without subsidies, especially over long distances (e.g., Union Pacific in USA with EBIT of EUR 7.5bn in 2015 without subsidies) 	

We recommend that all rail areas except for cargo be subsidized in Iran, with subsidies tied to pre-determined KPIs

Target direct subsidies for Iran

	Infrastructure	Long-distance passenger	Commuter rail	Cargo
Effect on rail in Iran	<ul style="list-style-type: none"> > Allows extension of network and increases in network density and efficiency, especially on less profitable routes > Larger network supports possibility of franchise model for operations and greater competition 	<ul style="list-style-type: none"> > Potential to improve passenger experience, but right subsidy structure needed > However, achieving best network effect would require a single long-distance operator – in that case, subsidies may not be necessary 	<ul style="list-style-type: none"> > Commuter rail in Iran likely only possible with subsidies > Establishment of commuter rail has potential for great socio-economic benefits (traffic safety, environmental, mobility of population, etc.) 	<ul style="list-style-type: none"> > Problems reported by cargo operators often tied to traction and infrastructure issues, which would not be solved by cargo subsidies > Cargo would already be indirectly subsidized by infrastructure subsidies
Recommendation for RAI	Recommended in form of network performance contract	Recommended , with regular checks to see if subsidies still necessary	Recommended , as commuter rail is unlikely to be profitable on its own	Direct subsidies not recommended ; cargo profitable without them

Financing and operation/quality of infrastructure are settled by network performance contract – Example Switzerland

Mechanism of network performance contract



Quality of infrastructure

Existing infrastructure

- > Intercity and urban agglomeration network
- > Regional networks
- > Passenger stations
- > Freight transfer stations
- > Marshaling and shunting yards
- > Power supply units



SBB guarantees provision + operation of infrastructure at appropriate quality level and reports this

Federal government¹⁾ provides funds for infrastructure and controls fulfilment of contract

- ➔ Transparency on targets, quality and funds provided by government
- ➔ Precondition for realizing savings for the government

1) Federal transportation office (Bundesamt für Verkehr = BAV)

Financial requirement/sources

Requirement	Source
Extension	Fed. gov. (infrastructure contribution)
Replacement, maintenance	
Operations	
	SBB

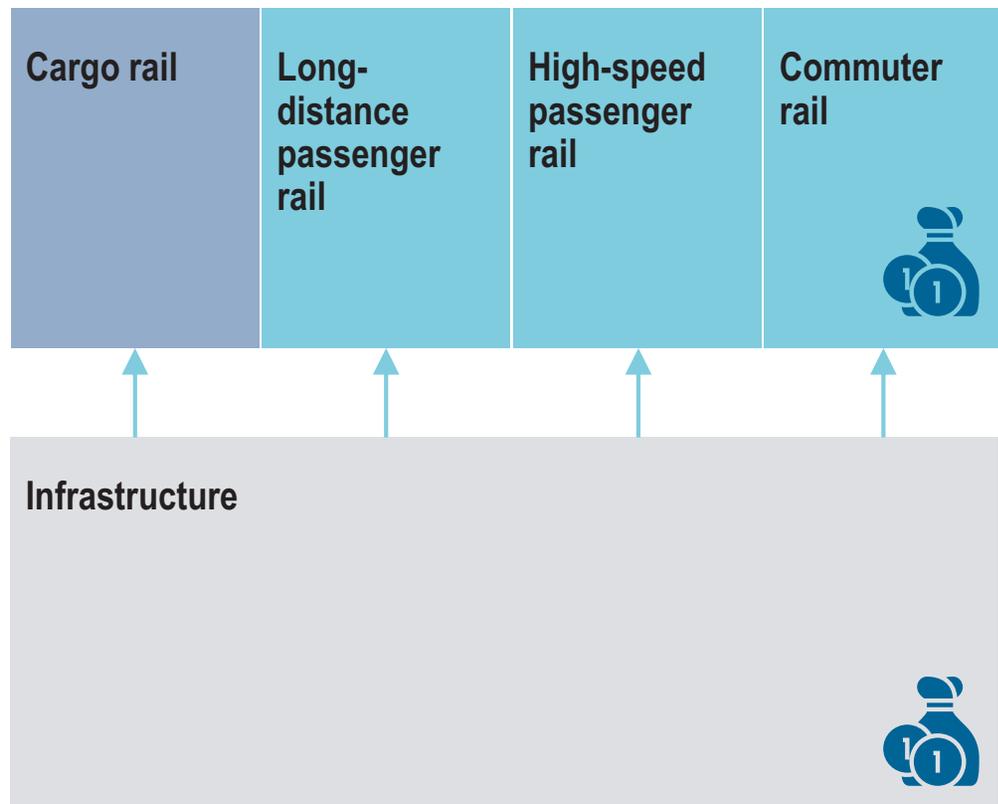
Detailed subsidy levels will have to be set according to the selected strategy

Key actions required

Action	Description	
1 Create performance contracts to incentivize efficiency	Current subsidy schemes for railway should be modelled after performance contracts from other countries, which tie subsidies to efficiency and require that the railway companies fulfil certain efficiency indicators and KPIs	
2 Provide subsidies to passenger operations	Passenger rail (including commuter rail) are unprofitable businesses in most cases and will have to be supported by subsidies if Iran aims to increase the passenger modal shares	
3 Remove subsidies from cargo business	Since Iran fulfils the requirements for profitable cargo rail (e.g., long distances) and infrastructure subsidies also indirectly subsidize cargo, we recommend not to set subsidies for cargo in order to create a more competitive environment and leave more resources for passenger rail	
4 Set subsidy levels according to selected strategy	Subsidy levels for the railway system will depend on the amount of investments required by the chosen strategy , and should be set accordingly	

A mixture of direct subsidies and indirect subsidies will be required to make rail a competitive transport mode

Target subsidy system for Iranian railway industry



Are direct subsidies required?

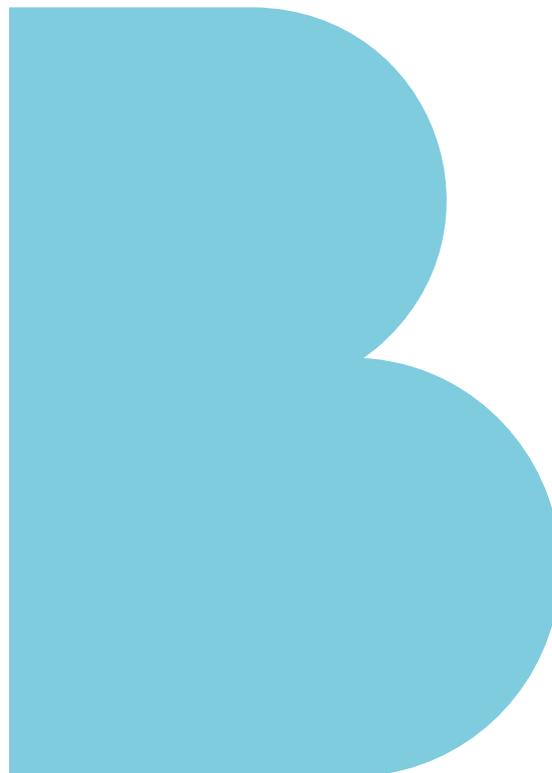
- > **If track access charges are sufficiently low** there is **no need for direct subsidies** of rail cargo, long-distance passenger and high speed (further research required)
- > **Direct subsidies required for commuter rail** (unlikely to be profitable without direct subsidies), to be granted via performance contracts
- > Subsidies for infrastructure **granted via network performance contract enable lower track access charges** (especially on less profitable routes), and benefit both cargo and passenger indirectly
- > **Network performance contract recommended** to incentivize efficiency

Indirect subsidization
 Direct subsidies recommended

Summary of our key recommendations along the four guiding questions

Guiding question	Key recommendations
<p>1 Target role split and regulatory responsibilities</p>	<ul style="list-style-type: none"> > Create separate regulatory authority to enable more competitive rail environment and stronger business mindset within RAI > Create rail environment in which all involved entities (led by strong RAI CEO) take shared responsibility for the continued development of the Iranian railway system
<p>2 Integration of infrastructure and competition</p>	<ul style="list-style-type: none"> > Avoid separation of infrastructure from operations due to the importance of a strong railway company and negative international experiences > Allow competitive train operations wherever possible, while retaining capital-intensive business lines within RAI
<p>3 Privatization</p>	<ul style="list-style-type: none"> > Continue past efforts in allowing competition on higher parts of the value chain and outsourcing/ spinning off partial functions of RAI > Leave possible full privatization of RAI for the long-term; in the interim, ensure that RAI has a common vision between which to unite the employee base
<p>4 Commercialization and subsidies</p>	<ul style="list-style-type: none"> > Use infrastructure subsidies (with network performance contracts) to indirectly support all areas of rail > Subsidize commuter rail directly (e.g., based on train kilometer) to gain environmental benefits

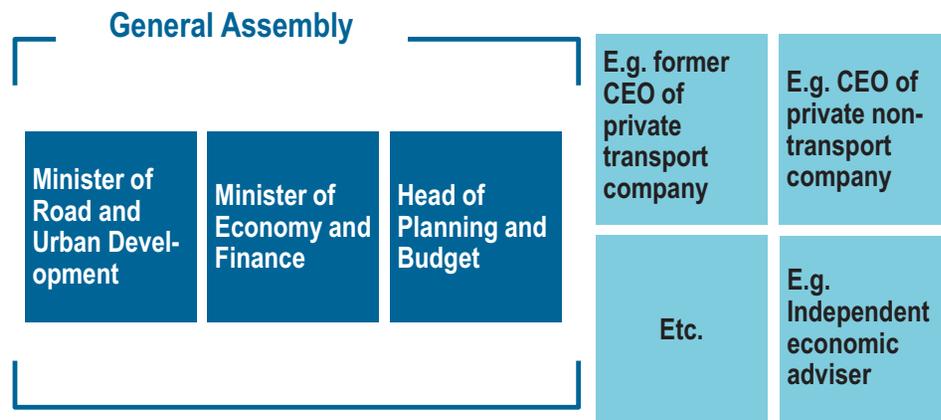
A.4 Definition of organizational structure for RAI



We recommend three different bodies to take over the governance responsibilities of RAI

RAI governance structure

RAI Advisory Board (potential members)



Main responsibilities

General Assembly

- > Set RAI's overall strategy, approve budget, P&L and balance sheet
- > Select RAI CEO, appoint members of advisory board
- > Approve changes to company bylaws

Advisory Board

- > Discuss all decisions to be taken by General Assembly
- > Supervised by the General Assembly
- > The secretariat should be located where the secretariat of the General Assembly is today
- > List of criteria for selecting members: Active or former Iranian or International business leaders, no conflict of interest, impeccable standing and reputation, excellent track record in managing their companies, experience that adds value for RAI

RAI Managing Board (potential members)



Existing member New/changed member

Managing Board

- > Execute GA decisions
- > Propose plans to reach strategic targets , take care of day-to-day company operations
- > General assembly selects CEO and then approves managing board members by the CEO proposal
- > The CEO can suggest the board dismissal to the GA and then the GA has to approve it

The new advisory board of RAI should be implemented to drive the transformation towards a business-oriented organization

Recommendation for General Assembly

General Assembly members



Minister of Road and Urban Development

Minister of Economy and Finance

Head of Planning and Budget

Additional advisory board members (illustrative examples)



E.g. former CEO of private transport company

E.g. CEO of private non-transport company

E.g. Independent economic adviser

Etc.

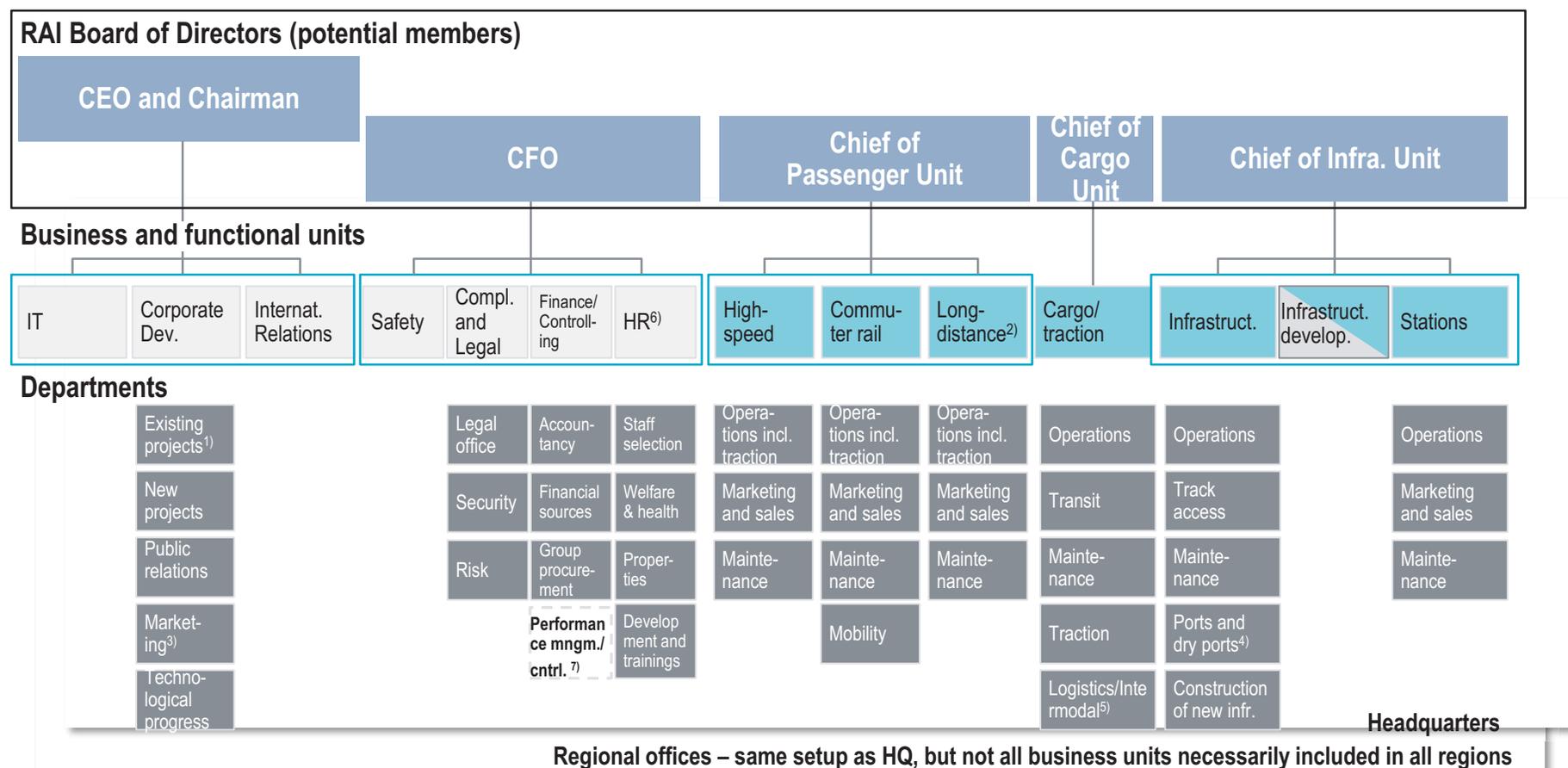
Main tasks

- > The General Assembly is the main governance body of RAI, consisting of three active politicians
- > The main function of the advisory board is to bring in commercial and business perspective into governance by discussing the GA's decisions on RAI, e.g.:
 - Corporate strategies proposed by the CEO
 - Budget/ P&L presented by the CFO
 - Key investment decisions
 - General governance tasks (see following page)
- > Decisions are discussed in advisory board meeting, but taken with finality at GA meetings

To fulfil its new scope of services RAI needs to reorganize its governance and organizational structure

RAI recommended organization structure

Reporting lines only – Not final legal structure for RAI



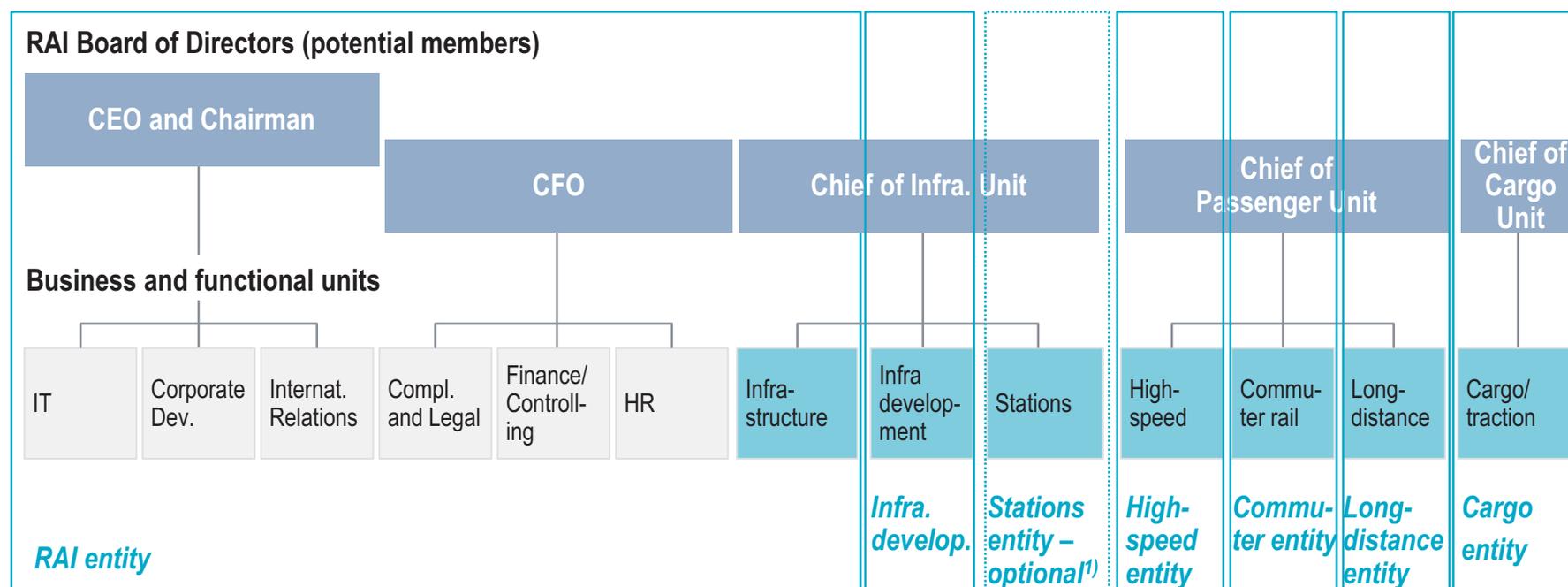
1) Includes safety improvement and electrification; 2) Responsible for passenger sales; Re-integration of RAJA recommended to create strong rail organization; otherwise, long-distance unit to be newly built up; 3) Cargo only for interim phase 4) Together with cargo unit 5) To be split later 6) As unions do not play such a major role in Iran we do not advise to have a separate Head of HR like at DB 7) Should also be established in all BU

Functional units
 Business units
 Departments

According to RAI's decision infrastructure entity should be the RAI group parent company

RAI legal entities structure (departments not shown)

RAI decision



- > Org. structure proposed by RAI have several inefficiencies
 - Infrastructure entity needs to be neutral, in other cases private railways will complain
 - Conflict of interest is higher in this case

1) Recommended mainly if JVs with private investors are pursued for stations

Business lines take care of operational rail tasks and are supported by the functional units

Main tasks of functions and business units

1 Functions (e.g., HR, IT)

Efficient management support through controlling and service functions

- > Realization of synergies in an integrated rail system through coordination of the work between divisions
- > Escalation responsibility with unbiased holding-perspective in case of divergent interests between different business lines
- > Reliable provision of services and relief of business lines
- > Controlling of firm-wide administrative aspects (e.g., salaries of employees across different departments)

2 Business units (e.g., high-speed, cargo)

Market and customer proximity in business lines and divisions

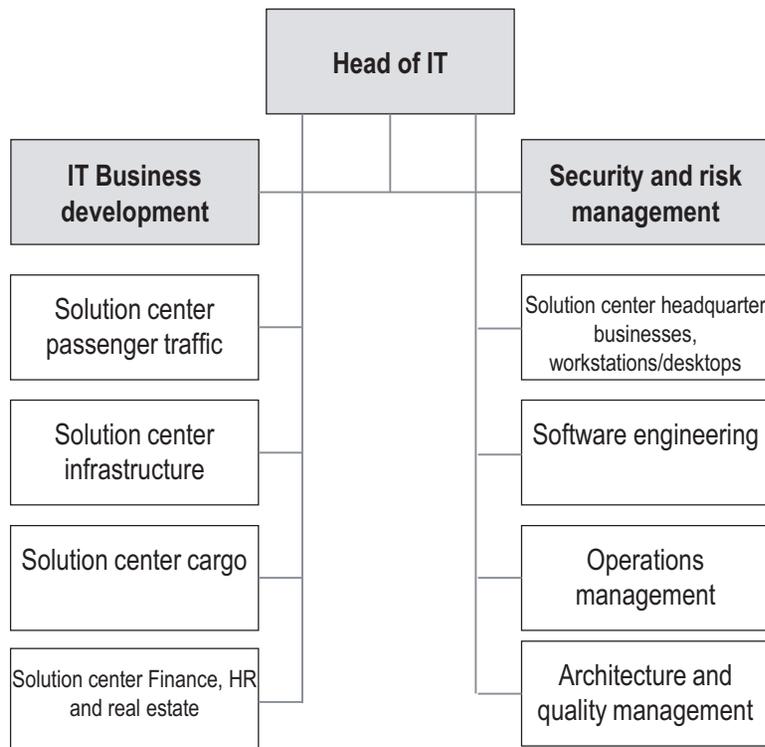
- > Realization of business with P&L responsibility and all related tasks:
 - Sales and customer contact
 - Operations
 - Etc.
 - Separate business divisions for different areas of rail (e.g., high-speed, cargo)



IT department within the organization is responsible for the information technology and computer systems

IT department roles and responsibilities

Example of rail company IT department organization structure (2 level)



IT Department roles and responsibilities

- > Information technology strategy development and implementation
- > Information systems and Business Strategy alignment
- > Information and Knowledge Management
- > Risk Management
- > IT Transformation need identification
- > Service Level Management
- > IT Architecture Design
- > Application Design
- > Watching of new technology
- > Design and Development of IT systems
- > User Support & Help desk
- > Change Support
- > Problem Management
- > Information Security
- > Education and Training
- > Purchasing

Functional units take care of some of the core processes outlining RAI's strategic direction

Key functional processes of an integrated rail system

Process and process owner	Main content
Strategy development (Corporate development and CEO)	<ul style="list-style-type: none"> > Determination of business portfolio and main strategic focus > Developing road to revenue and profit goals > Definition of target markets
Mid-term financial plan and budgeting (CFO)	<ul style="list-style-type: none"> > Traction and station requirements > Migration planning > Business and financial planning
Timetable development (Corporate development and CEO)	<ul style="list-style-type: none"> > Prioritization of investment and expansion plans > Timing for introduction of new technologies > Timing of procurement financing
Development of investment plan (CEO and CFO)	<ul style="list-style-type: none"> > Description of investment projects > Financial planning and financing concepts > Timeline and milestone planning

> Value chains of different rail divisions **differ from each other** with different revenue sources

> However, value added of holding company lies in **coordinating targets** to achieve optimum results for entire company

> Certain key processes with **effect on all business units**

We recommend establishing a group marketing function for RAI during the build-up phase

Group marketing function

Usual group marketing role

- > Generally group marketing only with limited role in organization, including for example:
 - Decisions on branding of organization
 - Realization of synergies of integrated railway across business units

> Example DB: Marketing located in separate business units, group marketing exists as a lean and weak unit mainly for branding responsibilities



> Example SNCF, SBB: no group marketing within organization



Special situation of RAI and recommendation

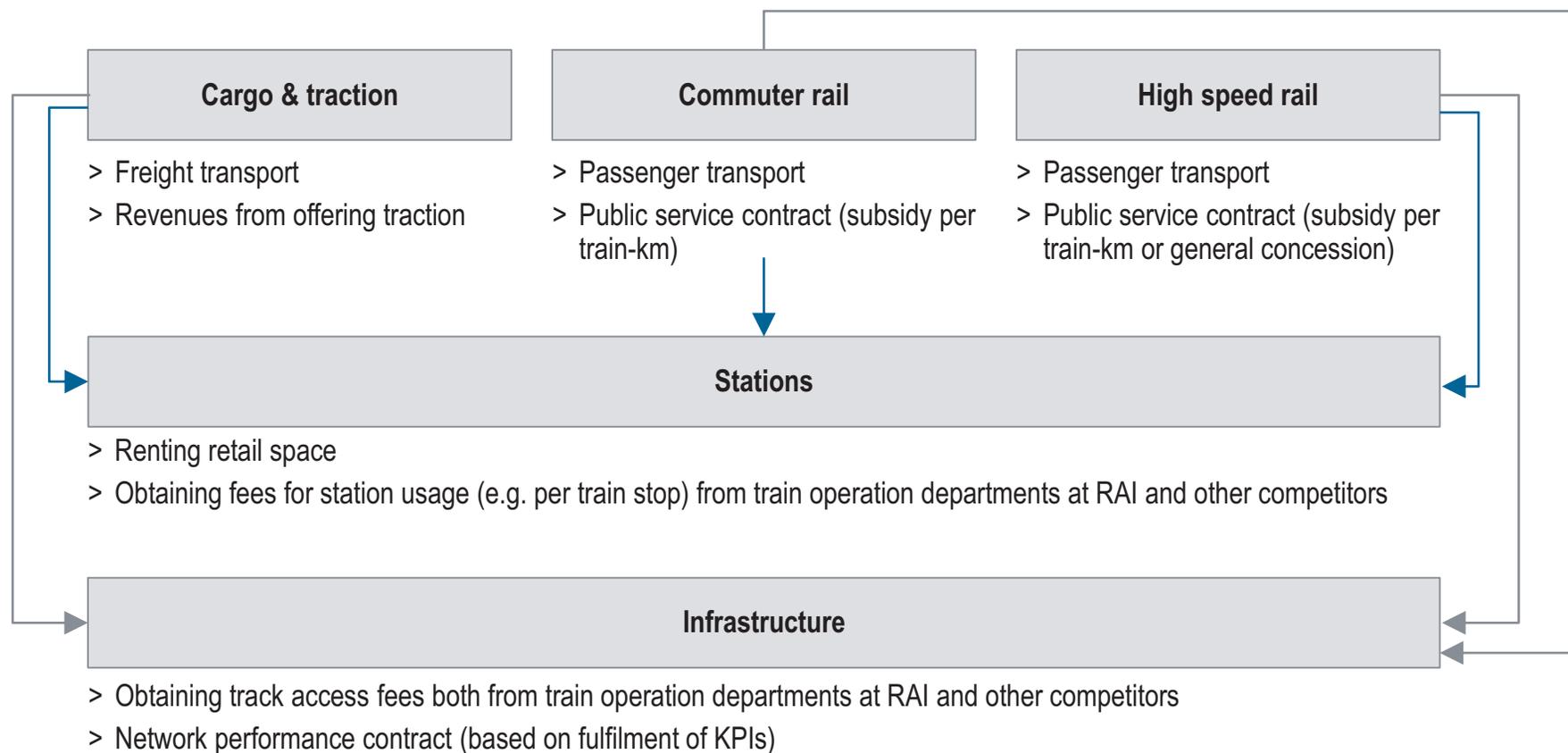
- > Unique situation of marketing in Iran due to the following factors:
 - Weak marketing of private cargo operators and negative experiences in delegating marketing activities to private cargo
 - Marketing unit for the whole system needed

Recommendation:

- > Until all private players have established own strong marketing (incl. RAI cargo business itself), establish group marketing within RAI
- > Gradually make marketing group leaner and eventually dissolve in the separate departments within entities

In the new setup, business units will partially depend on each other for their revenue streams

Revenue sources of the business units



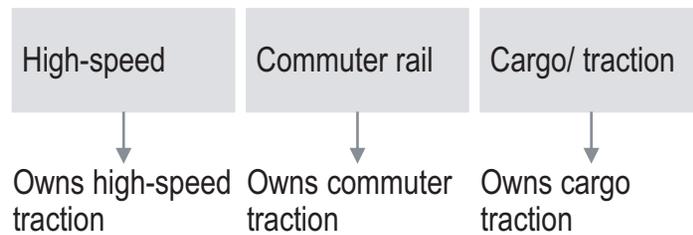
—▶ Track access charges —▶ Stations fees

Business units will be responsible for their own traction and maintenance of it

Divisionalization of traction and depots

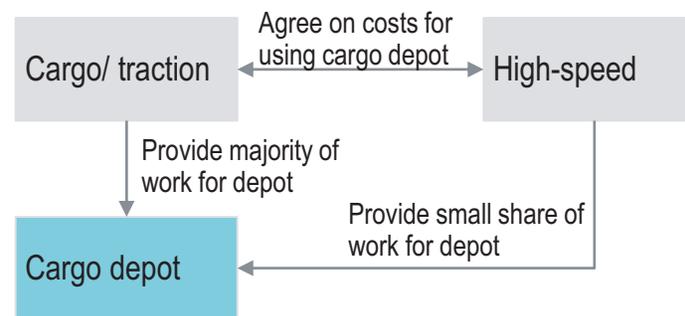
Illustrative

Traction



- > Traction eventually to be **located in each specific business unit** (e.g., cargo traction within cargo business unit)
- > However, possible solution **for interim phase**: traction mainly within cargo unit, with some contingent given to other units, and increased as other units are built up
- > All business units are "**entities in charge of maintenance**" responsible for the maintenance of their own rolling stock (either in-house or through outsourcing)

Depots



- > Divisionalization of depots depending **on majority principle to ensure synergies**
 - Unit with most work in the depot receives ownership of depot
 - Services in depot are then sold to other units (on cost transfer basis or internal service agreements)
- > In the long run, depots to specialize in certain types of traction

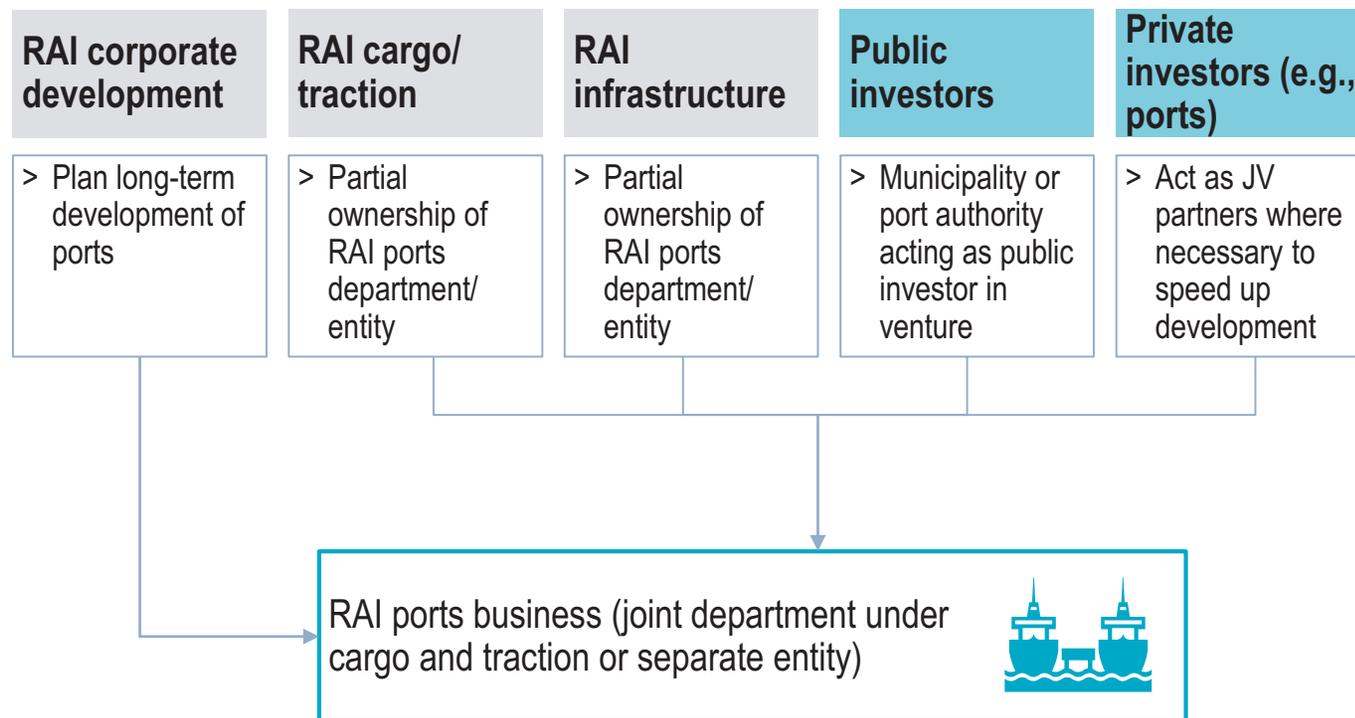
Comments

- > System similar to "essential facility doctrine" recommended to facilitate competition
 - Essential facilities (e.g., depots, sidings for train at night) must be provided by incumbent operator
 - Doctrine was included for example in Germany's 4th railway package to stimulate competition

Connection to ports should be managed mainly by the cargo and infrastructure departments at RAI

Responsibility for ports

Responsibility for dry and sea ports



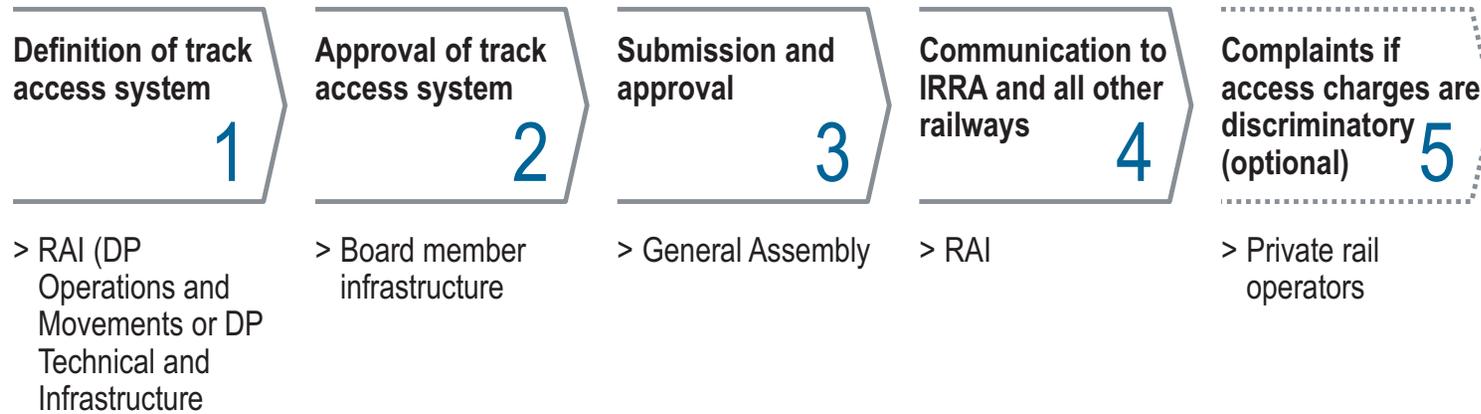
Comments

- > Long term development for ports to be planned by corporate development at RAI together with cargo and infrastructure departments
- > Strategic partnerships to be entered in specific areas (for example, alliances with sea ports)
- > Dry ports potentially possible as JVs between cargo and infrastructure without involving other players

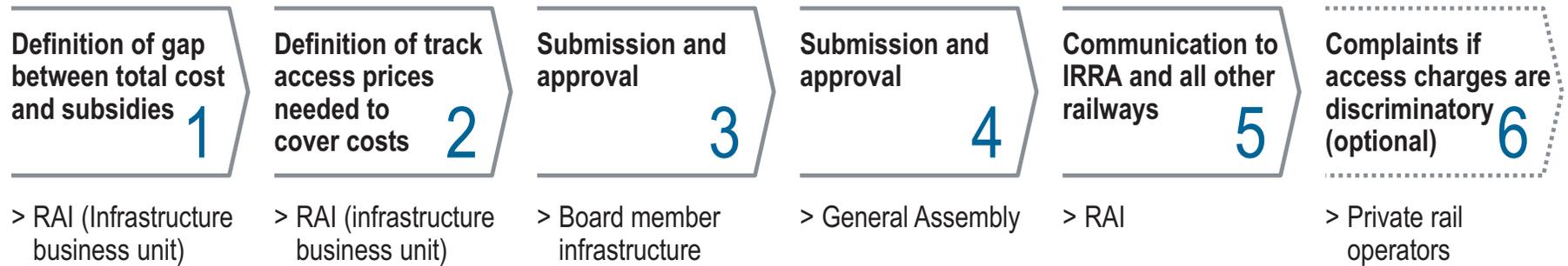
Process for setting track access charges is driven mainly by RAI's infrastructure business unit

Process for setting track access charges

Process of setting access charges (should be stable and unchanged for 5-10 years at a time)



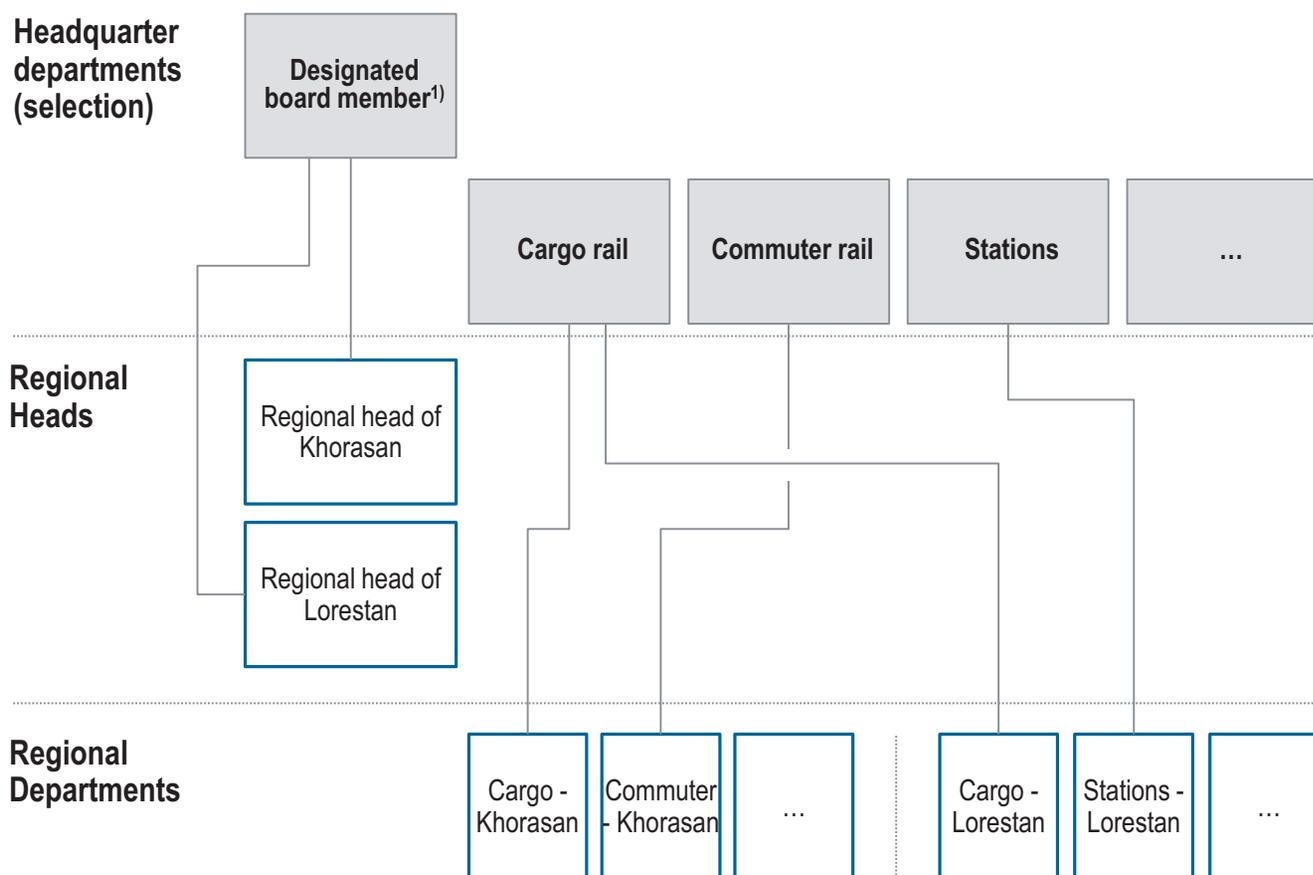
Levels (can be changed more frequently, but not every year)



Regional department structures match the HQ set-up, but not all regional departments must include all departments

Example regional organization – Khorasan and Lorestan

Illustrative

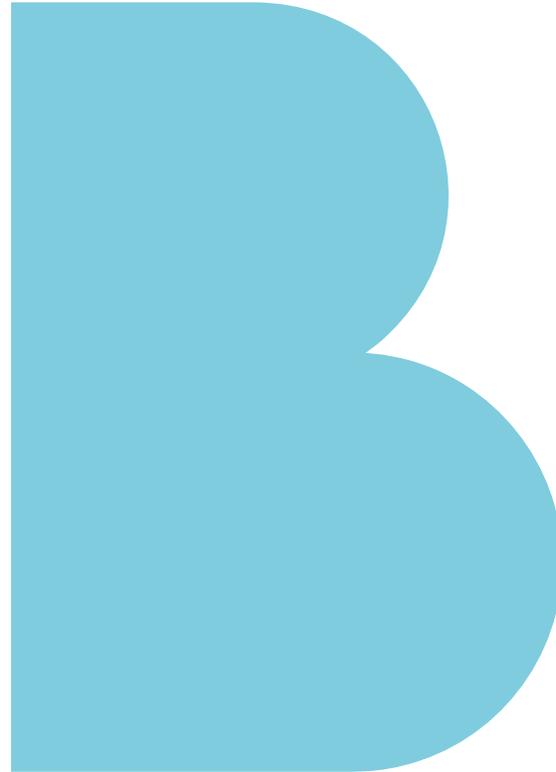


Description of main role

- > Operational management of regions (including decision on which departments are needed in which regions)
- > Supervisory function of one designated board member to whom all regional heads report
- > Representation of RAI in the region towards local politicians, mayors, etc.
- > Organization of monthly meetings of all regional Business Unit representatives to coordinate activities
- > Organization of real estate and facility management
- > Conduct regionally relevant business
- > Not all regions necessarily contain all business lines

1) Either CEO or Chief of Infrastructure Unit (CEO recommended during the transition phase)

A.5 Structure implementation approach



All external transformation activities are expected to be feasible, though some new legislation will be required

Key changes required and legal challenges

Preliminary

Initiatives	Description	Legal assessment/ roadblocks	Next action and responsible
1 Create separate regulator	Separation of regulatory responsibilities from RAI through establishment of separate regulatory body	Scope of regulator (and interface with competition council) needs to be clarified in new legislation to be passed by Parliament	Ministry of Roads and Urban Development to prepare proposal for Parliament to split regulatory activities from RAI
2 Create regulatory arbitration council	Establishment of regulatory arbitration council to allow both RAI and private operators to file complaints against regulatory decisions	Scope of regulatory arbitration council to be clarified in new legislation passed by Parliament (either jointly with legislation on regulator or separately)	Ministry to prepare proposal for Parliament following discussion with potential arbitration council members
3 Establish separate Rail Department	New Rail Department to be established as part of Ministry of Roads and Urban Development to develop rail-specific transport policy	Separate rail department can be established through decision of Ministry of Roads and Urban Development	Ministry to take decision on new Rail Department following discussion with RAI
4 Transfer suitable employees to Rail Department and regulator	Current RAI employees working on regulatory or policy topics to be transferred to new entities	Transfer of employees legally feasible in general, although review of contracts required in certain cases	Development & Management of Resources to create suggestion on possible employee transfers

All internal transformation activities are expected to be within RAI's scope, with no legal changes required

Key changes required and legal challenges

Preliminary

Initiatives	Description	Legal assessment/roadblocks	Next step and responsible
1 Establish advisory board for RAI	Addition of advisory board as additional governance structure within RAI	Legal change only necessary to give advisory board decision powers (not currently planned)	> General Assembly of RAI to take decision on extended advisory board
2 Rearrange roles of Board of Directors	Introduce dual role of CEO as Chairman and select RAI employees who act as members of the BoD	Only General Assembly agreement required	> Board of Directors prepares General Assembly resolution
3 Reorganize RAI departments	Merge existing departments and introduce new ones as required by planned re-organization (e.g. for construction of infrastructure)	Only General Assembly agreement required	> Board of Directors prepares General Assembly resolution
4 Transfer employees into new roles	Transfer of existing employees into new departments at RAI or new entities	No legal roadblocks, but in-depth contractual review required for specific cases	> Deputy Dev. and Mgmt. of Resources to decide on transfer of employees

All internal transformation activities are expected to be within RAI's scope, with no legal changes required

Key changes required and legal challenges

Preliminary

Initiatives	Description	Legal assessment/roadblocks	Next step and responsible
5 Establish new railway activities	Introduce departments and processes for new business areas of RAI (e.g., high-speed)	Only General Assembly agreement required	Board of Directors prepares General Assembly resolution
6 Re-arrange regional organization	Decrease role of regional heads and establish reporting lines to HQ depts.	Only General Assembly agreement required	Board of Directors prepares General Assembly resolution
7 Introduce track access regime	Develop track access regime for private players in all parts of the rail market	N/A	Deputy Operations and Movement develops suggestion for BoD
8 Prepare controlling and reporting	Detailed development of reporting lines for newly developed organization	Only General Assembly agreement required	Board of Directors prepares General Assembly resolution
9 Establish Network Perf. Contract	Design of network performance contracts together with government entities	N/A	Board of Directors to discuss KPIs with Management and Planning Org. of Iran

Suggestion for initial transfer matrix (1/4)

Preliminary

		Workforce has relevant expertise for:		
Department		RAI after reform	Rail Depart.	IRRA
Dev. & Mgmt. of Resources	HR & Organizations	Human resources		
	Equipping Financial Sources	Finance/ Controlling		
	Welfare and Health	Human resources		
	Finance & Properties	Finance/ Controlling		
	Procurement and Logistics	TBD		
	Project of Organizing Apartments	Human resources		
Fleet Affairs	Wagons	Operations incl. traction ¹⁾		
	Traction	Operations incl. traction ¹⁾		
	Engineering & Supervision of Fleet Bureau	Operations incl. traction ¹⁾		 Safety or technical regulation
	Passenger wagons project unit	Operations incl. traction (passenger)		
	General Department Locomotive rebuilding (KARAJ)	Operations incl. traction ¹⁾		

¹⁾ In either of the train operations business units, depending on employee's competencies

Suggestion for initial transfer matrix (2/4)

Preliminary

Workforce has relevant expertise for:

Department	RAI after reform	Rail Depart.	IRRA
Technical & Infrastructure	Track and Technical Structures		✓ Safety/technical
	Communication and Electric Signaling		✓ Safety/technical
	Buildings and Installations		✓ Safety/technical
	Engineering & Infrastructure Installations		✓ Safety/technical
	Municipality of Tehran site project unit		
Planning and Economy of Transportation	Planning & Budget Bureau	✓	
	International Affairs Bureau	International relations	✓ Network
	Communications & IT Bureau	IT	
	Training and Research Center	HR	
	Investment & Economy of Transport	Corporate Development	

Suggestion for initial transfer matrix (3/4)

Preliminary

		Workforce has relevant expertise for:		
Department		RAI after reform	Rail Depart.	IRRA
Operation & Movement	Project of Intl. Commerce (Intl. Transit)	Corporate Development/Transit		
	Movement	Infrastructure		
	Commercial and Marketing	Group Marketing/Marketing and sales		
	Station Services	Operations/ Maintenance (Stations)		
Passenger Affairs	Passenger Planning and Supervision	Operations/ Maintenance (Passenger) ²⁾		
	Project Management of Commuter Trains	Operations/ Maintenance (Commuter)		
	Security	Security		
	Performance Management Bureau	HR		
	Legal Office	Legal Office		

1) Exact department (e.g., cargo, passenger) depending on competencies of employee; 2) High-speed, commuter or long-distance depending on competencies of employee

Suggestion for initial transfer matrix (4/4)

Preliminary

Workforce has relevant expertise for:

Department	RAI after reform	Rail Depart.	IRRA
Dry port project	Ports and dry ports (Infrastructure)		
Safety and Supervision of Network	Operations/Maintenance (Infrastructure)		✓ Safety/Network
High speed trains project	High-speed		
Project of planning and safety assurance	Operations/Maintenance ¹⁾		✓ Safety
General services of central building project unit	TBD		
Project of electrification of the routes	Infrastructure development		
Communication office	Public Relations (Corporate Development)		
Comptroller of Investment projects	Financial Sources (Finance/Controlling)		
President's Office	Corporate Development	✓	
Staff Selection Office	Staff Selection (HR)		

1) Exact department (e.g., cargo, passenger) depending on competencies of employee

To aid the transition from the current railways structure we have developed job descriptions for the most relevant new functions

Example job description

Illustrative



Position overview	
Job title	CFO
Direct supervisor	Board of RAI
Date prepared/revised	June 2017
General goals as member of the management board	<ul style="list-style-type: none"> Contribute to RAI's financial success and long-term development by setting the financial targets together with CEO to achieve goals set by General Assembly Participate in key business decisions regarding company strategy Ensure smooth and efficient processes and structures in the entire finance department (including Controlling)
Division's line specific goals	<ul style="list-style-type: none"> Ensure a consistent and integrated approach in budget planning, use of tax instruments and assessment of chances and risks across the organization Ensure close collaboration of RAI with the auditor and that financial decisions taken by the General Assembly are implemented Ensure correctness of accounting and bookkeeping methods across all divisions in the RAI holding and its subsidiaries Represent the interests of RAI both externally and internally (in coordination with the CEO) Coordinate financial regulations with the government Ensure that financing of RAI activities is feasible Implement efficient risk management system

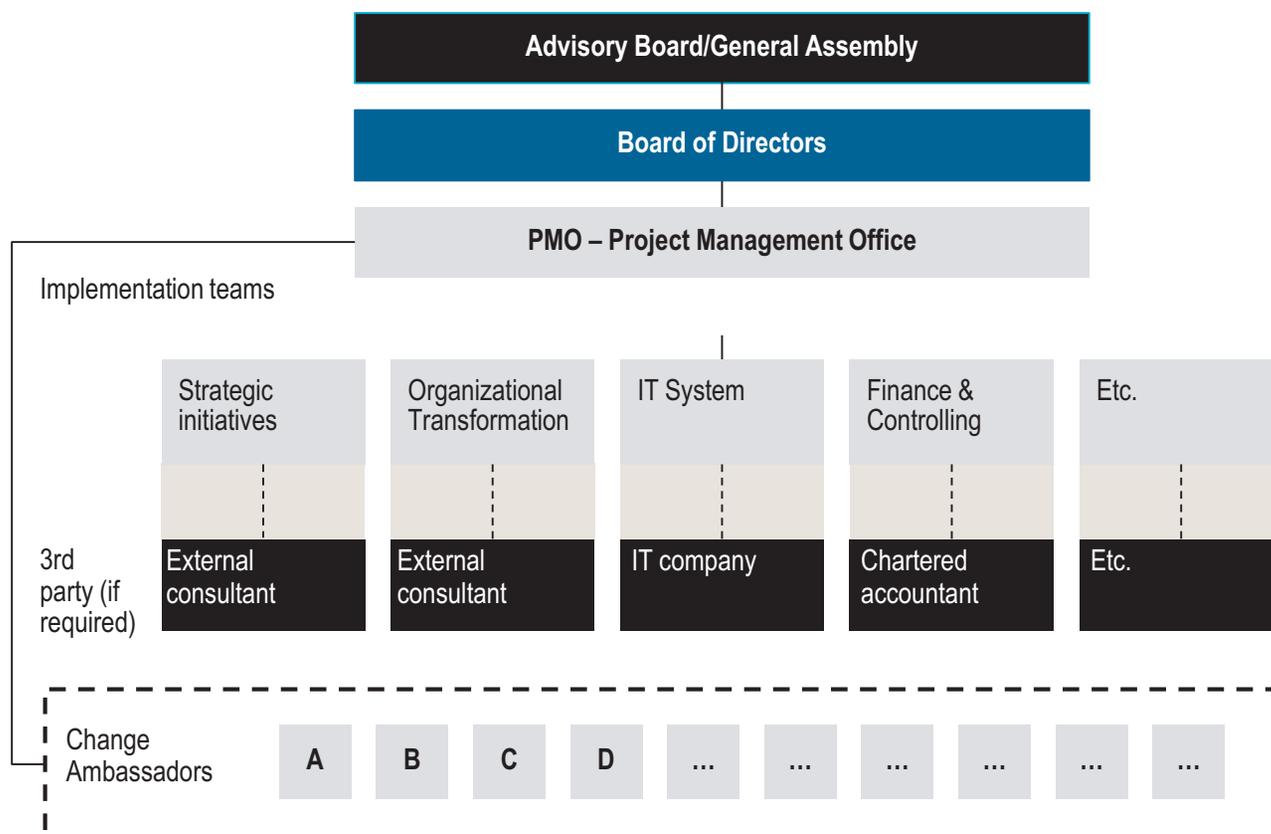
Key responsibilities	
Financial leadership of RAI	
<ul style="list-style-type: none"> Judge all important business-related decisions with a significant effect on RAI's performance (e.g. strategy, large investments and spending) from a financial perspective, demonstrate chances and risks and propose adequate measures Supply the necessary financial means (together with the CEO and along the guidelines set by the Board and General Assembly) for the company to achieve its business targets Work out a prioritization of initiatives across all business lines and divisions in order to prepare board decisions Continuously develop the role of finance and controlling functions in a constructive and critical manner 	
Ensure proper accounting and bookkeeping for the company, divisions and subsidiaries	
<ul style="list-style-type: none"> Take responsibility for external and internal financial reporting while following the prevailing accounting, legal and tax standards Maintain contact with external and internal auditors Set company internal standards and rules for accounting and assist their implementation Ensure transparent, reliable and timely reporting towards shareholders and other stakeholders 	
Ensure proper planning, controlling and reporting	
<ul style="list-style-type: none"> Take decisions on purchasing and supplying all necessary systems to conduct an integrated planning, controlling and reporting Ensure that business planning, budget creation and forwarding of business targets is completed in a 	

Comments

- > High-level organizational redesign of rail creates new positions and modifies existing ones
- > New job descriptions created to facilitate the transfer of existing roles and search for new employees where necessary
- > JDs are created for all new as well as modified positions down to N-2 level, e.g.
 - CFO
 - Head of Commuter Rail
 - Head of Dry Ports
 - Etc.
- > Additional job description for key positions in new entities, e.g., heads of regulatory departments and head of Rail Department

We recommend the set-up of a strong PMO with direct reporting line to top management

Suggested PMO organization



OVERALL OBJECTIVES

- > Implement future business model

PMO responsibilities

- > Manage and supervise all implementation and change activities in HQ and branches

Implementation teams

- > **Module/Function owners** responsible for implementation of respective measures
- > **3rd party firms** delivering dedicated services (if needed)
- > **Change Ambassadors** responsible for ensuring implementation in own Branch/country/site

The implementation plan which shows the roadmap for RAI's transformation, including KPIs and transfer matrix

Implementation plan approach

Illustrative – Implementation plan in development

KEY SUCCESS FACTORS

- > Shows roadmap to transformation including required resources
- > Breaks down overall approach of project into **detailed steps** to implement future organization and provide orientation to all affected employees
- > Clearly displays interdependencies between work packages/activities to show **'critical path'** and implementation sequence
- > Designated **owner/ responsible party** per activity to ensure measure resolution on time in full and allow stringent tracking of implementation process

EXAMPLE EXCEL TOOL

RAI Transformation program Implementation time schedule				Today 18-Jun-2017	Year 2018	Month	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2019	Jan	Feb
Sub-project 1	Status	Start	End																
1. Measure 1																			
1. 1. Action 1	Not started	01-Mar-2017	01-May-2017																
1. 1. 1 Step 1	Not started	01-Mar-2017	01-Apr-2017																
1. 1. 2 Step 2	Not started	01-Mar-2017	01-Apr-2017																
1. 1. 3 Step 3	Not started	01-May-2017	01-May-2017																
1. 2. Action 2	Not started	01-Apr-2017	01-May-2017																
1. 2. 1 Step 1	Not started	01-Apr-2017	01-May-2017																
1. 2. 2 Step 2	Not started	01-Apr-2017	01-May-2017																
1. 3. Action 3	Not started	01-Jun-2017	01-Jun-2017																
1. 3. 1 Step 1	Not started	01-Jun-2017	01-Jun-2017																
1. 3. 2 Step 2	Not started	01-Jun-2017	01-Jun-2017																
1. 4. Action 4	Not started	01-Jun-2017	01-Sep-2017																
1. 4. 1 Step 1	Not started	01-Jun-2017	01-Jul-2017																
1. 4. 2 Step 2	Not started	01-Jun-2017	01-Jul-2017																
1. 4. 3 Step 3	Not started	01-Jun-2017	01-Sep-2017																
1. 4. 4 Step 4	Not started	01-Jul-2017	01-Sep-2017																
1. 5. Action 5	Not started	01-Sep-2017	01-Dec-2017																
1. 5. 1 Step 1	Not started	01-Sep-2017	01-Sep-2017																
1. 5. 2 Step 2	Not started	01-Sep-2017	01-Oct-2017																
1. 5. 3 Step 3	Not started	01-Sep-2017	01-Nov-2017																
1. 5. 4 Step 4	Not started	01-Sep-2017	01-Nov-2017																
1. 5. 5 Step 5	Not started	01-Oct-2017	01-Dec-2017																
2. Sub-project 2																			
2. 1. Action 1	Not started	Recurring (quarterly)																	
2. 1. 1 Step 1	Not started																		
2. 1. 2 Step 2	Not started																		
2. 1. 3 Step 3	Not started																		
2. 1. 4 Step 4	Not started																		
2. 1. 5 Step 5	Not started																		
2. 1. 6 Step 6	Not started																		
2. 2. Action 2	Not started	Recurring (annually)																	
2. 2. 1 Step 1	Not started																		
2. 2. 2 Step 2	Not started																		
2. 2. 3 Step 3	Not started																		
2. 2. 4 Step 4	Not started																		
2. 2. 5 Step 5	Not started																		

The implementation plan includes all relevant stakeholders and ensures strong commitment to the agreed upon measures

Implementation plan as relevant tool

Reason for implementation pressure



Present situation of RAI and demonstrate need for action

Create awareness



Create transparency of all required actions of RAI

Agree on path to follow

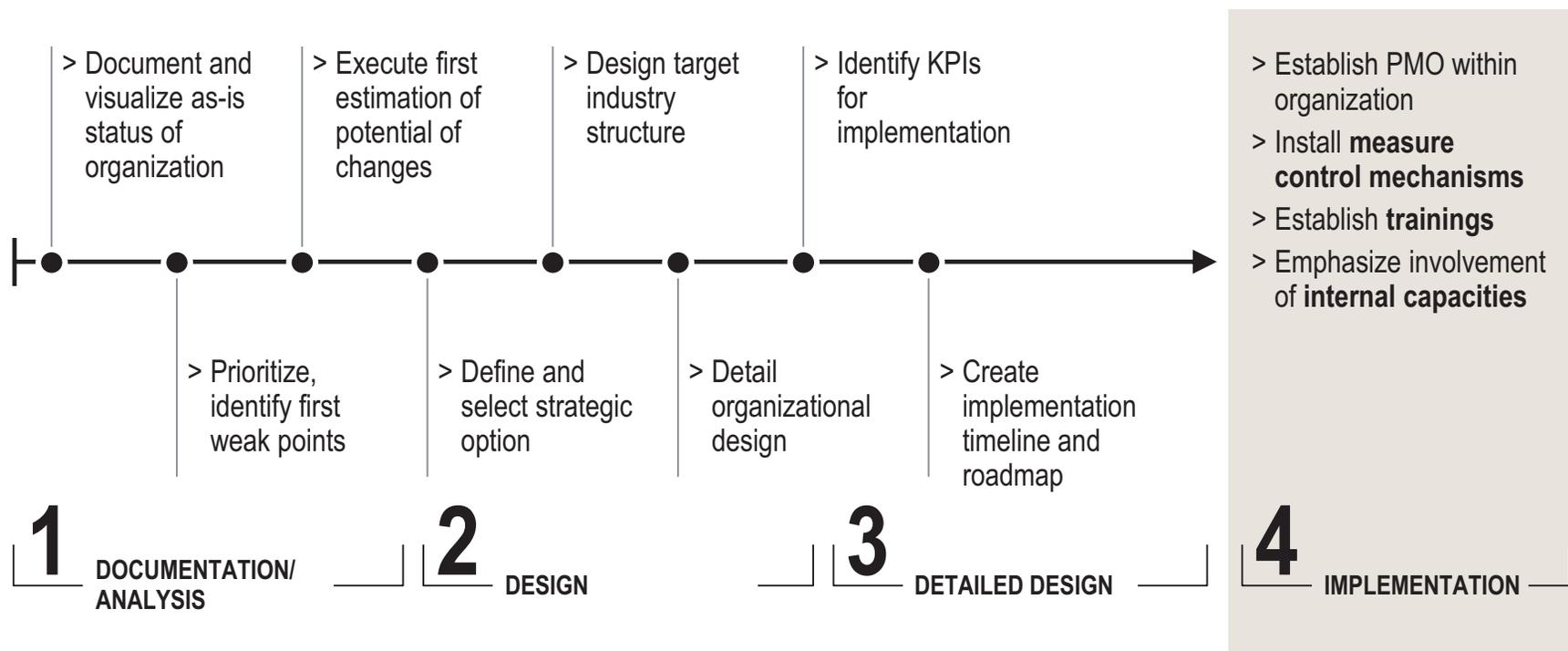


Parties in charge and all relevant stakeholders **agree on identified actions**

- > **Integrative approach** fosters an understanding of the need for action of RAI
- > Implementation plan creates **transparency of all required actions of RAI**
- > **Responsibilities and due dates** are clearly defined and aligned with all parties in charge and all relevant stakeholders
- > **Strong joint commitment to implement agreed upon measures along a defined "path to follow"** ensures success of project

The implementation roadmap usually marks an increase in the responsibility of internal employees

Development of an implementation plan



EXTERNAL SUPPORT

INTERNAL RESPONSIBILITY

We identified key policy measures used in European countries to positively affect rail cargo and passenger modal shares

Overview of policy measures

	Country ¹⁾	Policy measure
Mixed	Germany	Low track access charge due to heavy subsidization of infrastructure to increase the number of rail operators
	Germany	Introduction of tolls for trucks, busses and cars on motorways to increase the travel costs on roads
	Germany	Introduction or increase of existing gasoline tax to increase travel costs on roads
	Denmark	Tax exemptions for rail-related transport modes to enhance the attractiveness of rail over other modes
	UK ²⁾	Ban of old trucks, busses and cars to enhance environmental impact whilst increasing costs for road vehicles
	Germany	Strict emission restrictions to increase road travel-related investments and enhance environmental impact
	UK	Congestion charge and other limits for city car traffic to reduce general trafficking whilst leveraging rail
	Europe	General speed limit to deteriorate road-related travel times and speed
Cargo	Switzerland	Weight limit for trucks to reduce the carrying capacity of trucks
	Germany	Traffic restrictions for trucks , e.g. ban on weekends or limitations of working hours per day per trucker
Passenger	Germany	Cheap regional commuter rail transport due to subsidization to increase usage of rail for commuting to work
	Switzerland	Expensive public parking tariffs or an overall cap of parking slots to reduce number of cars and travel volume
	Germany	Income tax deductibility of yearly commuter rail tickets to reduce rail-related travel costs for public
	France	Compulsory job tickets provided by employer to reduce travel costs for employees commuting to work by rail

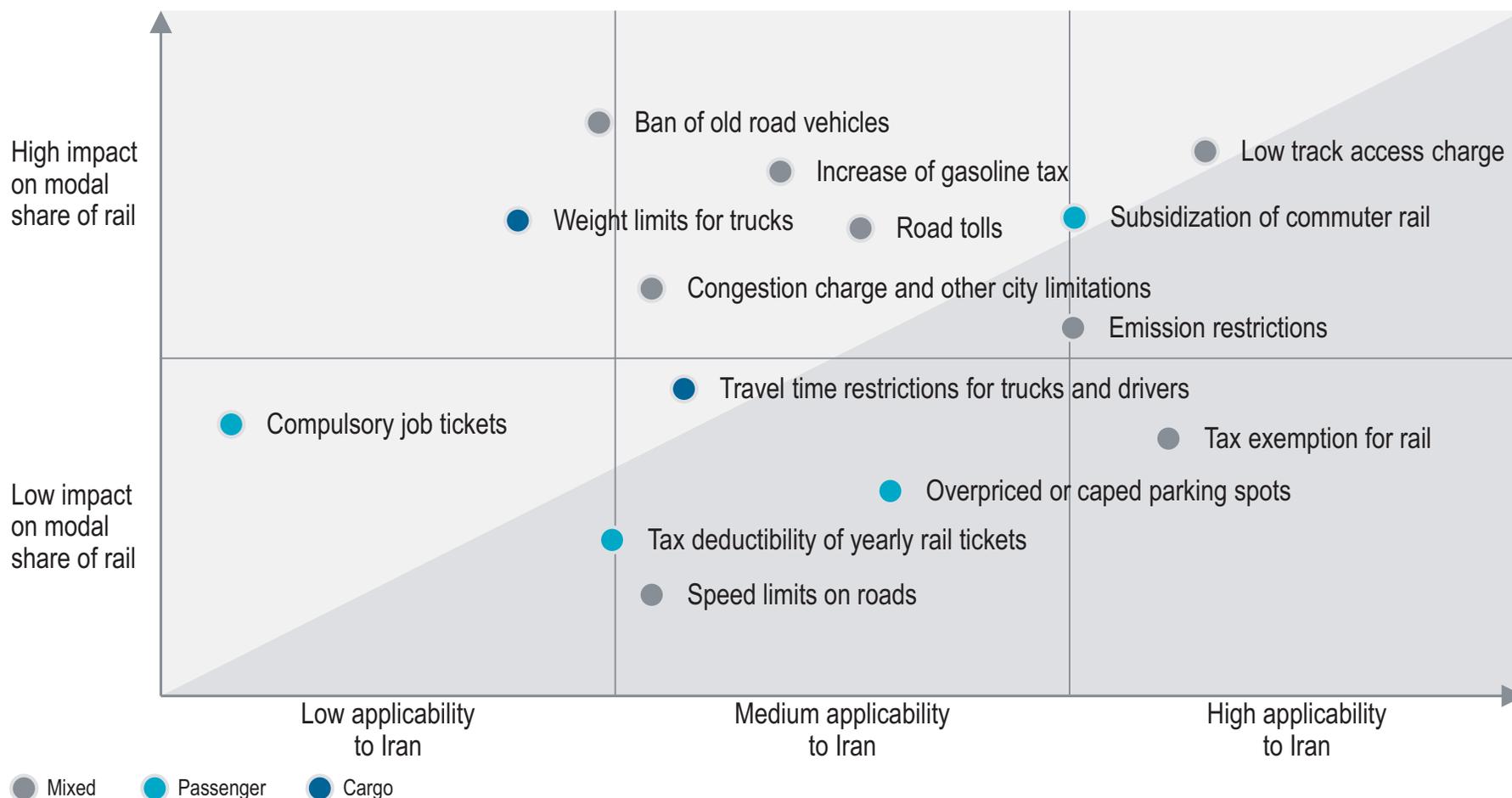
1) Only exemplary countries listed

2) Policy measure so far only planned in the UK

Low track access charges and cheap rail transport prices offer the best ratio of modal share impact to applicability in Iran

Preliminary evaluation of measures

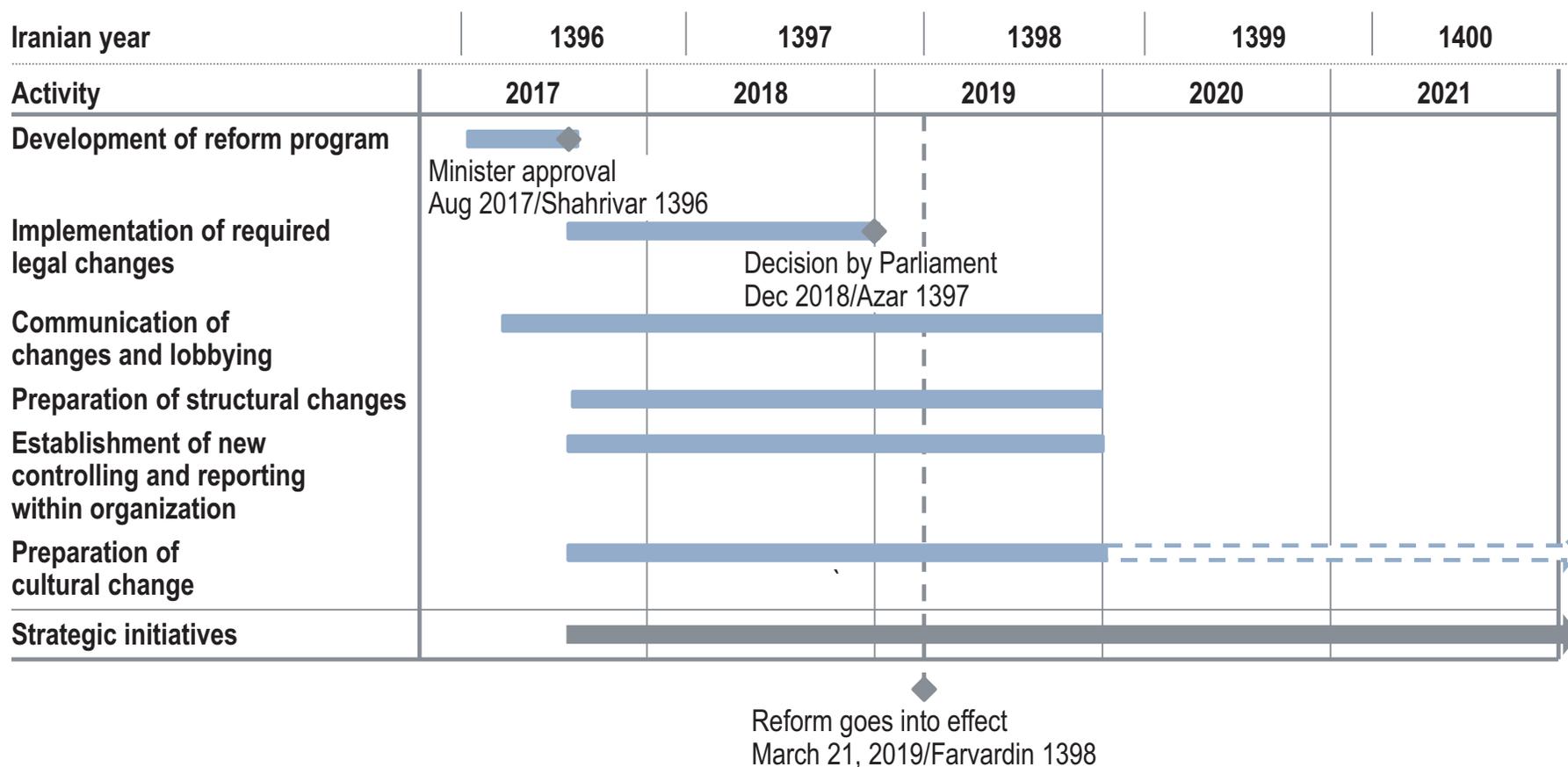
Illustrative – To be calculated during project



The day when the reform goes into effect should be defined by the Minister, the Department of planning and budget and RAI

Implementation roadmap

Time plan to be adapted according to progress of RAI



B. New strategy for RAI



Islamic Republic of Iran
Railways (RAI)



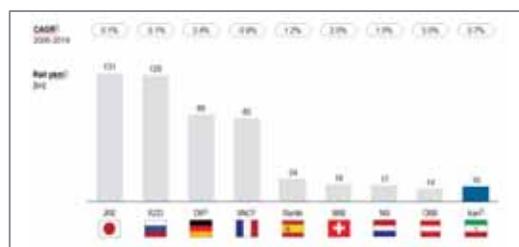
Our journey in strategy has been started with the market analysis and then followed a top-down logic from the vision to the funding

Logic of strategy module

1. We have conducted comprehensive **market analysis** and forecasted the Iranian transportation market



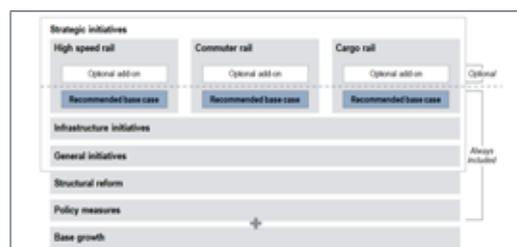
2. We have assessed **RAI's market position**, its strength and weaknesses through international benchmarks



3. We have designed a new **vision statement** and translated it in **strategic objectives** incl. performance indicators



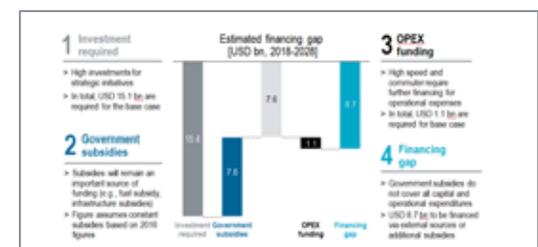
4. We developed a set of initiatives to reach the objectives that have been combined into **strategic options**



5. The selected option has been detailed with regards to investments, modal share effect and implementation in **fact sheets**



6. Finally, we developed a **funding plan** that details how to finance all initiatives of the selected strategic option



B.1 Market and intermodal competition

 Islamic Republic of Iran
Railways (RAI)



B.1.1 Approach to market analysis and forecast

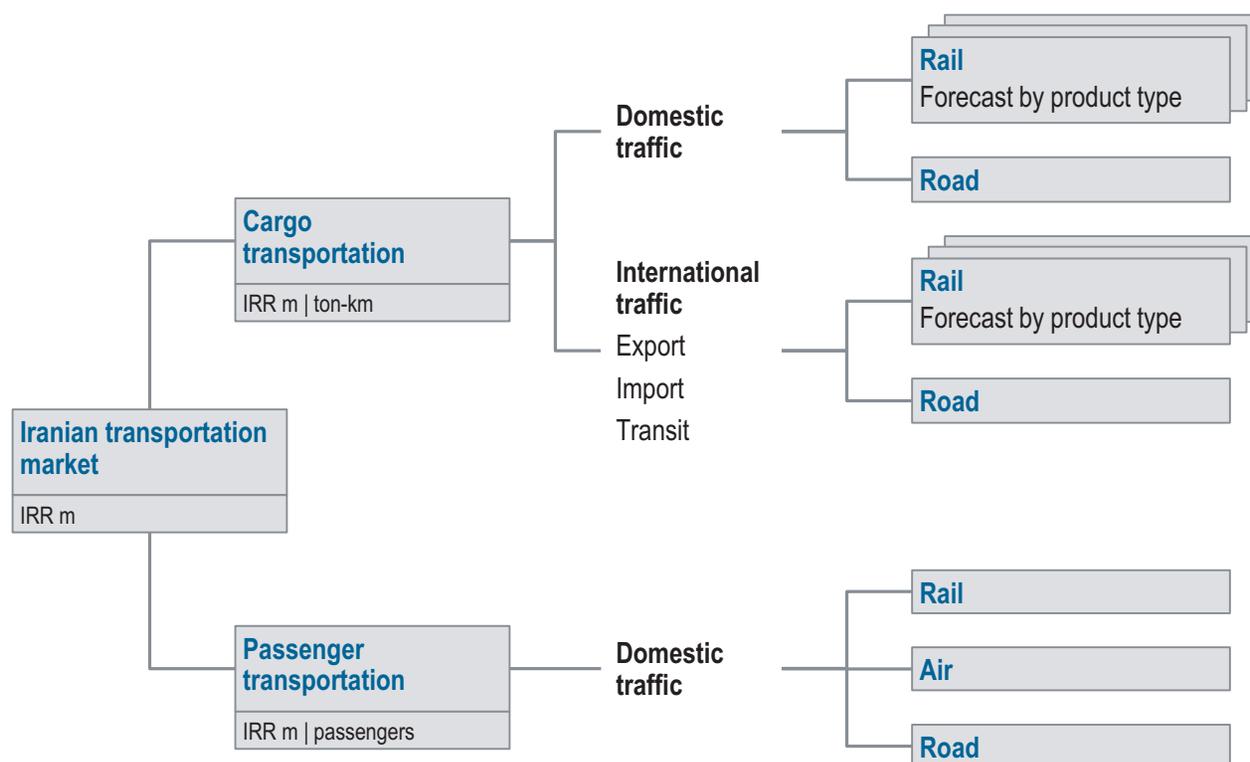


Islamic Republic of Iran
Railways (RAI)



We analyzed the Iranian passenger and cargo transportation market for all relevant transport modes and directions

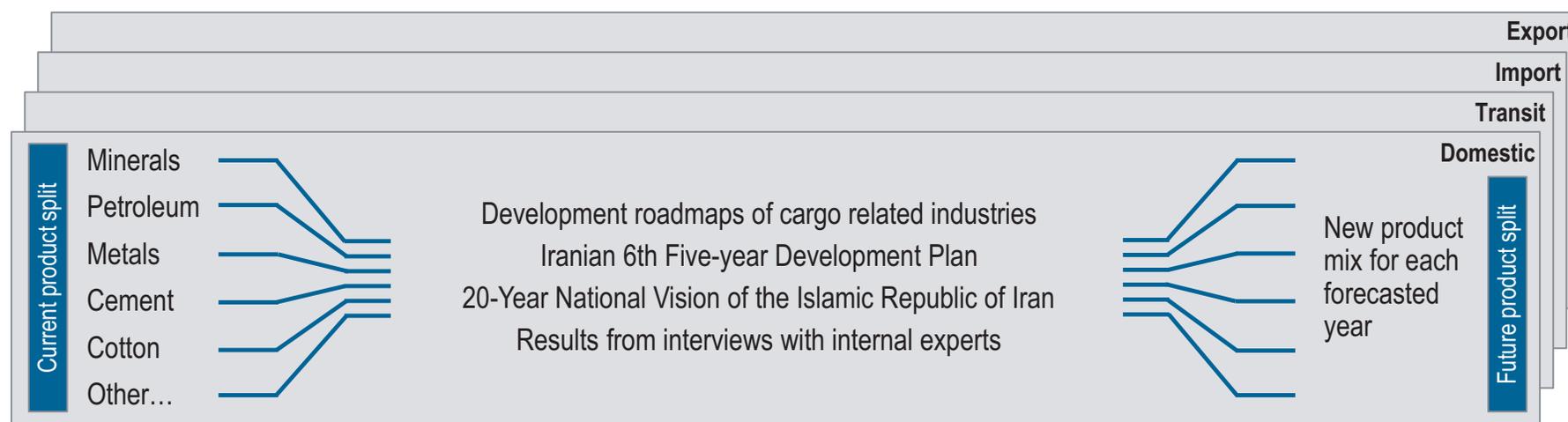
Market analysis approach



- > Yearly market forecast for Iranian cargo and passenger transportation market from today until 2028
- > Detailed forecast of all transport modes that are considered as competition to current RAI offering, e.g. truck, air, bus and private car
- > Consolidation of results in market volumes for passenger and cargo markets and overall monetary volume of Iranian transportation market
- > Approach based on historic data provided by RAI and own research – Validation of results in interviews with internal experts

Our cargo transportation market forecast is based on the analysis of the development of corresponding industries

Market analysis approach – Cargo transportation



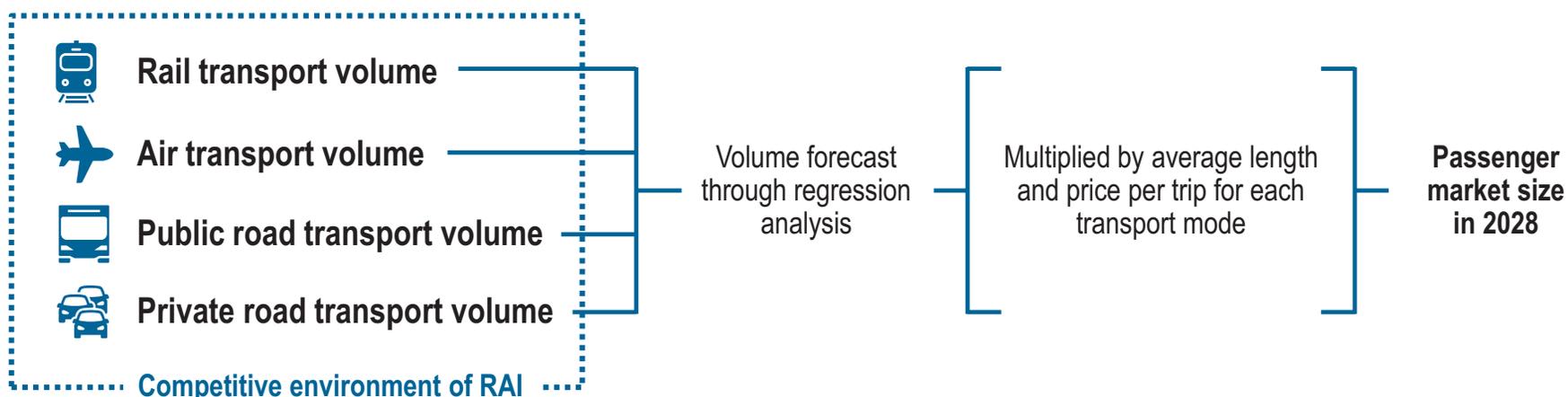
- > The forecast is based on the historic and current product mix of rail cargo transportation
- > Calculations are provided for domestic rail traffic as well as international traffic (transit, import and export)

- > We calculated growth rates for the most important products in the current RAI product split (top three products from current domestic, transit, import and export traffic)
- > The projection of the growth rates is derived from industry roadmaps and future plans of the relevant Iranian authorities

- > Based on the product growth rates we estimated the future product split and derived volumes of corresponding rail cargo traffic
- > For road freight transportation, correlations factors with economic indicators have been used

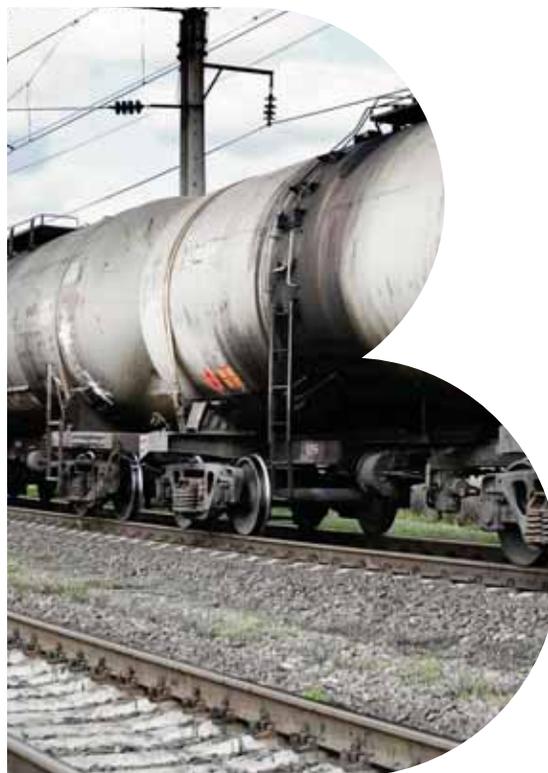
For the passenger market we performed regression analysis for all transport modes that are part of RAI's competitive environment

Market analysis approach – Passenger transportation



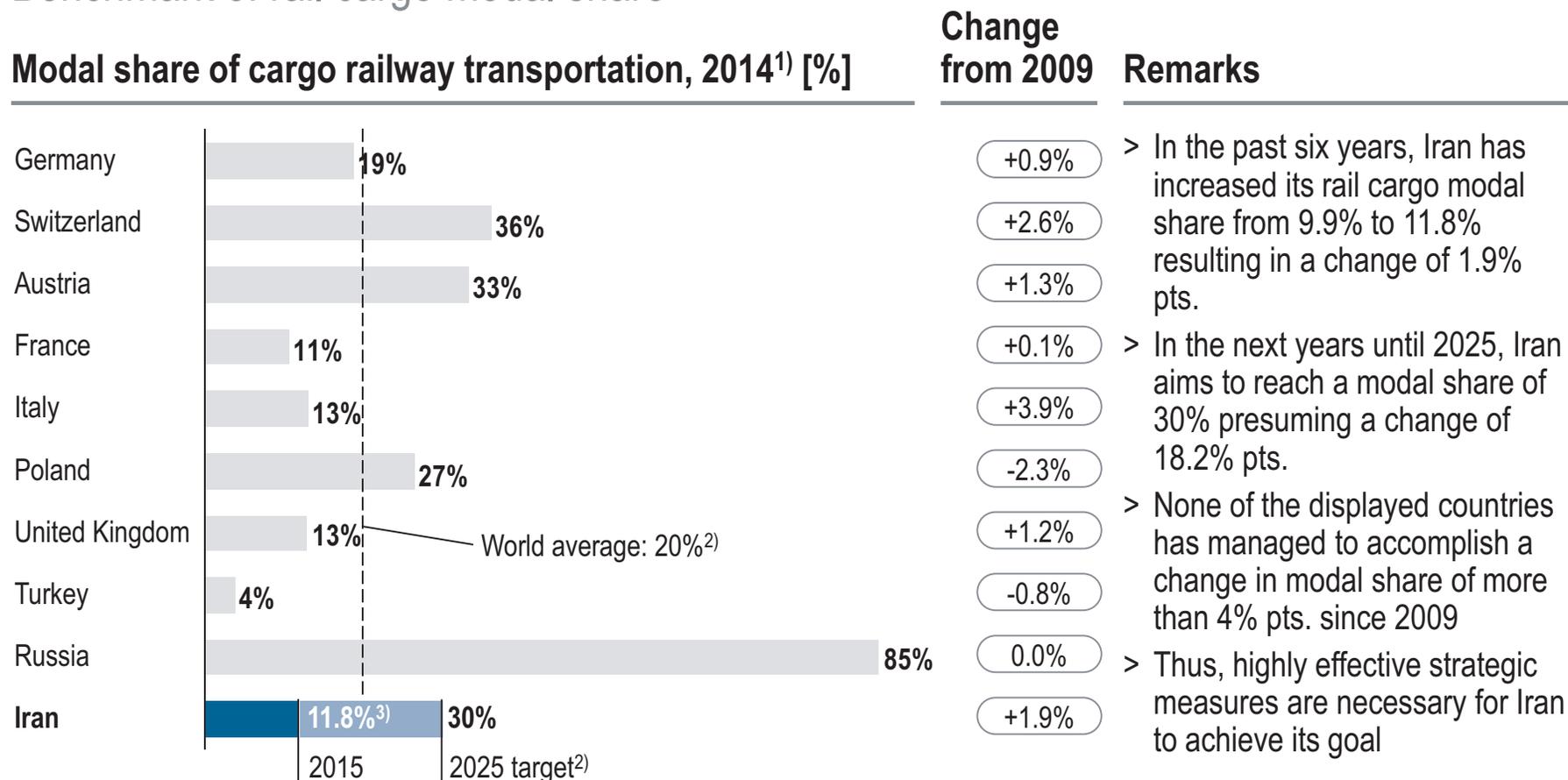
- > Basis of our forecast are historic and current modal splits of passenger transportation in Iran that have been provided by RAI upfront
- > For the forecast, we performed regression analysis of passenger volumes using a basket of economic indicators, e.g. GDP per capita, household income and population growth
- > The length and price of a trip has been taken from RAI data for rail – For other modes we conducted own research
- > Length and price are assumed to be constant over time

B.1.2 Iranian cargo transportation market



Iran's objective to nearly triple its rail cargo modal share until 2025 seems very ambitious given benchmarks

Benchmark of rail cargo modal share



xx% Change in rail freight modal share since 2009 in % pts.

1) 2012 for Russia; 2015 for Turkey and Iran

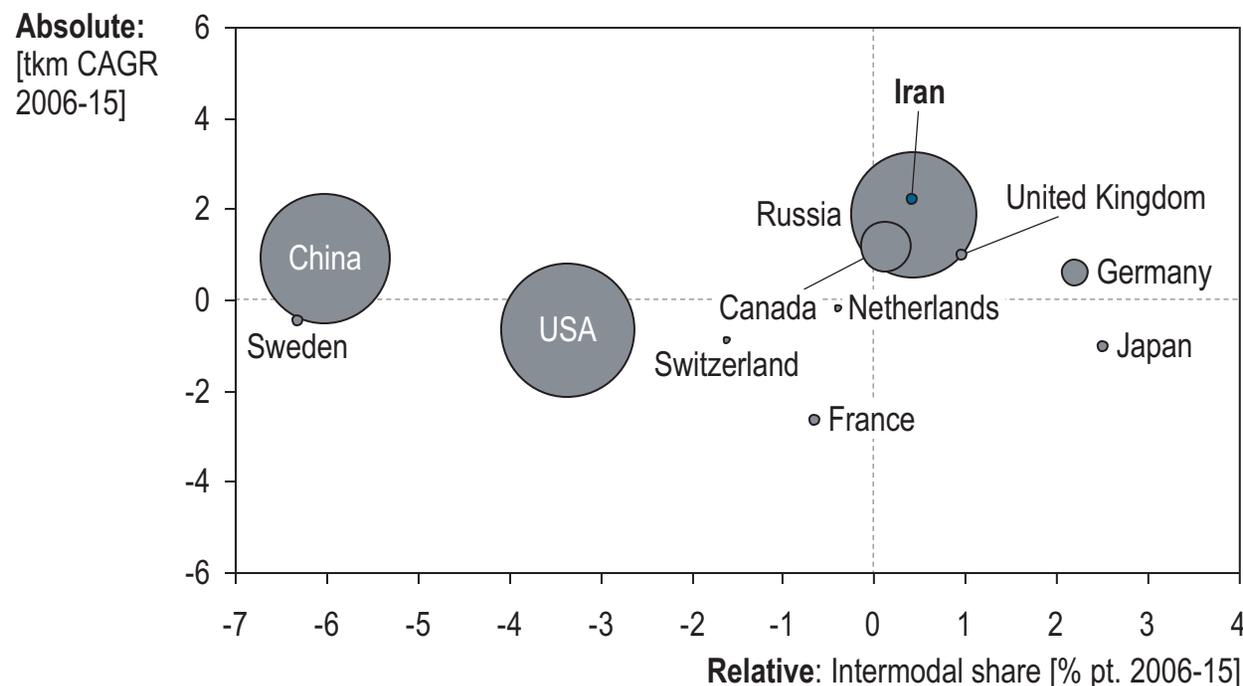
2) Average of displayed countries excl. Russia and Iran: 19.4% 3) Actual modal share could be lower due to unregistered road cargo flows

Source: Eurostat, OECD, RAI

Over the last decade, the market share of rail freight has slightly increased – Yet, significant market potential remains untapped

Traffic and market share development

Cargo traffic and intermodal share development, 2006-2015¹⁾



Remarks

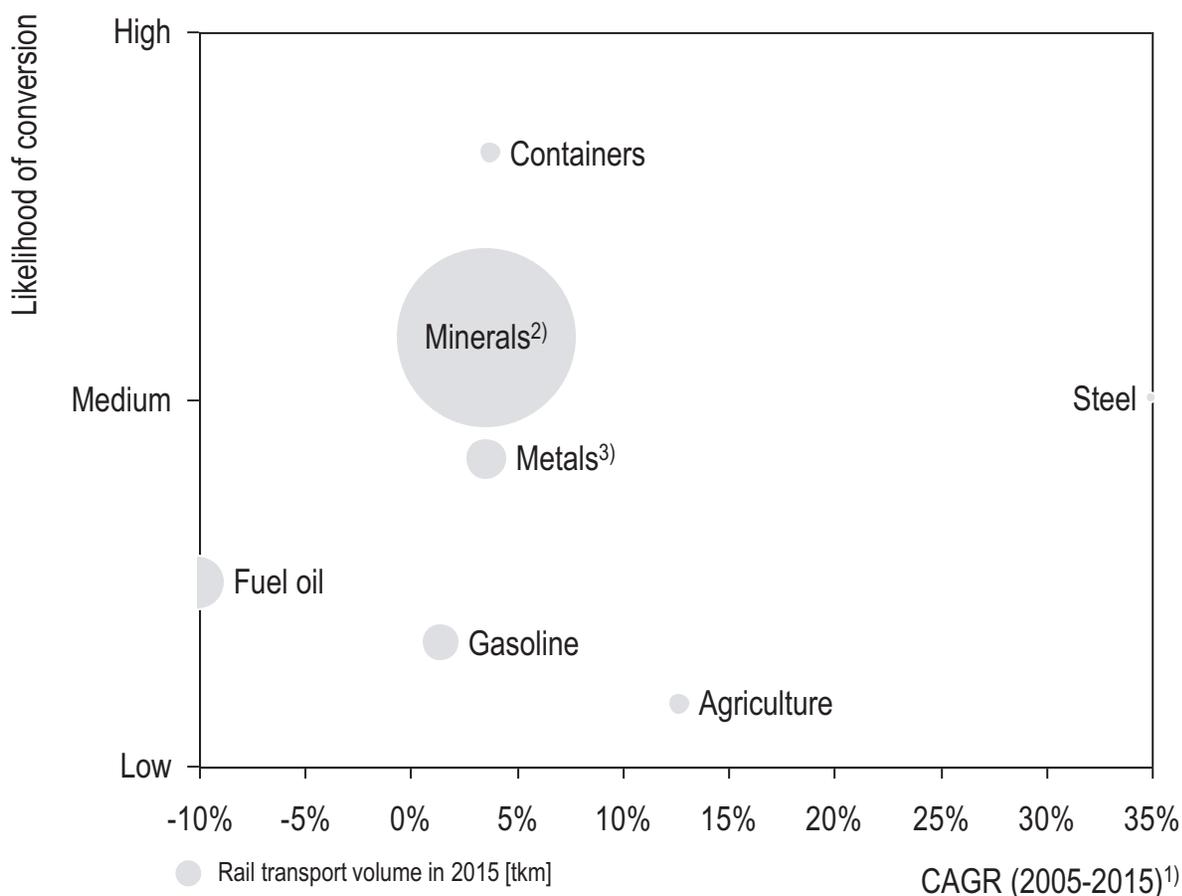
- > While the domestic cargo market in Iran for all transport modes has been growing at an average yearly rate of 1.8%, the domestic rail cargo market grew by 2.2%
- > Consequently, the intermodal share of rail freight traffic has been slightly increasing to its current value of 11.8%
- > Despite the growth in market share, rail freight remains small compared to road – Significant market potential of rail freight transportation currently untapped

 Bubble size indicates tkm 2015

1) Y-axis: Average % growth/decline in tkm p.a.; X-axis: Average % point growth/decline of rail intermodal share 2006-2015

Based on recent growth rates and general accessibility, minerals and containers appear to be the most suitable product types for rail

Growth of product types and accessibility by rail



1) Based on domestic rail transport volume in Iran 2) Iron ore 3) Iron

- > In terms of transported product volume by rail, minerals are by far the biggest product group
- > Compared to minerals, container volume by rail is still fairly low – Yet, containers offer a great potential for rail cargo due to easy handling and large economies of scale
- > Despite a recent growth in the past decade, agricultural products do not seem suitable for rail cargo due to high wagon costs and seasonality
- > Petroleum products are relatively hard to access for rail cargo as intermodal competition of trucks and pipelines is very high

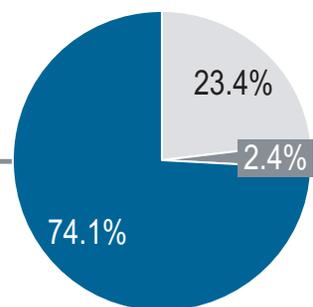
Looking at the current product split, main levers for an increase in modal share of rail are additional traffic in minerals and in containers

Rail freight product split

Minerals

- > The mining industry has been a major driver of growth in rail freight transportation – In the past decade, the volume of minerals transported by rail has been growing at an average annual rate of 4%¹⁾
- > In its development plans, the Iranian government plans to increase production and processing of minerals, e.g. iron ore and coal
- > While some production facilities already have direct access to the rail network, some are currently not served by rail

Direct rail access to important production facilities allows for increase in modal share



Rail cargo product split, 2015

- Other
- Containers
- Minerals (e.g. iron ore)

Container

- > Iran's geographic position at the Persian Gulf has led to an increase in container traffic at Iranian ports – In the past decade, the volume of container traffic at Iranian ports has been growing at an average annual rate of 11%²⁾
- > However, rail modal share of container traffic has remained at comparatively low level of 3% currently
- > Main reasons for the low modal share of rail are missing or insufficient capacity of terminals and dry ports and lack of developed logistics services providers

Modern intermodal infrastructure (terminals, dry ports) allows for increase in modal share

1) CAGR for minerals transported by rail from 2005 to 2015

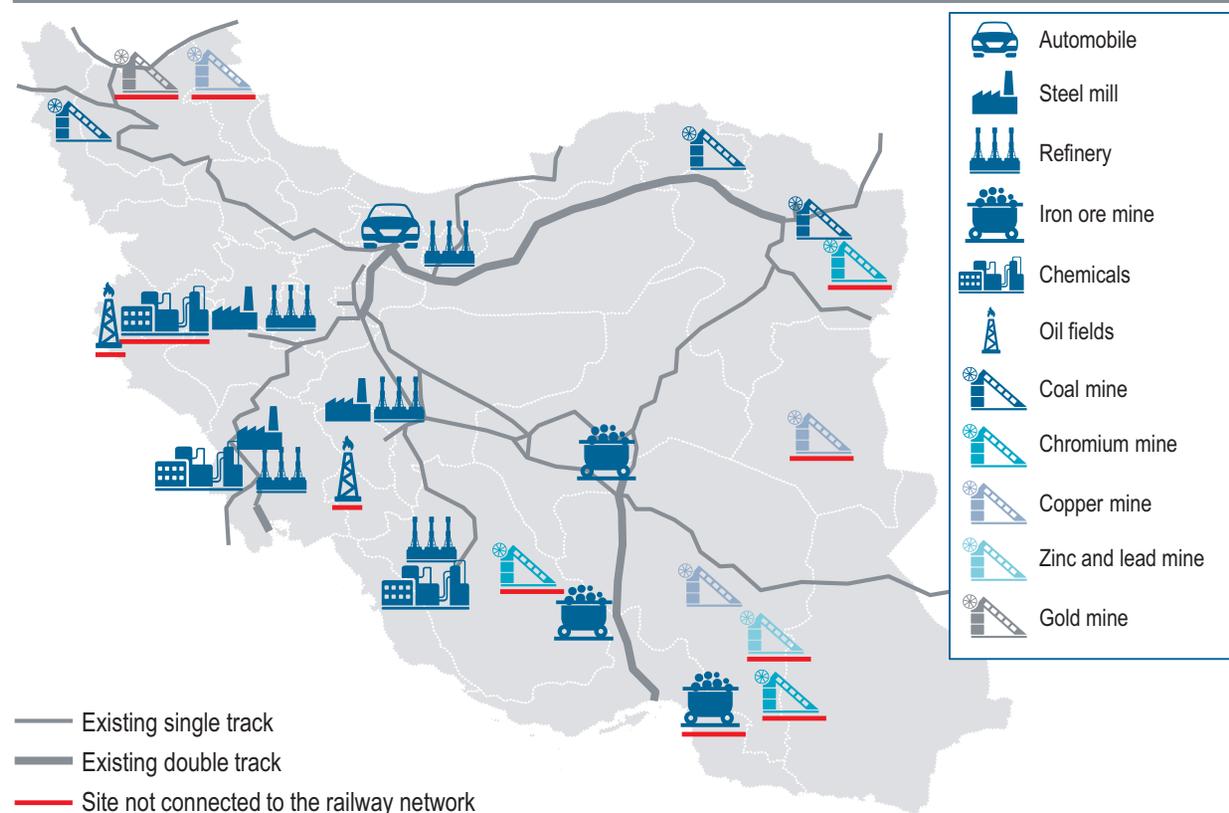
2) CAGR for container traffic at Iranian ports measured in TEU from 2003 to 2012

Source: RAI, World Bank, Financial tribune

Minerals make up the biggest share of rail freight – Yet, there is still potential to grow as many mines are not connected to the network

Country and region penetration

Production facilities and mines

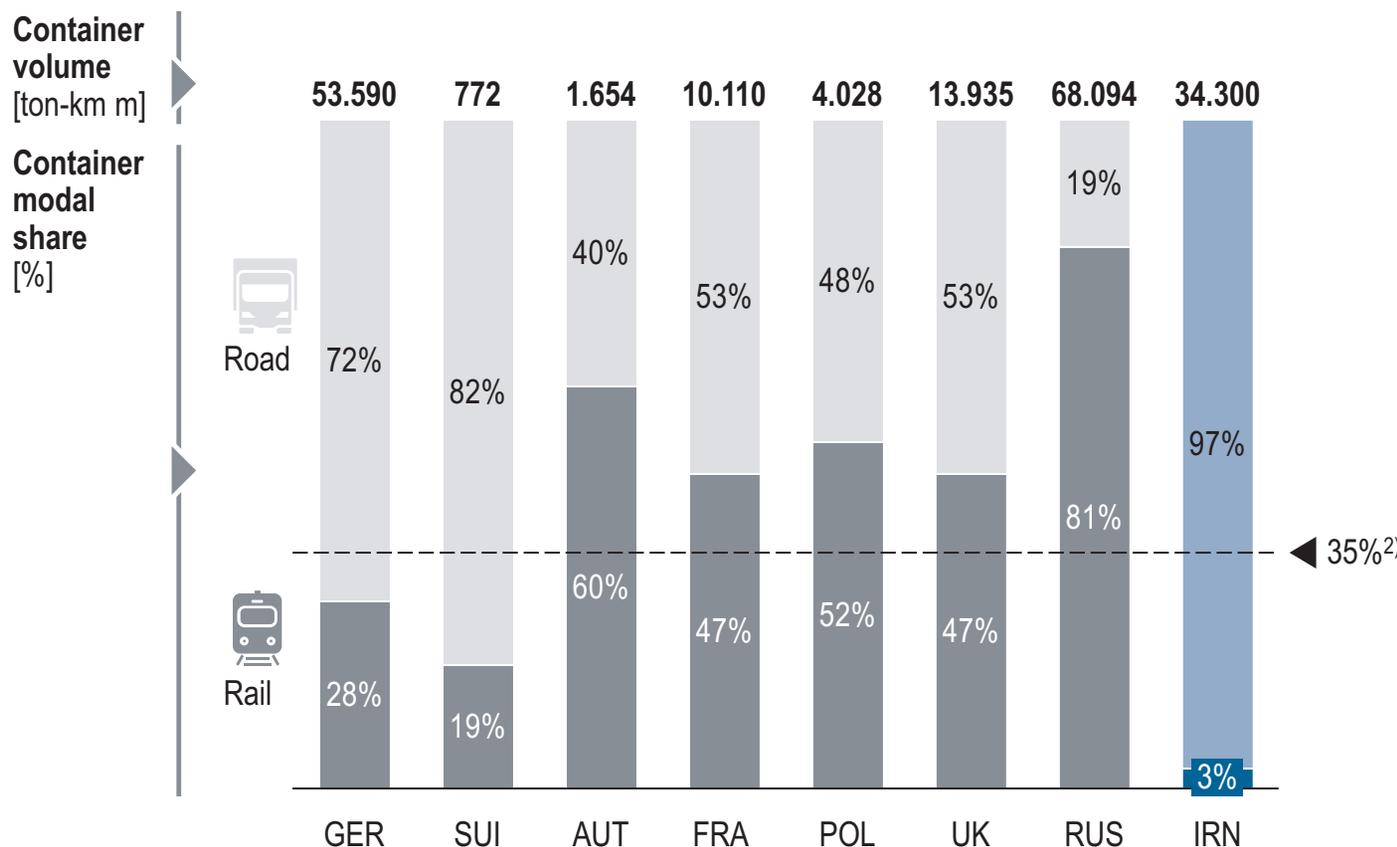


Remarks

- > Iran's economy depends heavily on industrial production of certain goods like cars and steel
- > Since respective production sites are located in cities which are connected to the rail network, these industries can be served by rail
- > Mining sites, on the other hand, are usually located outside of cities – Hence, special routes and stations are needed to connect mines to the rail network
- > In order to assess whether a mine should be connected to the network, individual business cases need to be calculated

Compared to other countries, Iran's rail modal share of container transport is very low due to insufficient terminal and dry port capacity

Container transport, 2015¹⁾



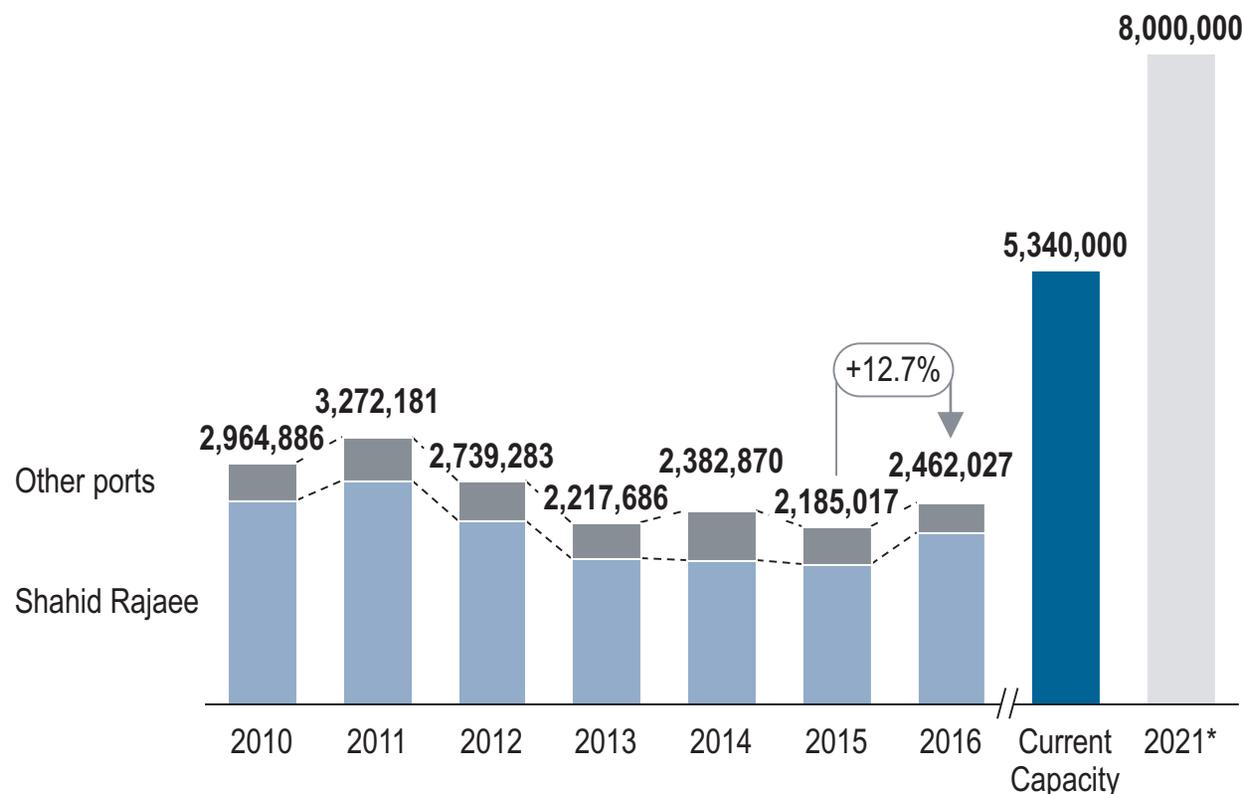
- > Iran's country size and its position at the Persian Gulf are the key drivers of the comparatively large container volume
- > However, currently only 3% of overall container volume is captured by rail
- > Low modal share of rail transport is a consequence of missing/insufficient capacity of terminals and dry ports

1) 2014 for Germany 2) Weighted average of displayed countries excl. Russia and Iran

Container traffic in Iranian ports is rising – Investment in terminals, dry ports & international routes is crucial for increase in modal share

Container traffic

Container traffic in Iranian ports, 2016 [TEU]



Remarks

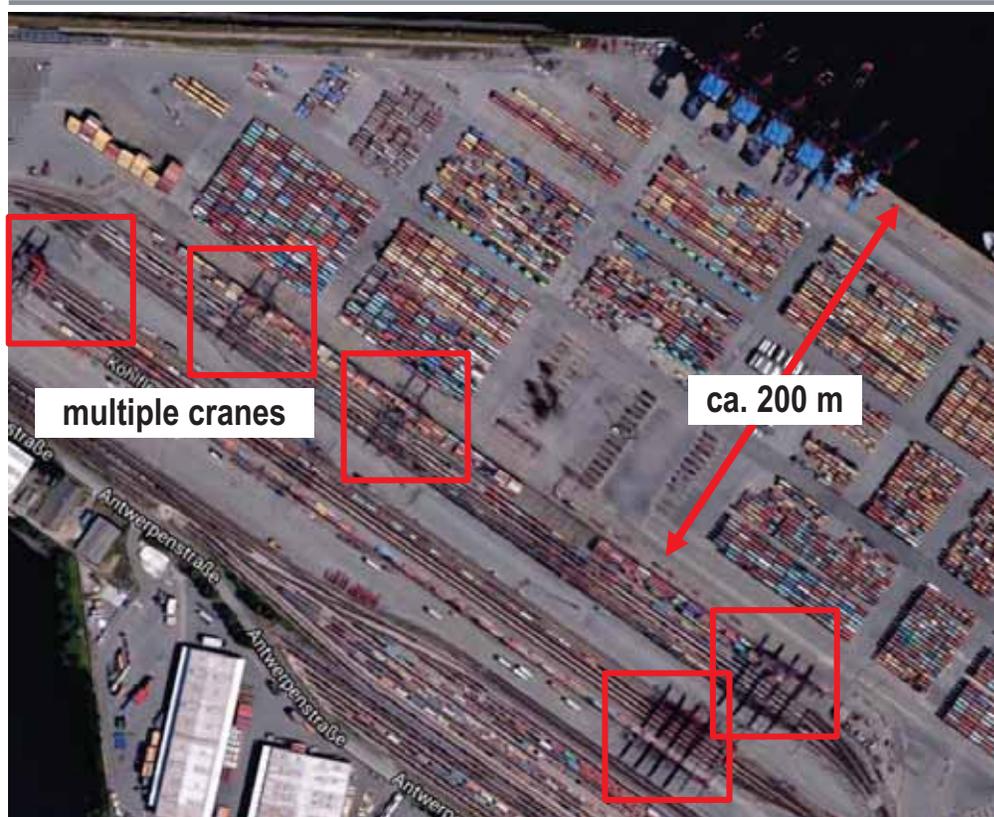
- > Container traffic in Iranian ports is rising after end of sanctions
- > Shahid Rajae port accounts for more than 80% of container traffic
- > Modal share can only be increased with adequate infrastructure at the port and the destinations
- > Some infrastructure investments are underway (e.g. 52km of railway tracks within Shahid Rajae port)

* Estimation

Efficient multimodal terminals allow for convenient transfer of shipments to rail

Best practice: Multimodal container terminal

Port of Hamburg: Eurogate / Eurokombi terminal



1) 2015 2) Hinterland-traffic

Figures – Port of Hamburg



Container traffic: 8.8 mio TEU¹⁾



Track length: 294 km



Modal share of rail: 41.6%²⁾

Remarks

- > Eurogate is one of several container terminals in Hamburg
- > Eurokombi terminal connects it to rail & road
- > Direct access to facilities (without shunting)
- > 11 train-long tracks for (un-)loading
- > Multiple cranes for faster handling
- > Transshipping between rail & road possible

Efficient multimodal terminals allow for convenient transfer of shipments to rail

Best practice: Multimodal container terminal

Port of Rostock: Rail cargo terminal



1) 2015 2) Hinterland-traffic

Source: Port of Rostock

Figures – Rail cargo terminal

-  Terminal size: 70,000 m²
-  Track length: 180 km
-  Number of gantry cranes: 2

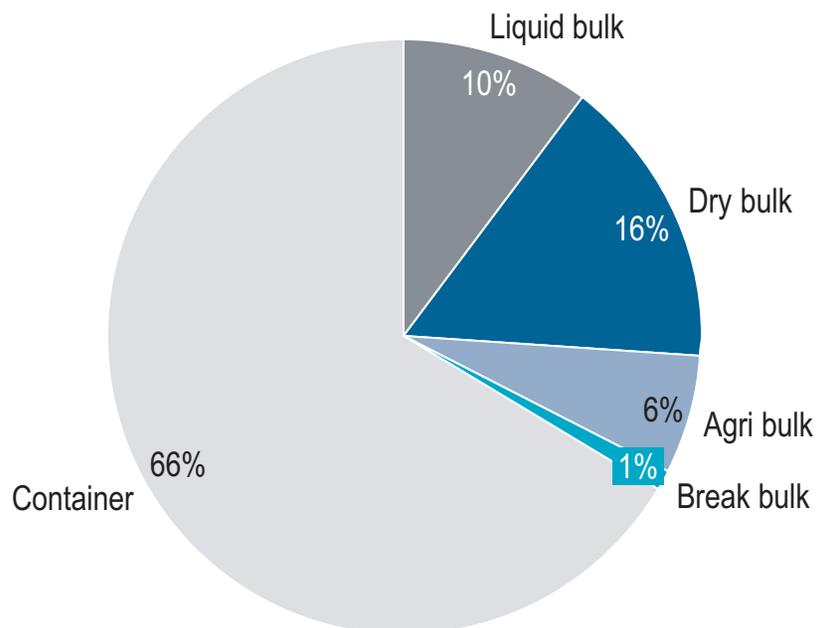
Remarks

- > The rail cargo terminal is mainly used for bulk cargo, e.g. coal and fertilizer
- > In 2016, the intermodal rail cargo volume exceeded 2 m tons
- > The number of cargo wagons handled increased from 69,824 in 2015 to 76,012 in 2016
- > Currently, there are 36 intermodal trains operating on a weekly basis

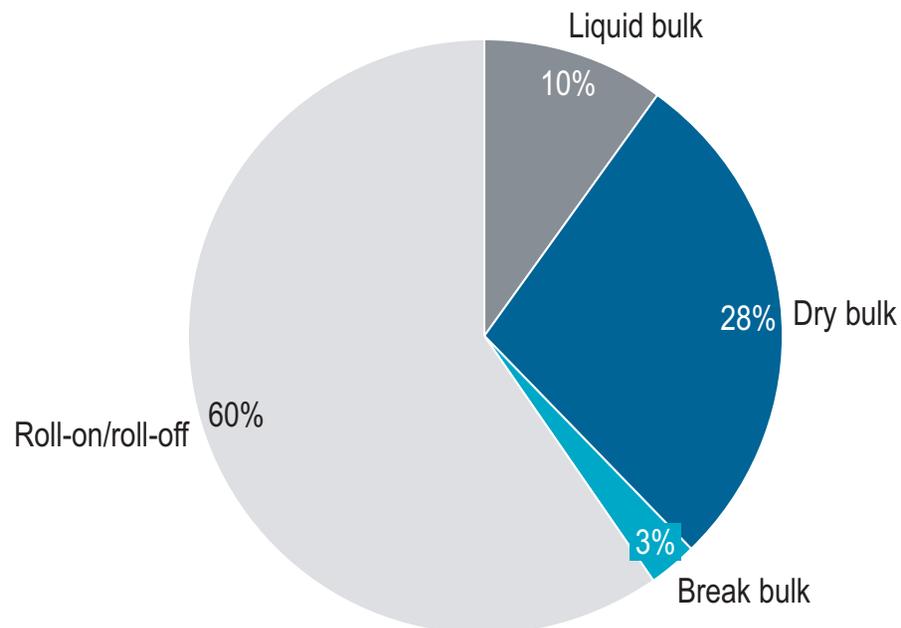
Port of Hamburg mainly focuses on container transshipments, whereas Port of Rostock's core business is roll-on/roll-off traffic

Product split at Port of Hamburg and Port of Rostock

Port of Hamburg



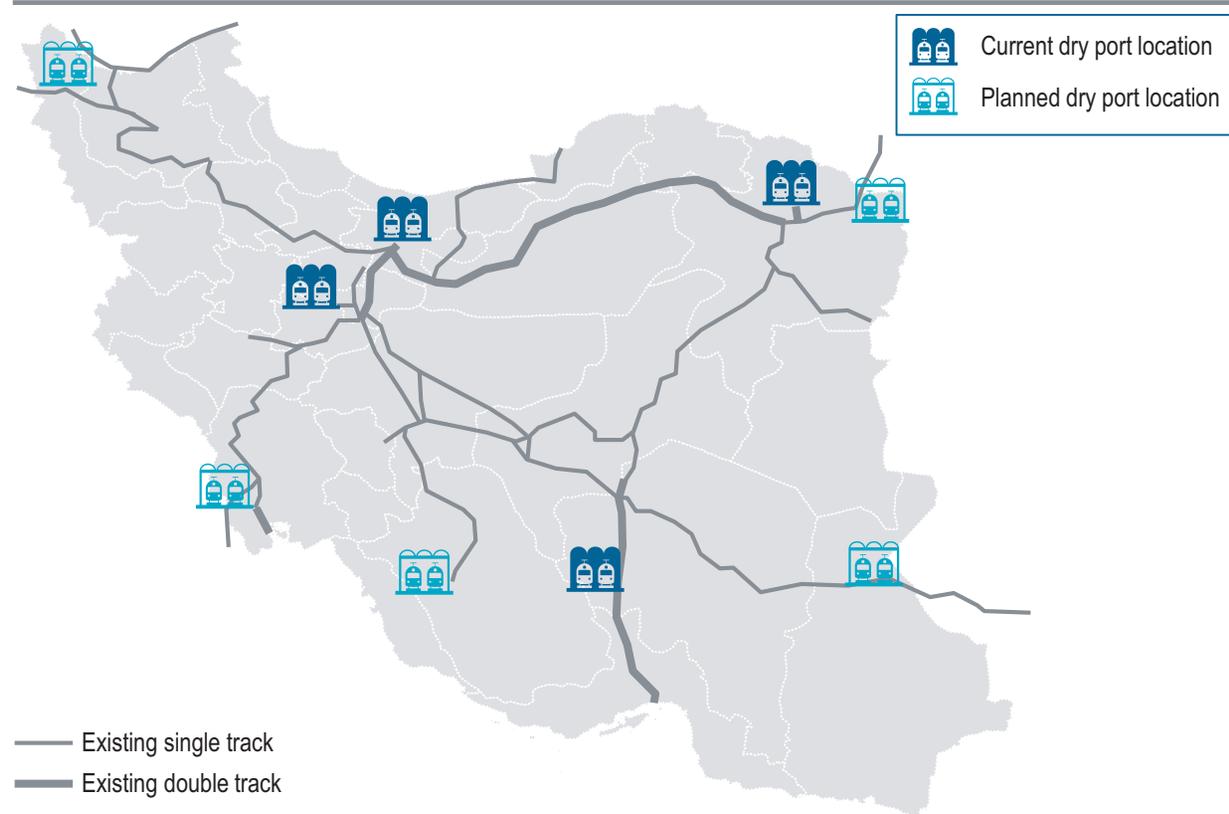
Port of Rostock



In order to increase its rail modal share of container transport, Iran needs to add further dry ports to its existing network

Intermodal transport services

Current and planned locations of dry ports, 2013



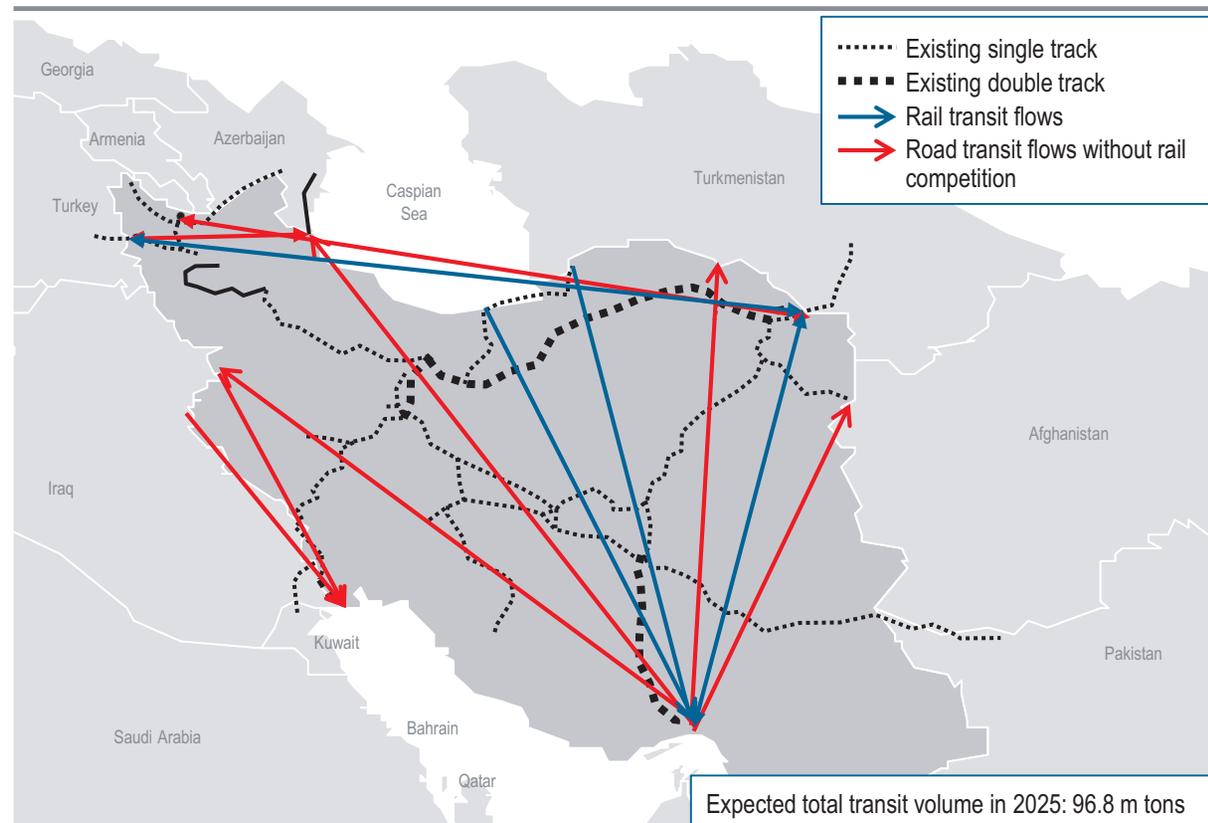
Remarks

- > Due to the growing numbers of containers arriving at Iranian sea ports, there is a rising demand for container transport by land
- > A prerequisite for container transport by rail is the existence of dry ports allowing the use of multiple transport modes
- > As of right now, Iran's rail network comprises only four dry ports which are mainly located near large cities
- > Additional dry ports are planned to be constructed at the borders to neighbor countries to facilitate transit traffic

A connection between Iran's rail network and networks of neighbor countries is needed to enable international rail cargo traffic

International traffic

Transit flows, 2025¹⁾



Remarks

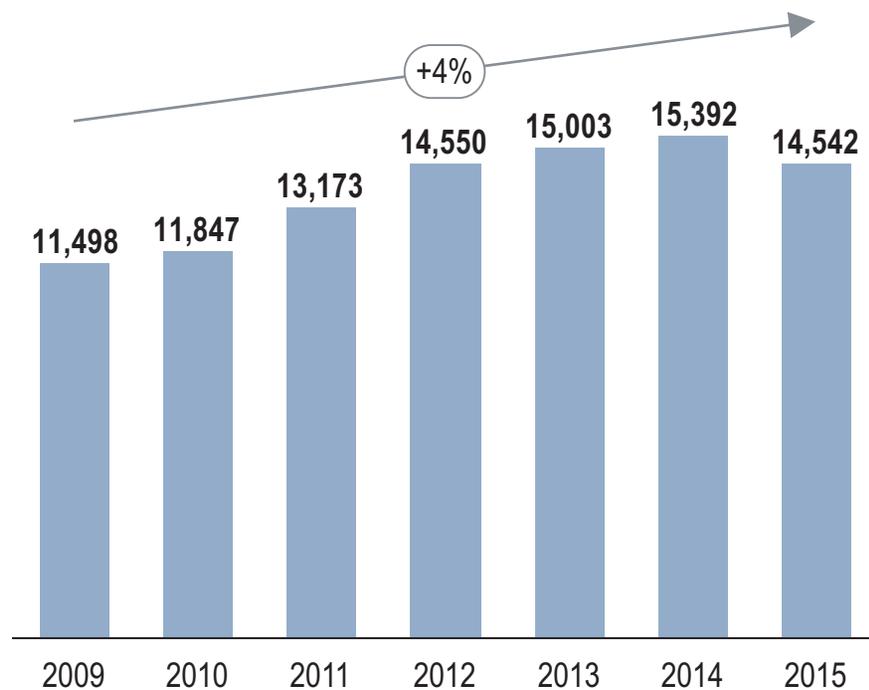
- > The majority of Iranian transit ways connect the Persian Gulf with Iran's neighbor countries
- > A few significant port cities, e.g. Chabahar, are not connected to the rail network yet
- > Railway tracks to certain neighbor countries, e.g. Iraq and Azerbaijan, are still under construction
- > Current rail network leads to severe detours for particular transit cargo flows, e.g. from Persian Gulf to Caspian Sea

1) Based on RAI forecast

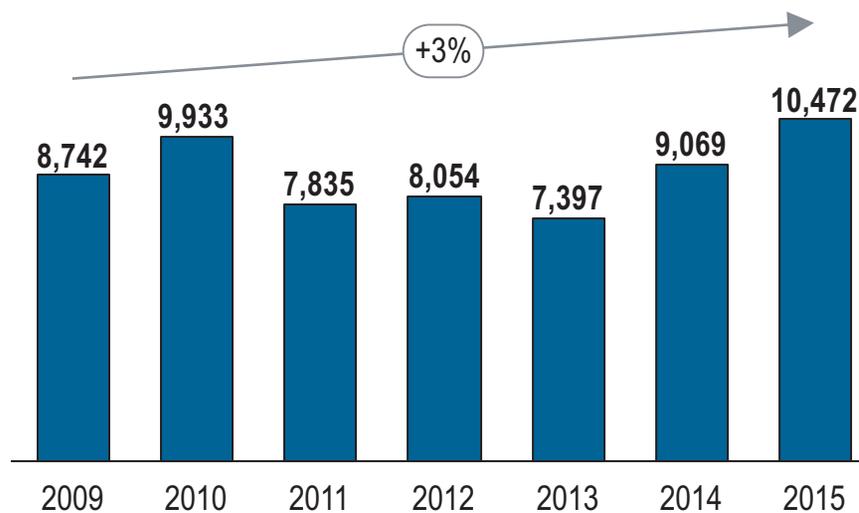
Currently, domestic traffic accounts for 58% of overall Iranian rail traffic, while international traffic accounts for approx. 42%

Split of cargo transportation by direction

Domestic traffic, 2009-2015 [tkm m]



International traffic, 2009-2015 [tkm m]



We identified five major drivers that can lead to changes in market size and structure

Cargo market drivers

Driver	Impact	Comments
1. Economic growth		> The domestic cargo market depends on the future development of Iran's economic situation
2. Trade growth		> The international cargo market depends on the future development of Iran's trade relations
3. Infrastructure projects		> Rail network expansions increase the overall capacity and create new market opportunities
4. Domestic and foreign policy		> New laws, e.g. for trade bans or speed limits, could either have a positive or a negative effect on the cargo market
5. Fleet development		> The capacity of rail cargo transports depends on the number and the condition of locomotives and wagons



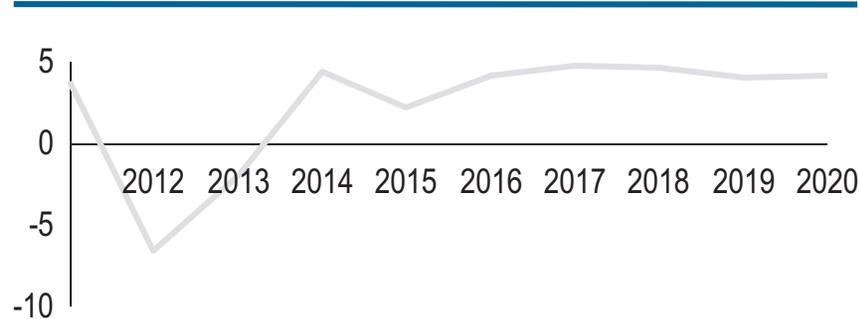
Level of impact

1. Economic growth

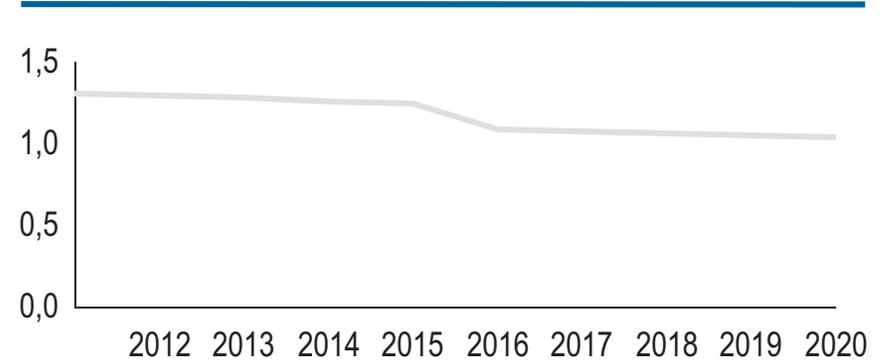
Lift of economic sanctions will lead to a higher economic output and lower consumer prices – population growth will slightly slow down

Forecast of main economic indicators

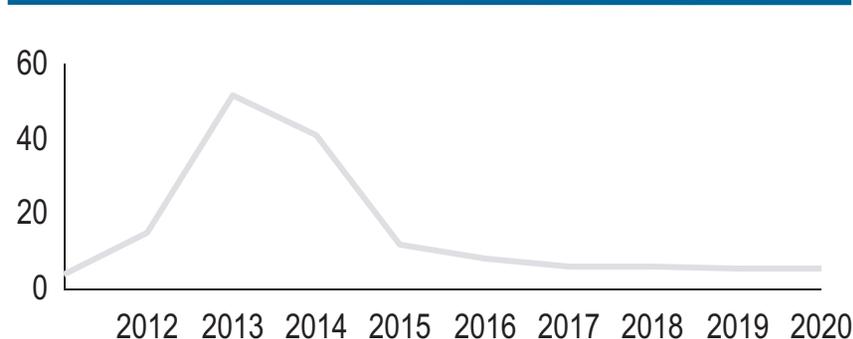
REAL GDP GROWTH [%]



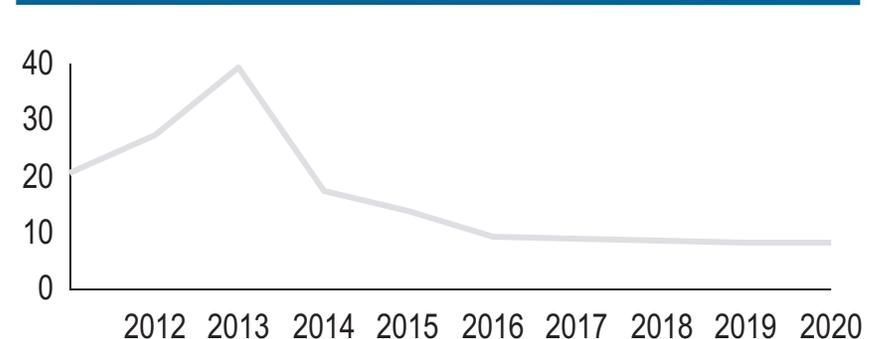
POPULATION GROWTH [%]



CHANGE IN EXCHANGE RATE IRR/USD [%]



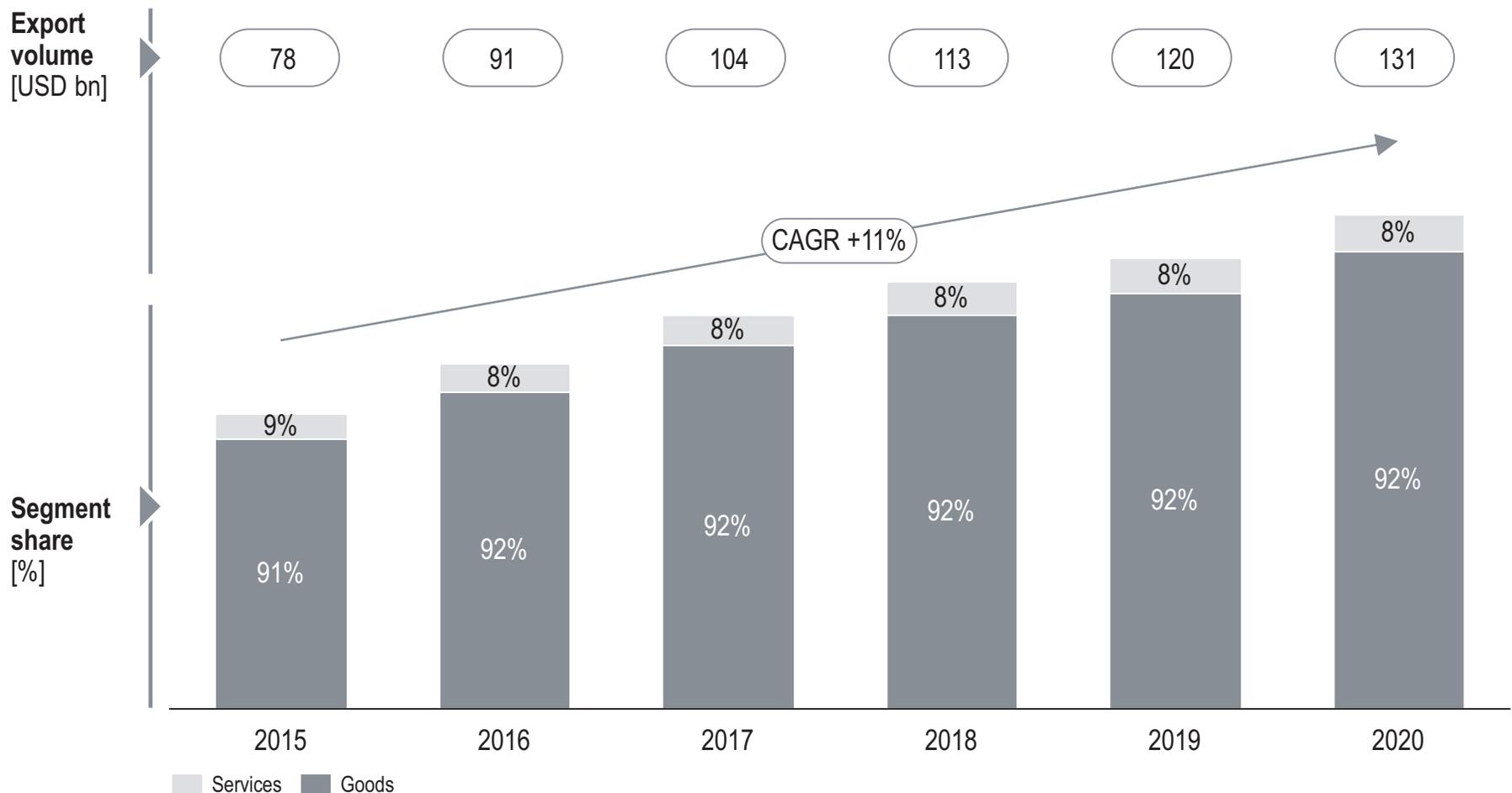
CONSUMER PRICE INDEX [%]



2. Trade growth

Overall, export volume is expected to increase considerably within the next few years – share of physical goods will stay above 90%

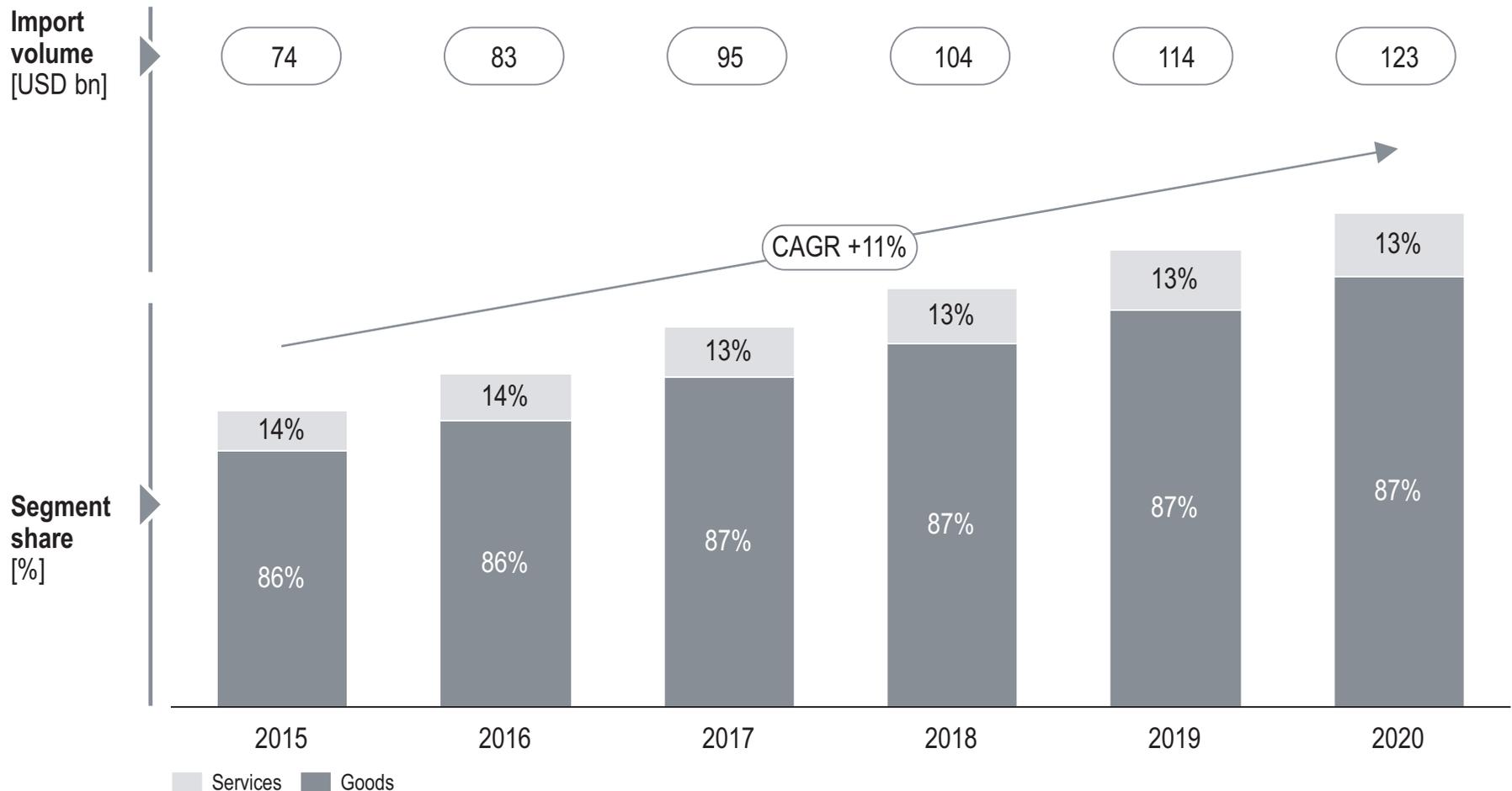
Forecast of export volume



2. Trade growth

According to forecast, import volume will grow by the same rate as export volume – Thus, Iran will keep its trade surplus

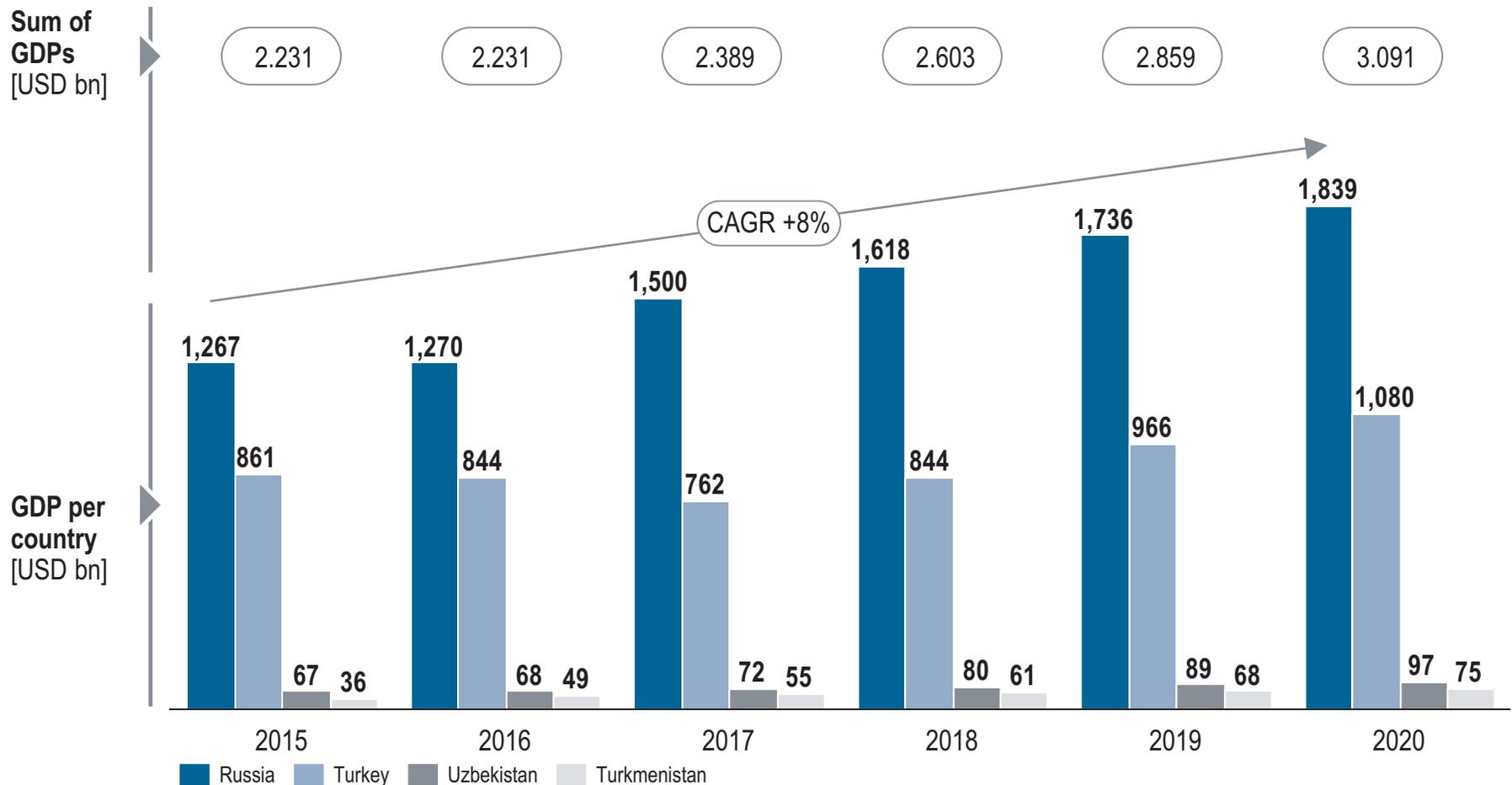
Forecast of import volume



2. Trade growth

Based on export forecast of major transit countries, Iran's rail transit volume will also increase significantly over the next years

Forecast of transit volume



3. Infrastructure projects

RAI will increase its network's capacity by investing 3.8 EUR bn in new lines, double track, electrification and dry ports until 2025

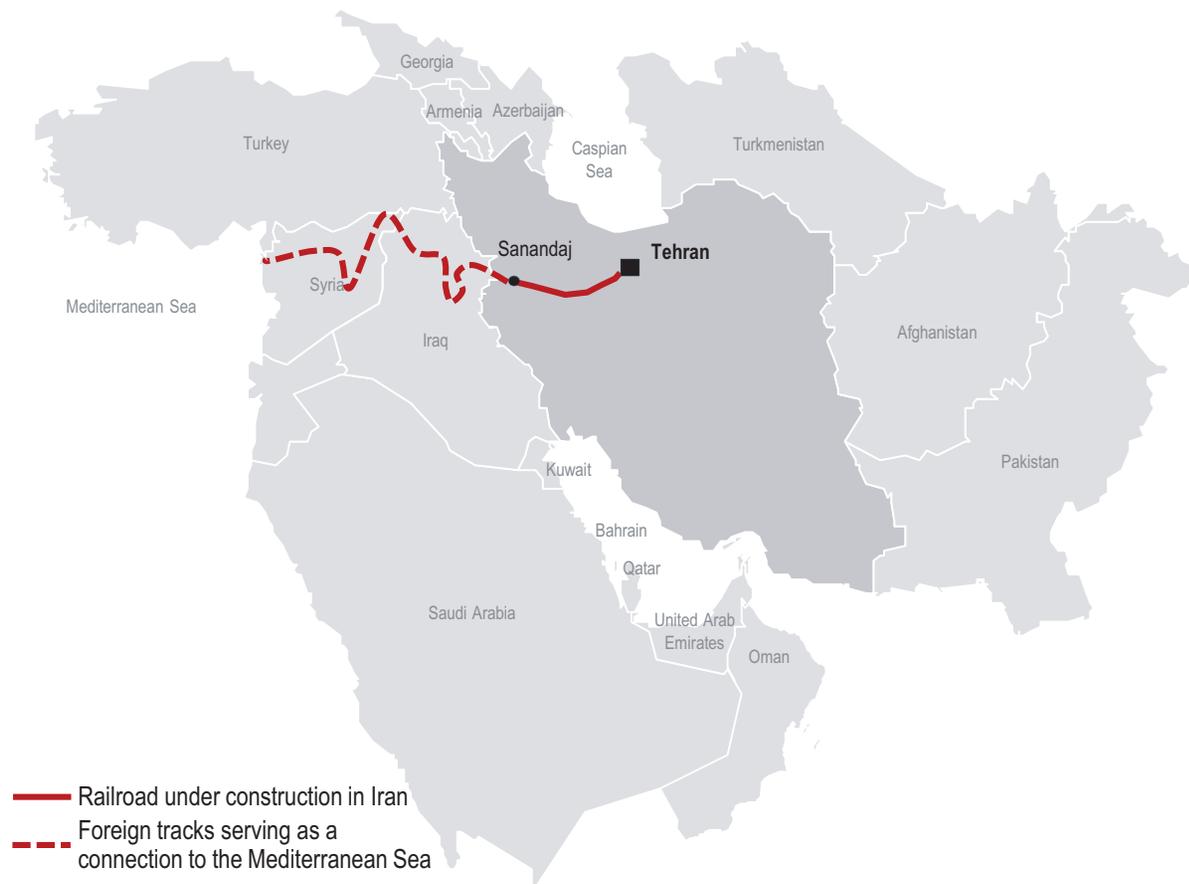
Infrastructure investments

Type	Route	Length [km]	Construction period [yrs.]	Total investment [EUR m]
New line	Isfahan - Ahwaz	545	n. a.	2,075
	Rasht - Astara	164	n. a.	350
Double tracking	Ghazvin - Zanjan	171	1-2	125
	Chadormalu- Ardakan	201	3	100
	Meybod - Badroud	254	2-3	142.5
	Badroud - Mohammadiéh	145	2	80
	Mohammadiéh - Samangan	157	2	120
	Samangan - Doroud	130	2	92.5
	Chadormalu - Jandaq - Mobarakeh	145	3	105
	Jandaq - Tabas - Torbat-e Heydarieh	542	3-4	282
Electrification	Sirjan - Bafq - Bandar Abbas	613	3-4	200
Multimodal terminals	Aprin	-	3	42
	Incheh Borun	-	3	62

3. Infrastructure projects

A very important project is the construction of a railroad between Iran and Iraq which will connect Iran to the Mediterranean Sea

Exemplary infrastructure project



- > Iran's rail network has been missing a connection to Iraq's railway network so far
- > To change this, a new railway track between Tehran and Sanandaj is currently under construction
- > By extending the railroad from Sanandaj to the Kurdistan Region in Iraq, Iran will connect its railway system to the Mediterranean Sea through Syria
- > This new route will serve Iran as an alternative to export products to Europe by rail
- > In addition, the route can also be used for transit products going from India or South East Asia to Europe

Both domestic and foreign policy measures have a significant impact on the development of the Iranian cargo transport market

Impact of political interventions



Domestic policy

- > Development of national and international cargo traffic depends on the respective legislative environment in Iran
- > New laws could either have a positive or negative effect on the overall rail cargo volume
 - Import/export limitations or trade bans for specific products to support domestic production
 - Government incentives, e.g. speed limits on road transportation or larger budget support for rail transportation

Iranian cargo market

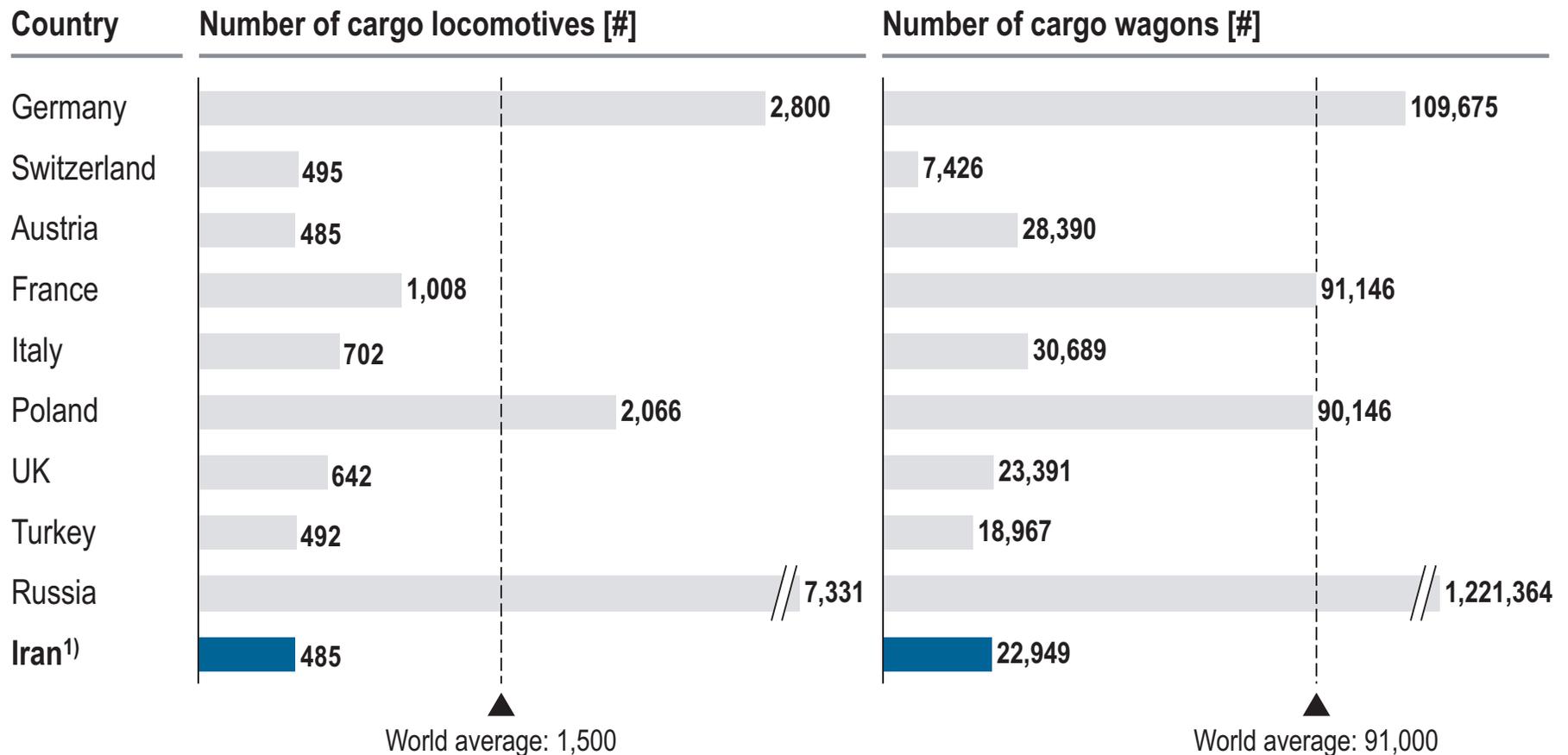
Foreign policy



- > In particular the international traffic depends on the legislative environment in neighbor countries
- > Potential interventions that would heavily impact the Iranian cargo transport market are for example
 - Enforcement of sanctions or other trade bans between certain countries
 - Changes in customs regulation of neighbor countries

The size of RAI's fleet of cargo locomotives and wagons is very small compared to international peers

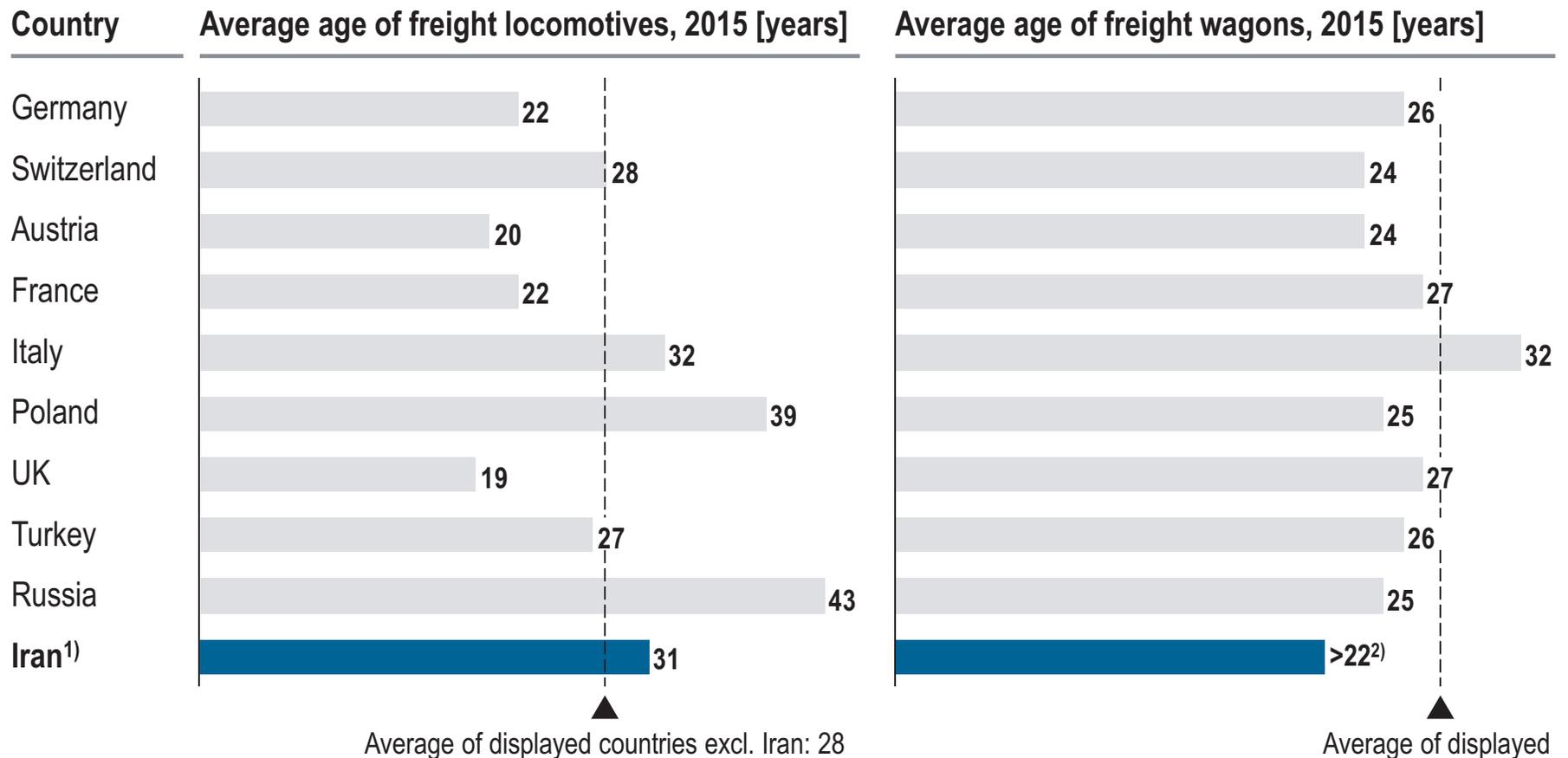
Fleet size, 2015



1) Iran numbers for 2017

RAI's average age of cargo locomotives is slightly higher than international average

Fleet age, 2015



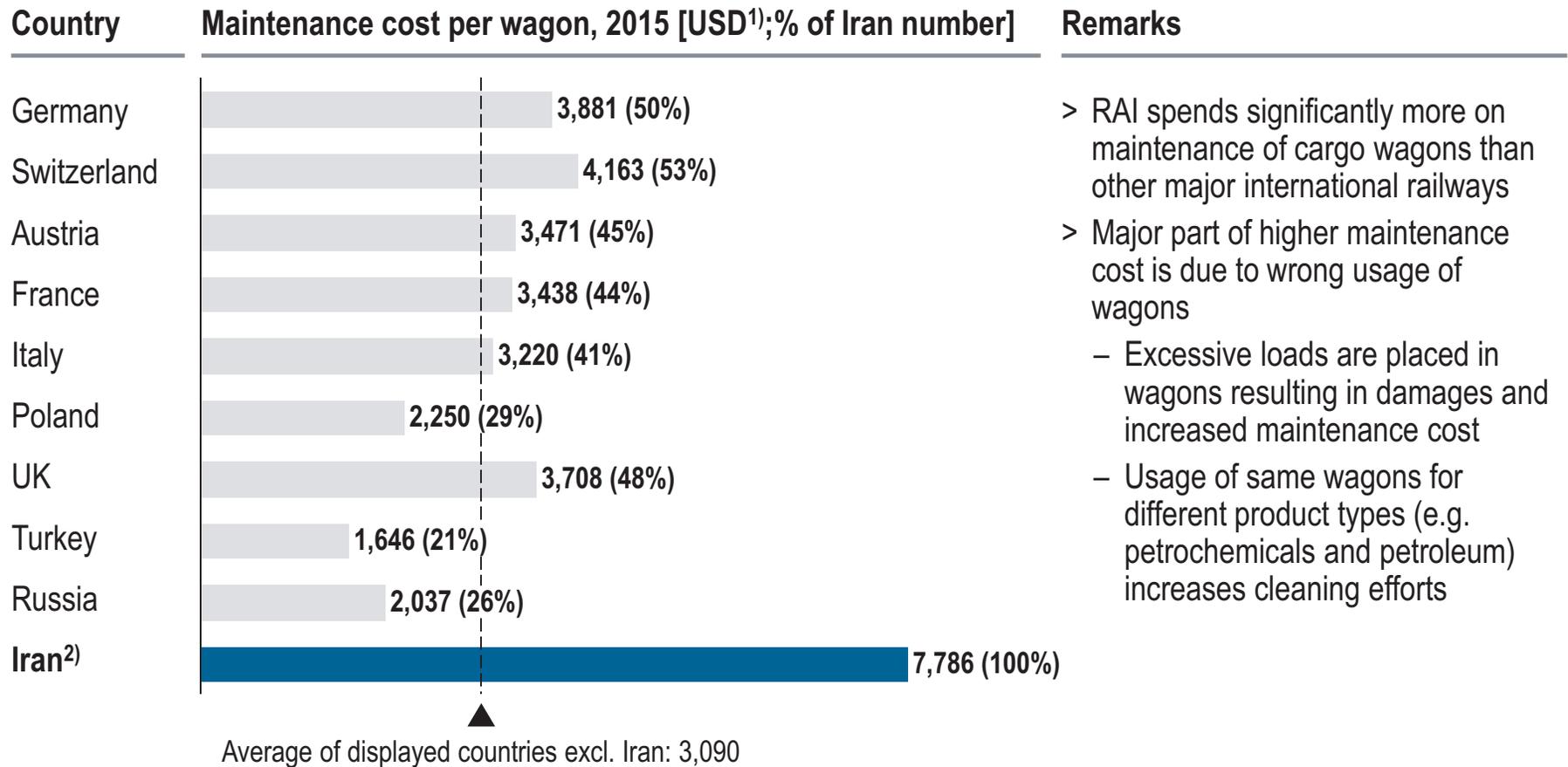
1) Iran numbers for 2017

2) No exact calculation possible as only average numbers have been provided

Source: RAI, Roland Berger

As a consequence of inappropriate operations of cargo wagons, RAI's maintenance costs are above international average

Wagon maintenance



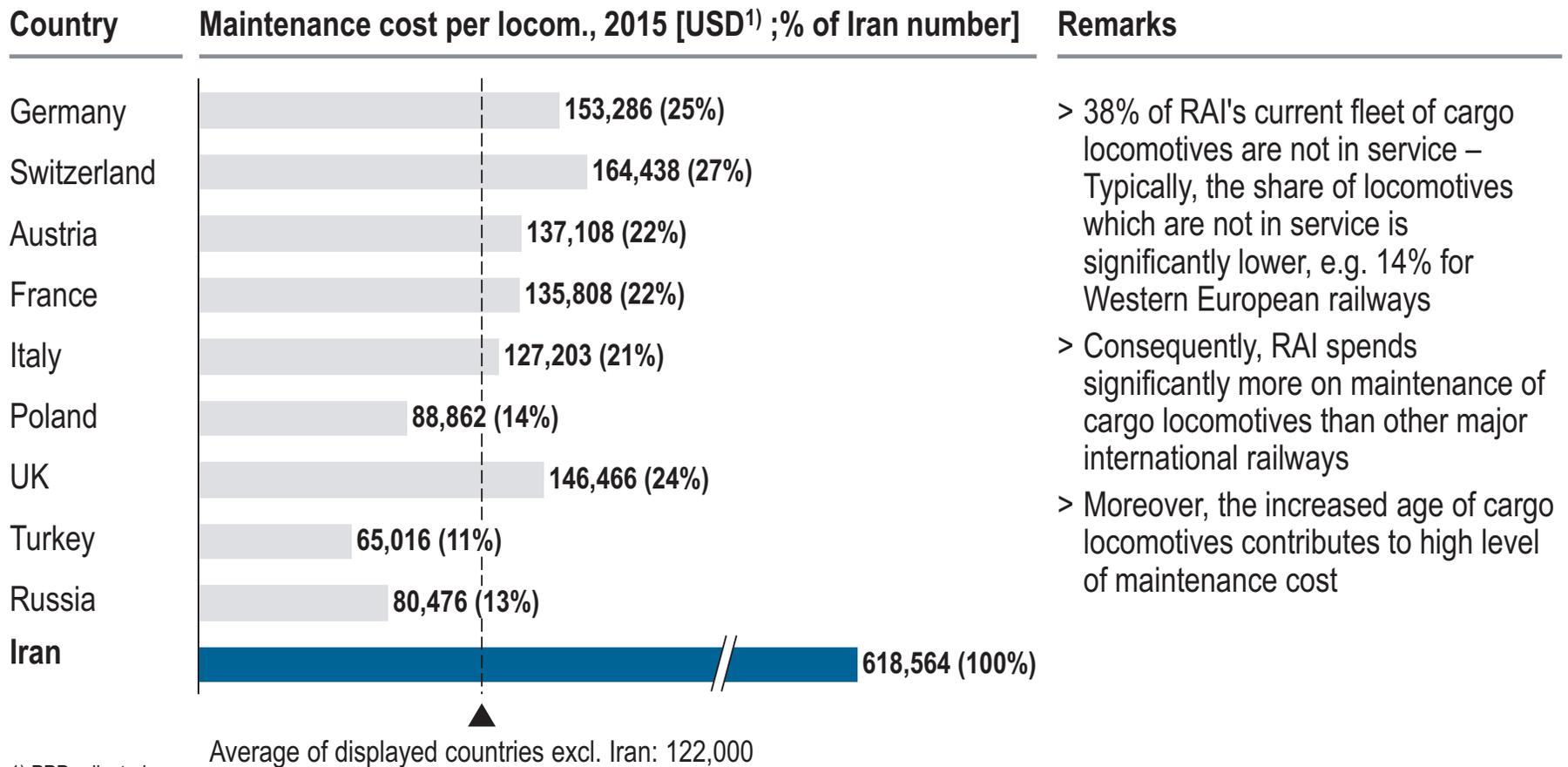
1) PPP-adjusted

2) Only 90% of maintenance cost for Iran have been PPP-adjusted; the other 10% are for spare parts that are sourced internationally

Source: RAI, Roland Berger

In addition, maintenance cost for cargo locomotives are significantly higher than international average

Locomotive maintenance

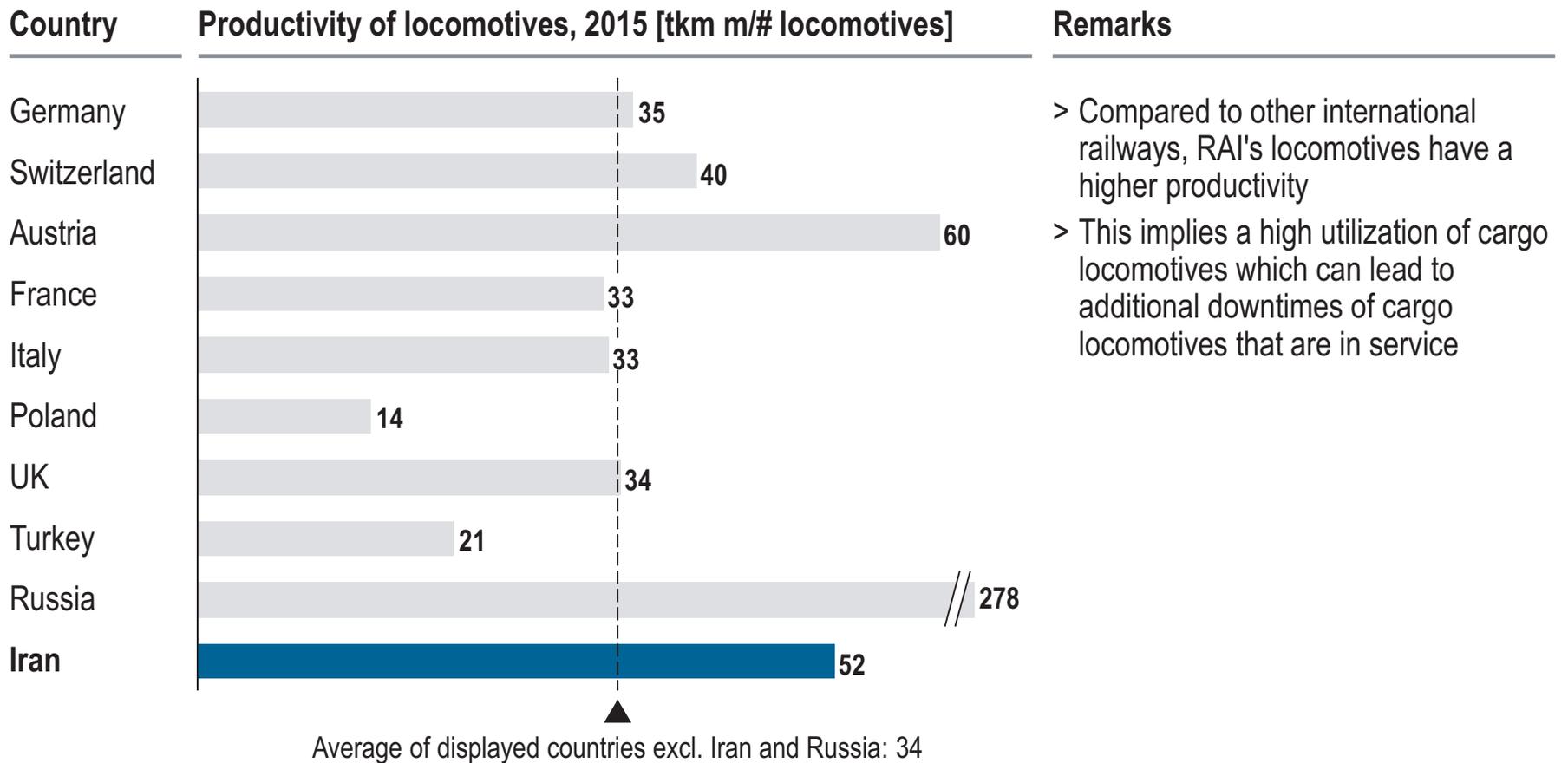


1) PPP-adjusted

2) Based on data for Alstom locomotive. Only 35% of maintenance cost for Iran have been PPP-adjusted; the other 65% are for spare parts that are sourced internationally

Due to high out-of-service rate, RAI needs to manage more traffic per locomotive risking over-utilization of its in-service cargo fleet

Vehicle productivity



Technological advancements in fields like automation and analytics can have a significant impact on rail operations and maintenance

Exemplary innovations

Automation



- > Automating transport services offers the chance to reduce costs and increase reliability
 - Traditional OEMs as well as major tech companies are currently in the process of developing self-driving trucks for the cargo market
 - Driverless train vehicles have mainly been used in urban mass transit system so far, but can also be used for cargo transport
 - The Australian mining company RioTinto has been testing autonomous freight trains since 2014

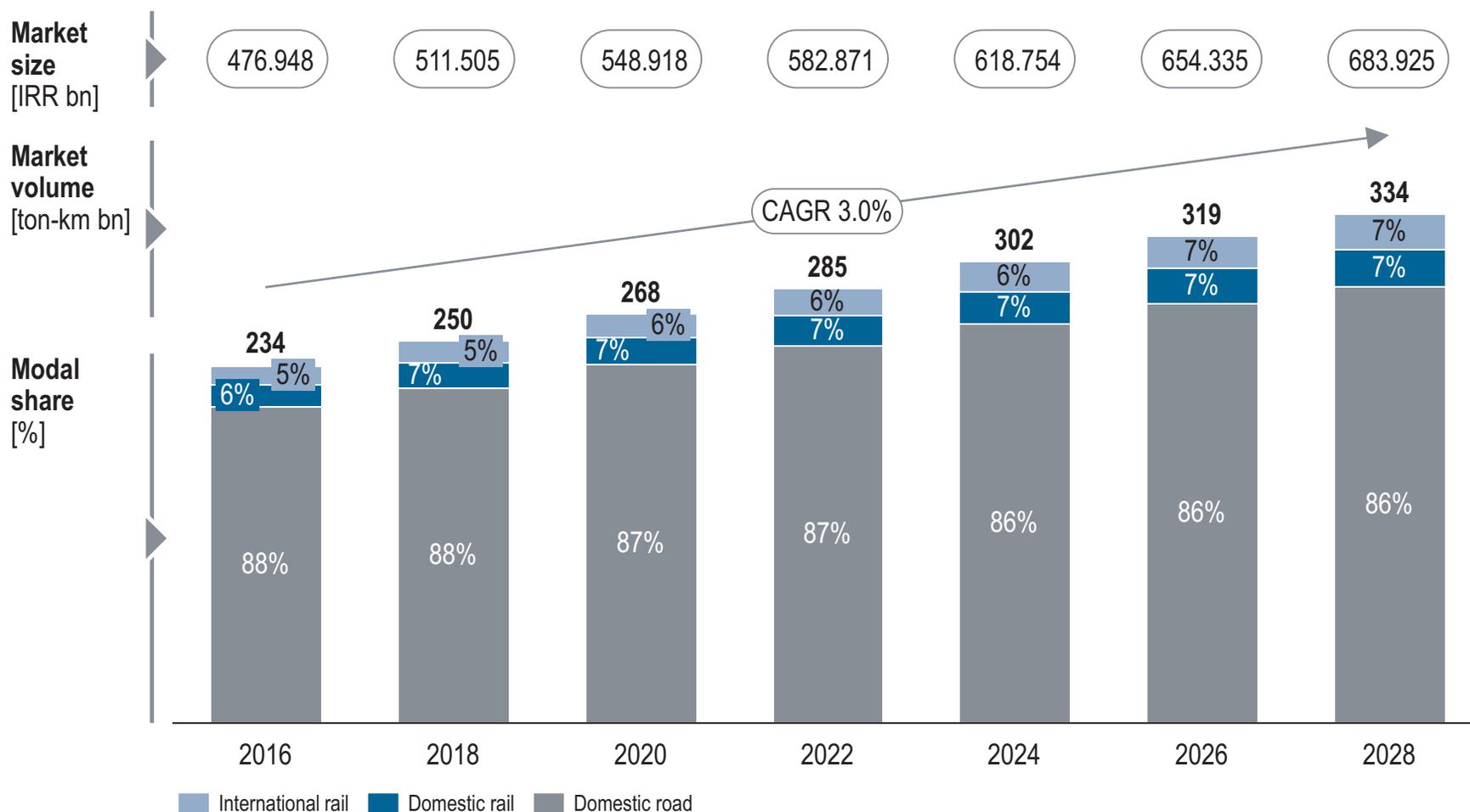
Smart data analytics



- > By gathering and analyzing relevant real-time data of train operation and condition, rail operators can improve reliability and minimize overall risks and costs
 - Virgin Rail has been using automatic train monitoring tools in UK to reduce the risk of in-service breakdowns
- > Data analytics systems can also be used to keep track of the infrastructure's condition
 - The Dutch railway organization ProRail has fitted its tracks with sensors to monitor the asset condition remotely

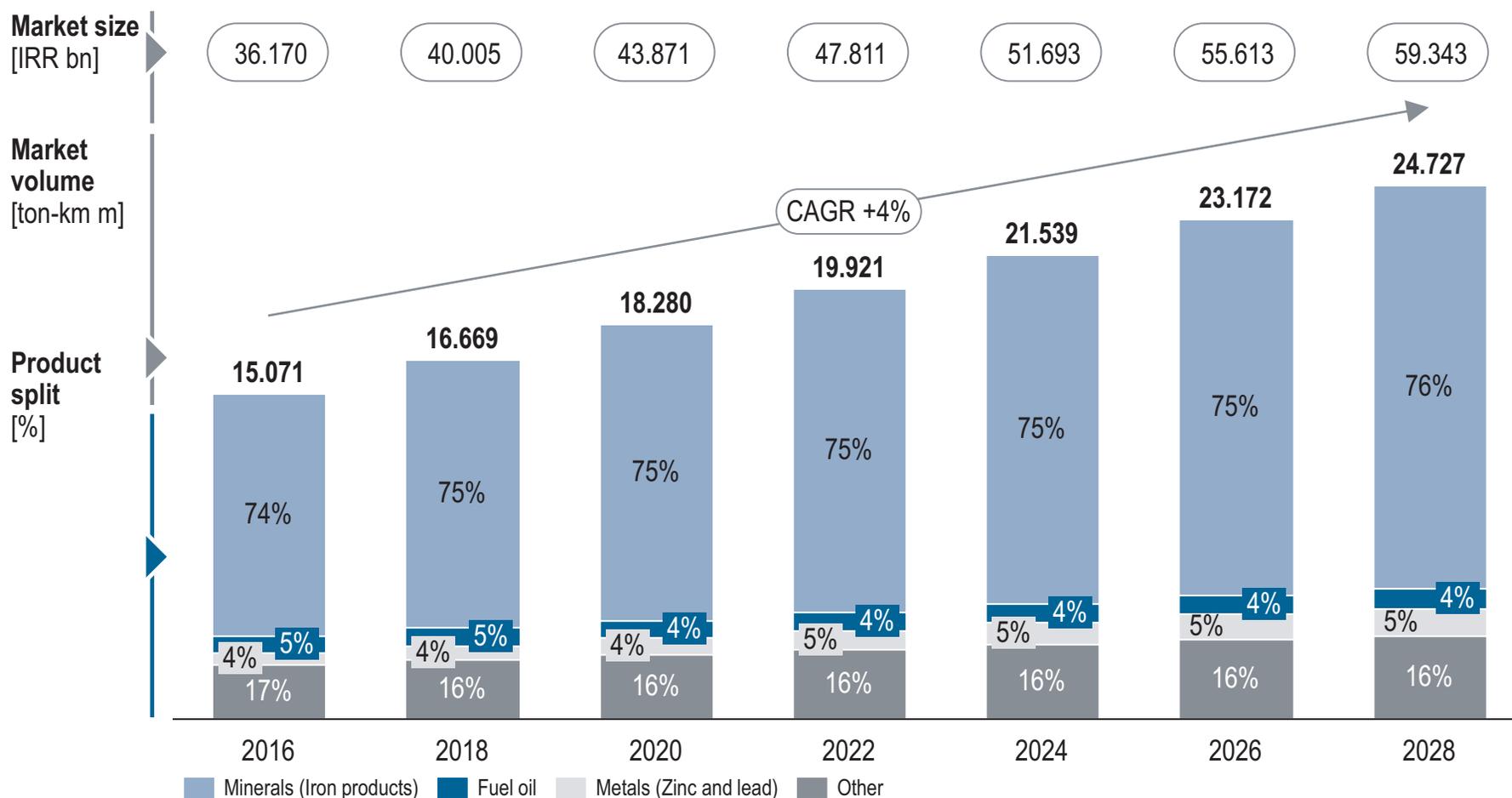
We expect the cargo transportation market in Iran to grow by an average annual rate of 3% from 2016 to 2028

Cargo transportation market forecast



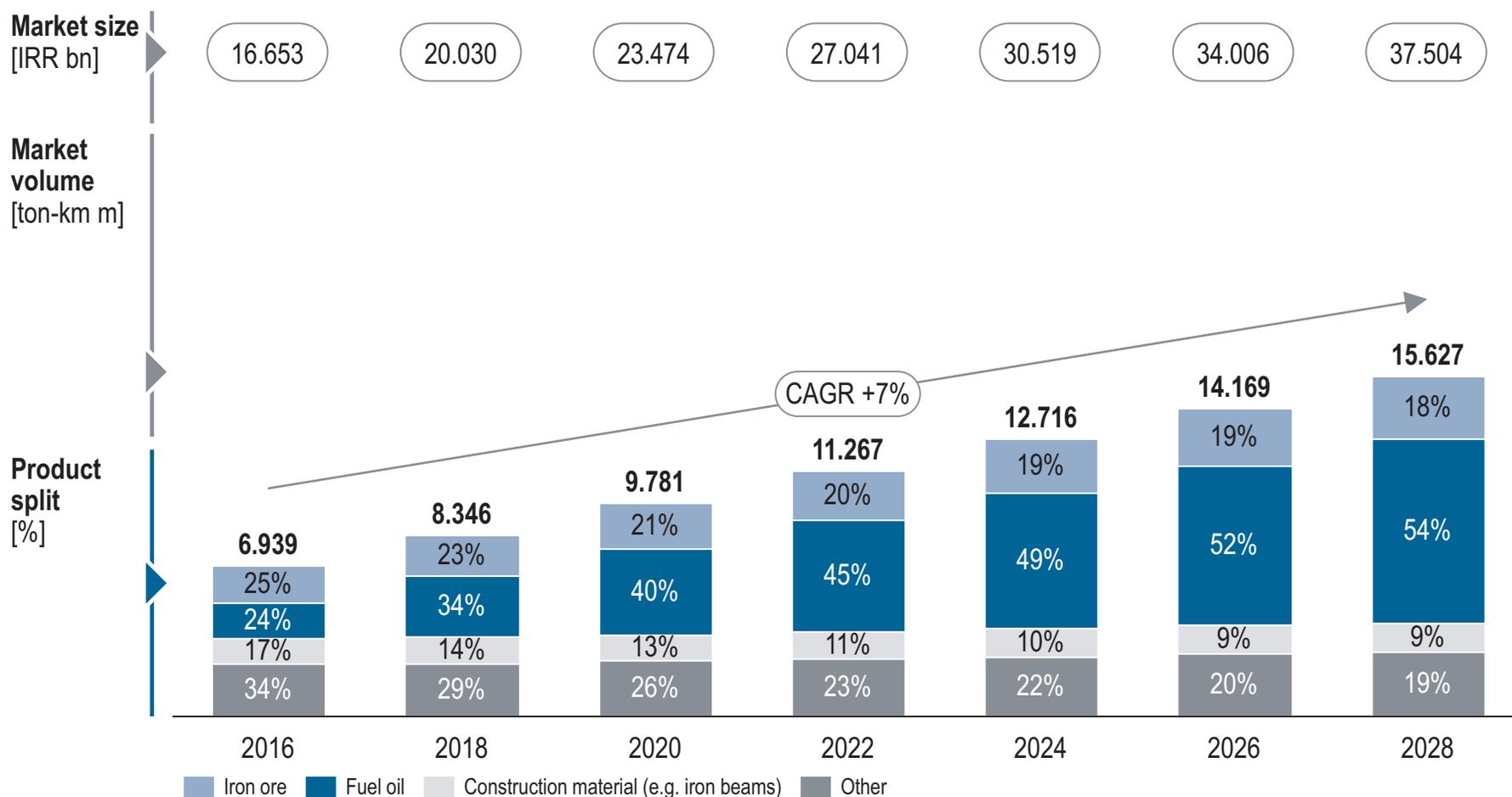
Our forecast suggests that domestic cargo will increase by more than 60% until 2025 – Minerals make up three quarters of the volume

Cargo transportation market forecast – Domestic



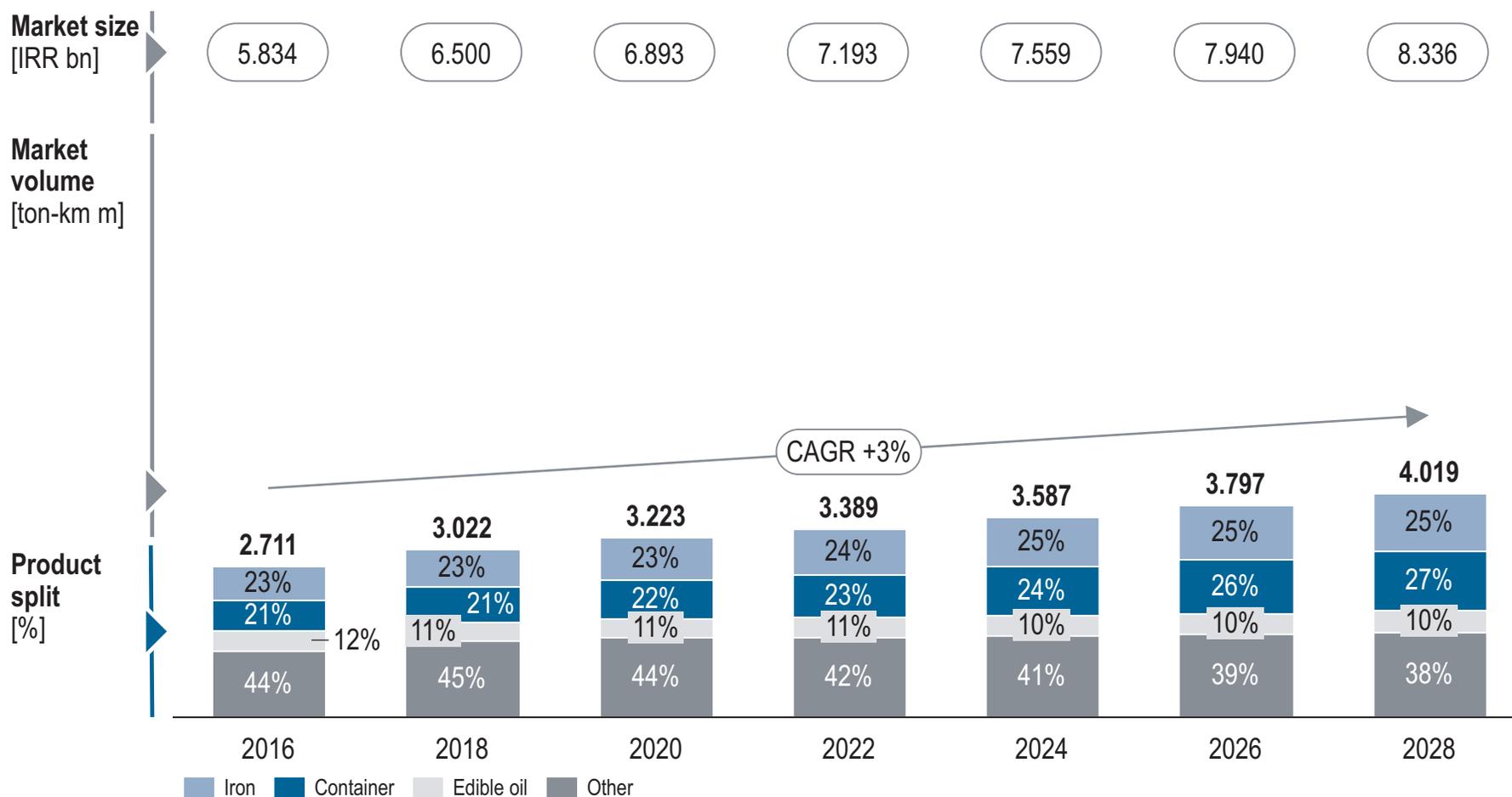
We expect export cargo to grow even faster than domestic cargo –
 Yet, export cargo remains very small compared to domestic cargo

Cargo transportation market forecast – Export



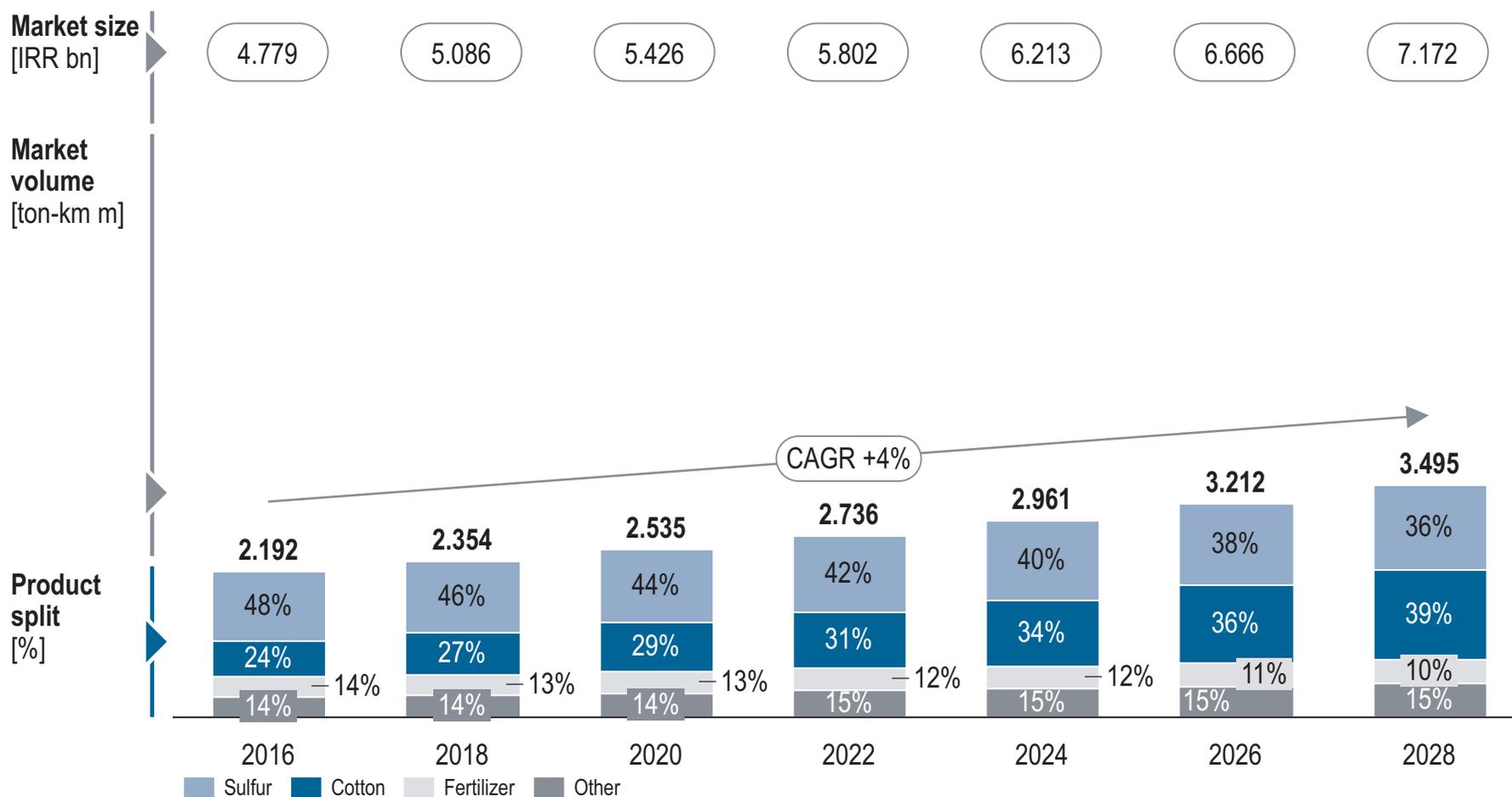
For imports, we forecast an annual growth rate of 3% until 2028 – Containers will become the most significant product type for imports

Cargo transportation market forecast – Import



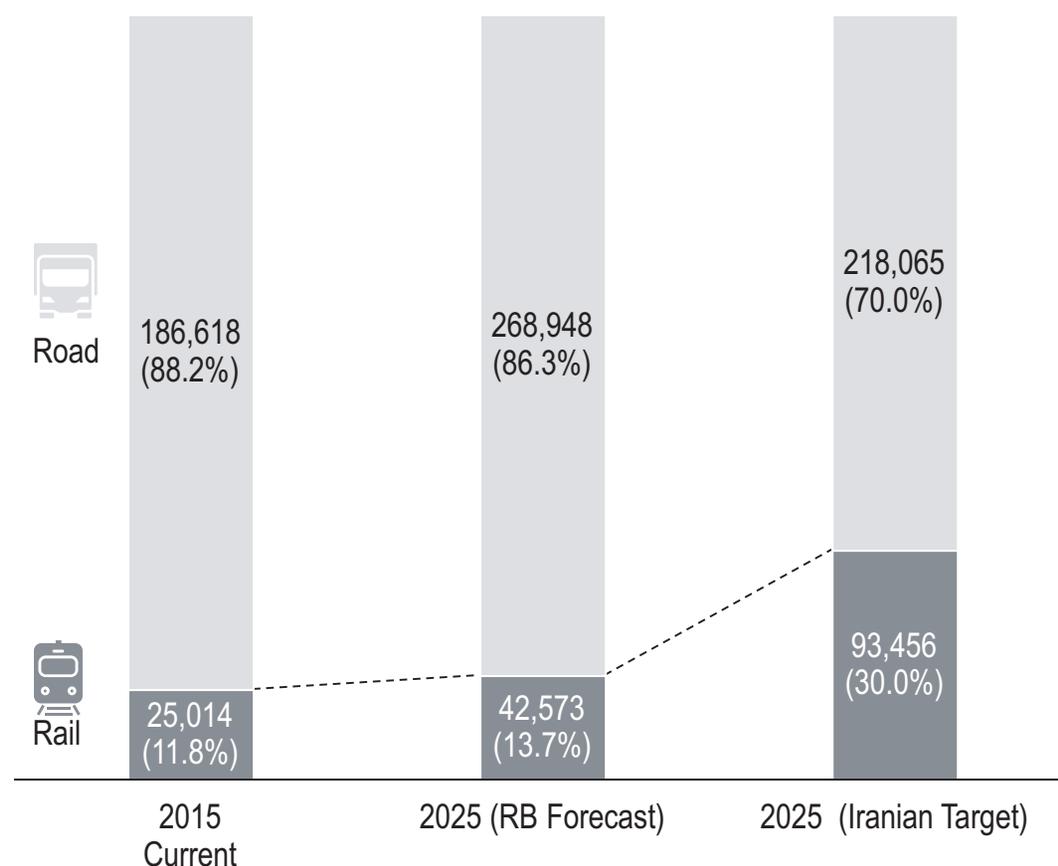
According to our forecast, cotton will gain momentum and become the most important transit good

Cargo transportation market forecast – Transit



Our forecast suggests that the rail market share will increase to 13.7% until 2025 – Strategic measures are needed to reach target share

Target comparison [million ton-km]



- > Without further strategic measures, the organic growth of the Iranian cargo market leads to an intermodal share of rail freight of 13.7% in 2025
- > Compared to the official target of the sixth development plan, rail needs to acquire 50,883 m ton-km in addition to the organic market growth
- > The additional growth should be created through the new strategy, in particular in the areas with strategic need for action

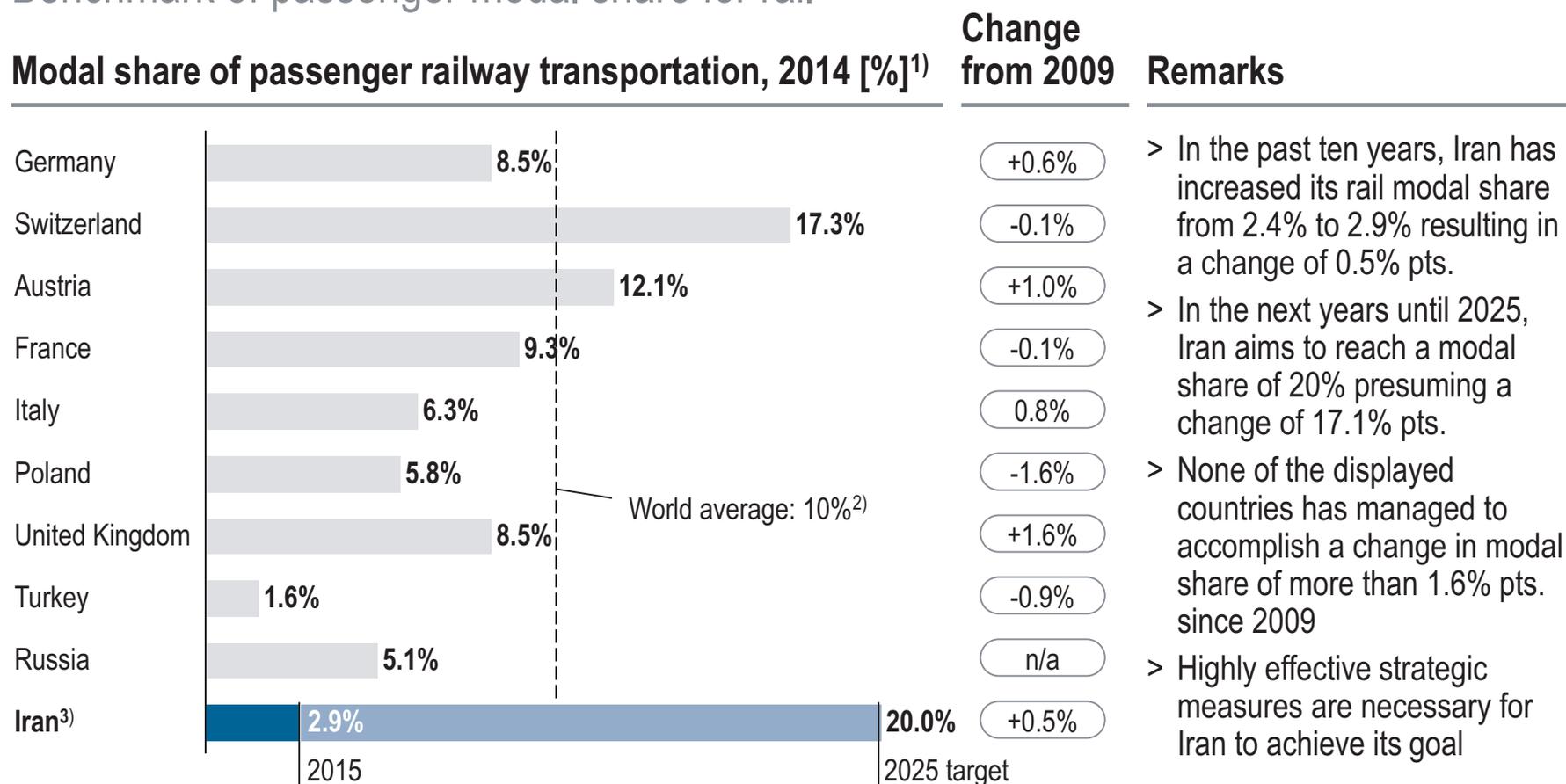
-  Market position
-  Operations
-  Fleet

B.1.3 Iranian passenger transportation market



Iran's objective to increase rail modal share from 2.9% to 20% until 2025 seems ambitious given the growth rate in the past decade

Benchmark of passenger modal share for rail



xx% Change in rail freight modal share since 2009 in % pts. (For Iran since 2005)

1) Based on passenger-km; 2012 for Russia; 2015 for Turkey and Iran

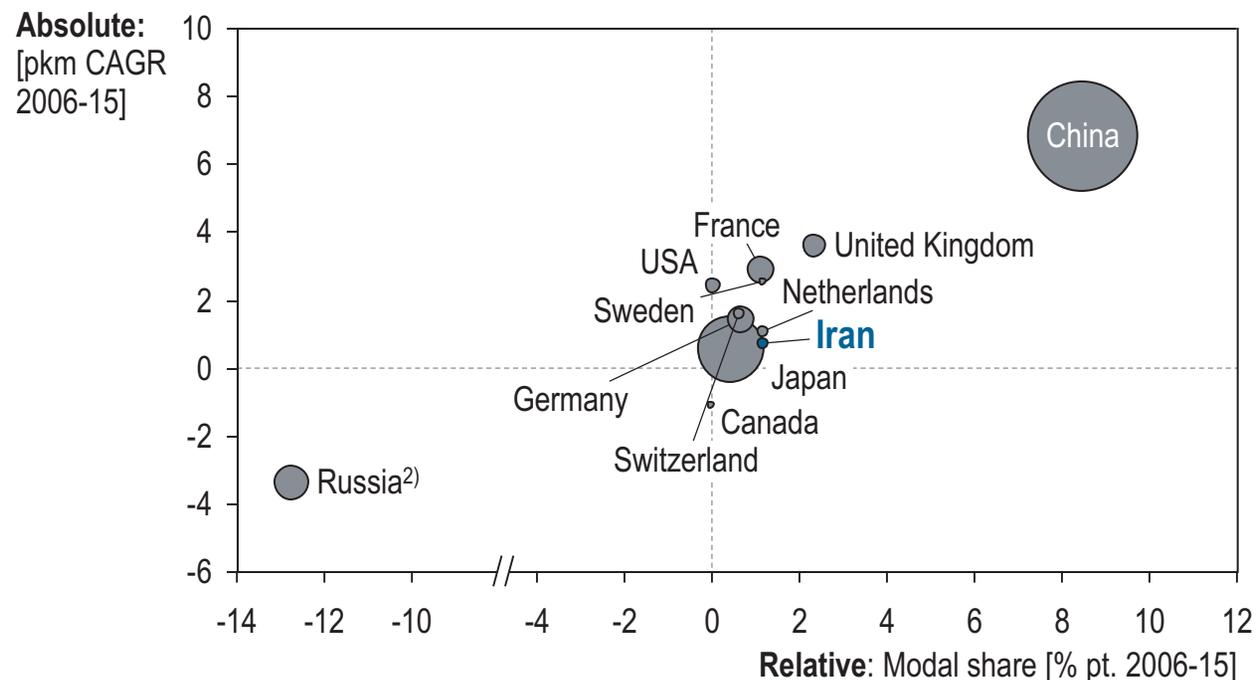
2) Average of displayed countries excl. Russia and Iran: 8.7% 3) Modal share based on passenger

Source: Eurostat, RAI

Over the last decade, the absolute volume and the modal market share of passenger transportation have been increasing

Traffic and market share development

Passenger traffic and modal share development, 2006-2015¹⁾³⁾



Remarks

- > Iranian rail passenger traffic has been growing at an average yearly rate of 0.7% – Modal share of rail transport grew by 1.2%
- > Consequently, the modal share of rail passenger traffic could be stabilized at its current value of approx. 3%
- > Still, a major part of the growth in passenger traffic during the last decade has been captured by road segment

 Bubble size indicates pkm 2015

1) Y-axis: Average % growth/decline in pkm p.a.; X-axis: Average % point growth/decline of rail modal share 2006-2015 3) For Iran 2008-2014

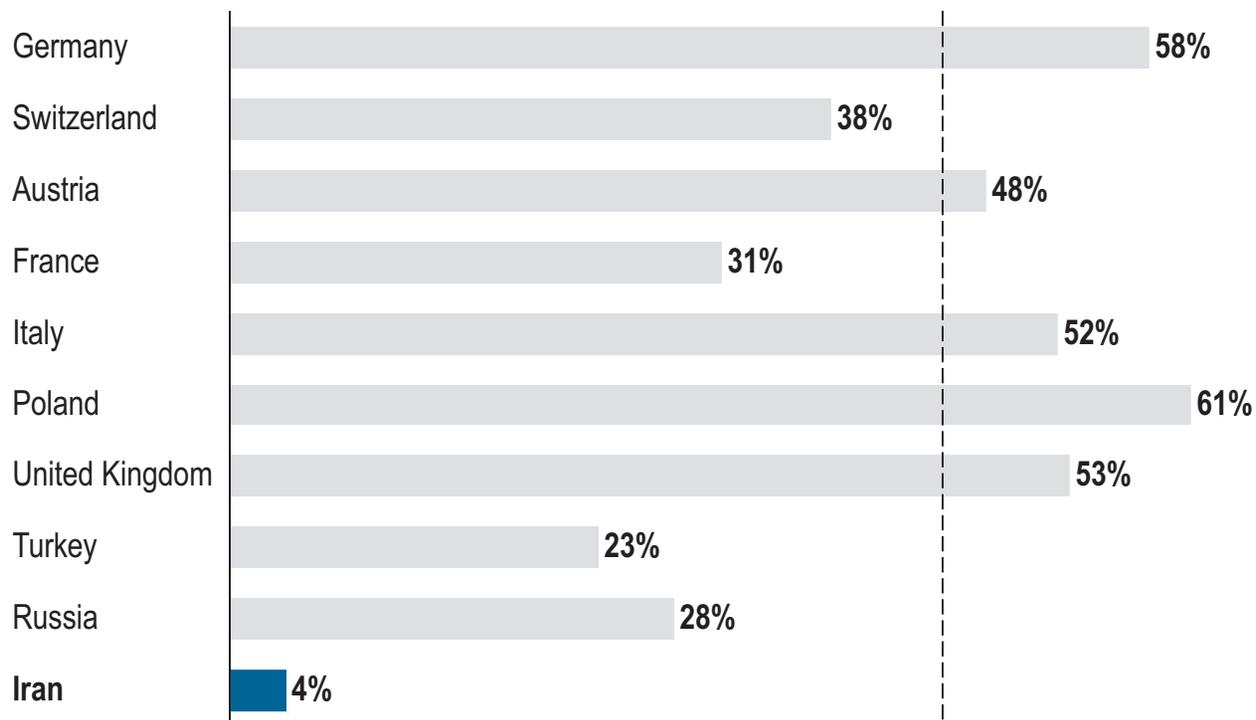
2) Significant increase in motor vehicles per 1000 inhabitants in Russia: From 228 in 2006 to 293 in 2014, i.e. 28%

Source: OECD, Eurostat, ICAO, National Bureau of Statistics of the PRC, Web research

A major reason for the low modal share of rail is that Iran's railway is still missing out on the potential of commuter services

Regional transport

Regional share of total rail passenger kilometers, 2015 [%]



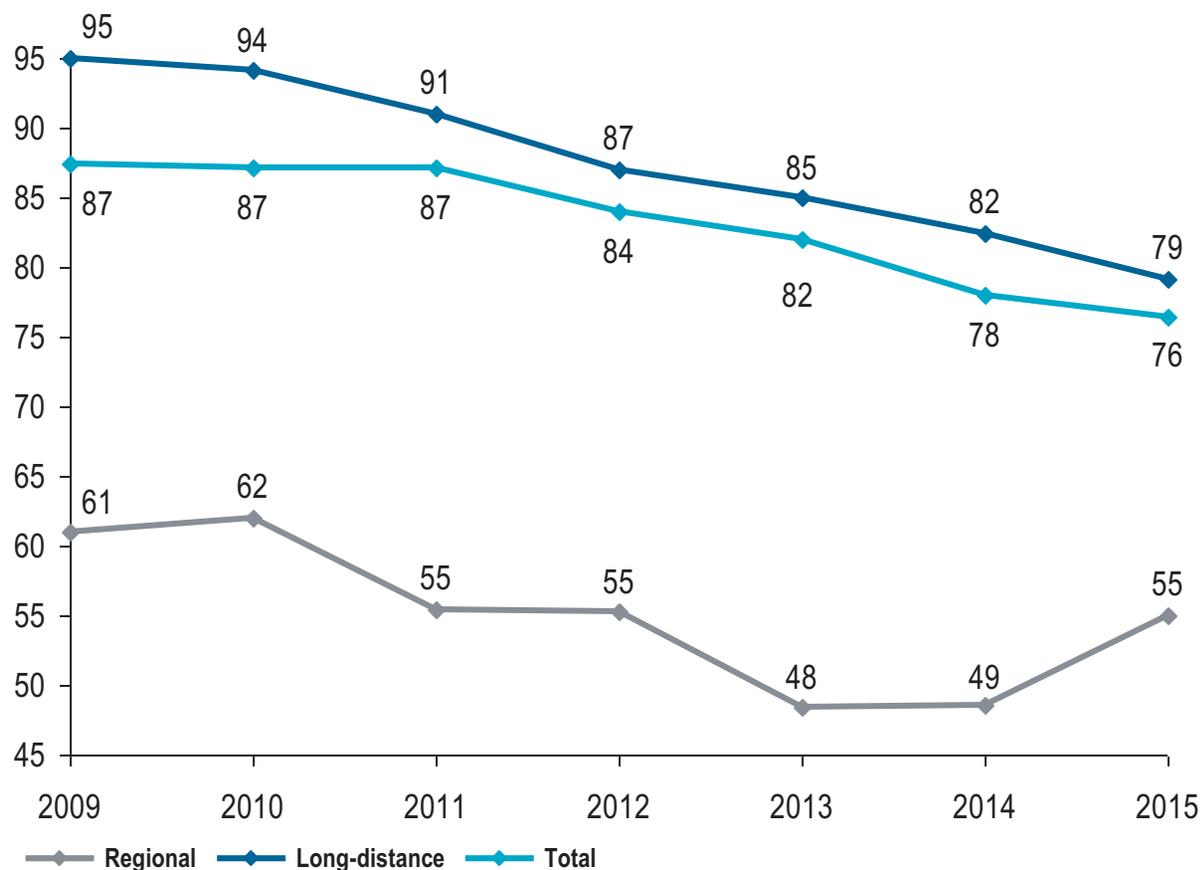
Average of displayed countries excl. Iran: 45%

Remarks

- > Current regional share of railway transportation in Iran is comparatively small compared to other countries due to insufficient regional and commuter lines
- > Expanding the commuter network around Tehran will lead to an increase in regional passenger volume
- > Further commuter lines in other major cities like Mashhad are necessary to exploit the potential of the regional transport market

Seat load factors have constantly fallen since 2009 but are still on a very high level compared to international peers

Seat load factor [%] (I/II)

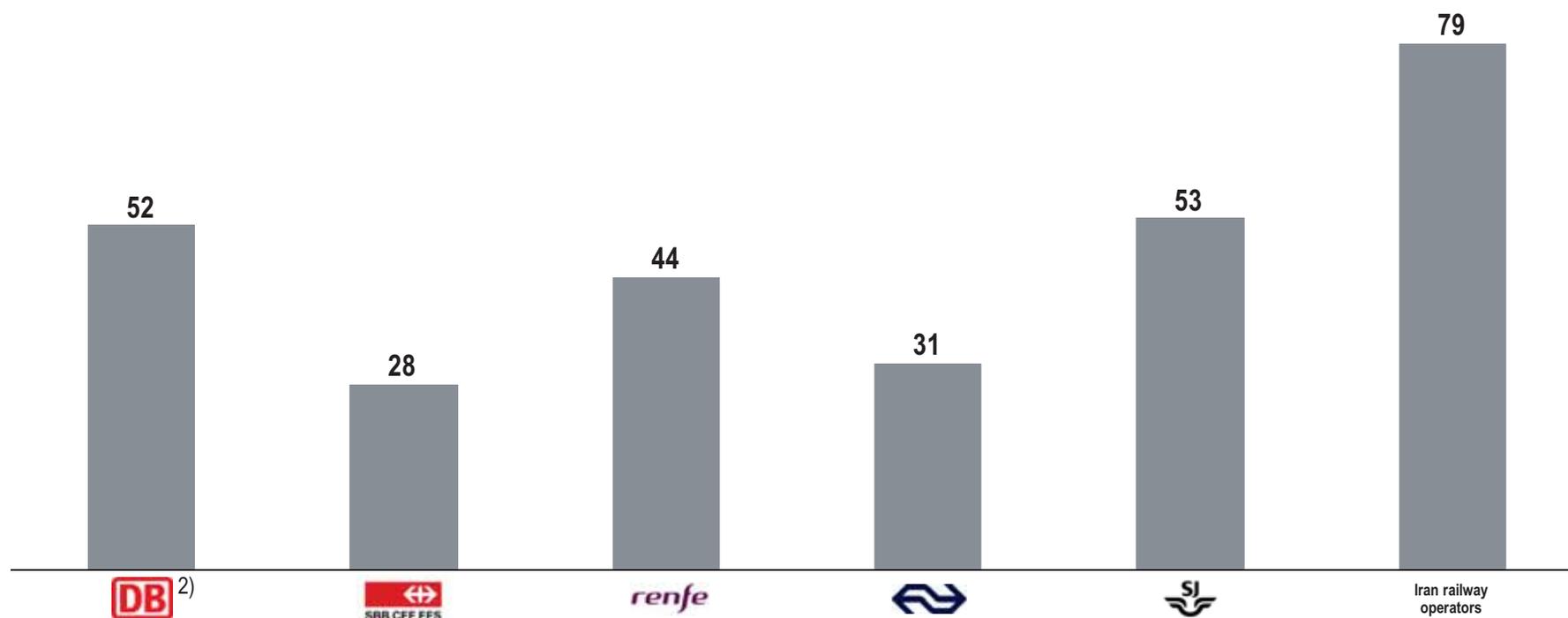


- > The seat load factor has always been extraordinarily high in Iran due to the fact that railway operators only serve the busiest routes between major cities
- > The strong decrease in recent years is mainly due to an increase in operated train services
- > Despite the negative trend, the occupancy rate is still far above the average of major European rail operators
- > In Germany, the seat load factor is 45% for long-distance and 25% for regional transport

RAI's seat load factor is hardly comparable as most railways do not publish statistics on occupancy rates of passenger trains

Seat load factor [%] (I/II)

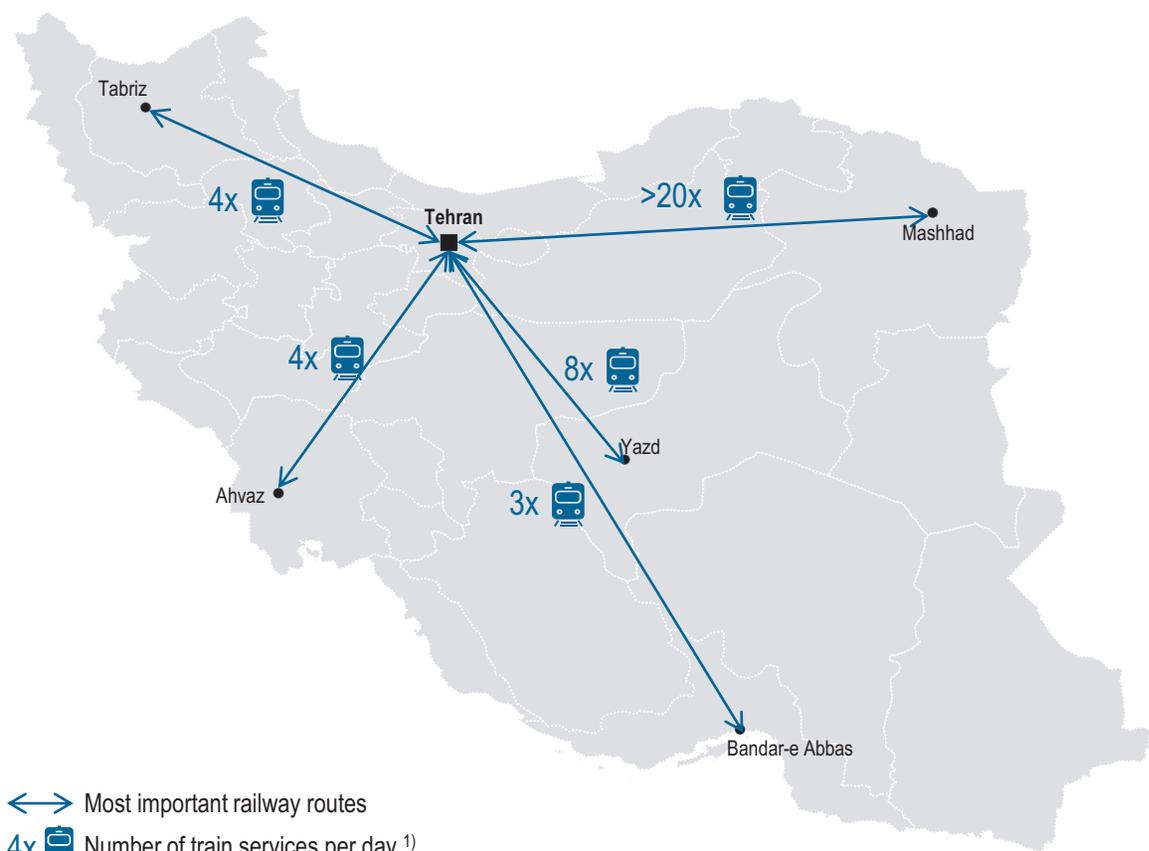
Seat load factors of national railways¹⁾, 2015



1) No data available for ÖBB, SNCF, Trenitalia, PKP, TCCD and RZD 2) Long-distance only

Tehran appears to be the center of the Iranian rail industry – The five most frequented routes all start in the capital

Map with most important passenger routes



↔ Most important railway routes
 4x  Number of train services per day ¹⁾
 1) Includes all operators

- > The major railway routes connect Tehran with other large cities across Iran
- > All of these routes belong to the long-distance segment with distances of more than 700 km
- > The frequency of train services varies greatly among the routes – The most frequented destination is Mashhad with more than 20 daily services

We identified five major drivers that can lead to changes in the passenger market size and structure

Passenger market drivers

Driver	Impact	Comments
1. Consumer prosperity		> The domestic passenger market depends on the economic well-being of potential customers
2. Service improvements		> A customer's choice of transport mode depends on certain key characteristics, e.g. speed and frequency
3. Infrastructure projects		> The length of the railway network determines which customer groups have access to rail services
4. Intermodal connectivity		> By connecting railway stations with the local mass transit system, more potential customers can be reached
5. Fleet development		> The capacity of rail cargo transports depends on the number and the condition of locomotives and wagons



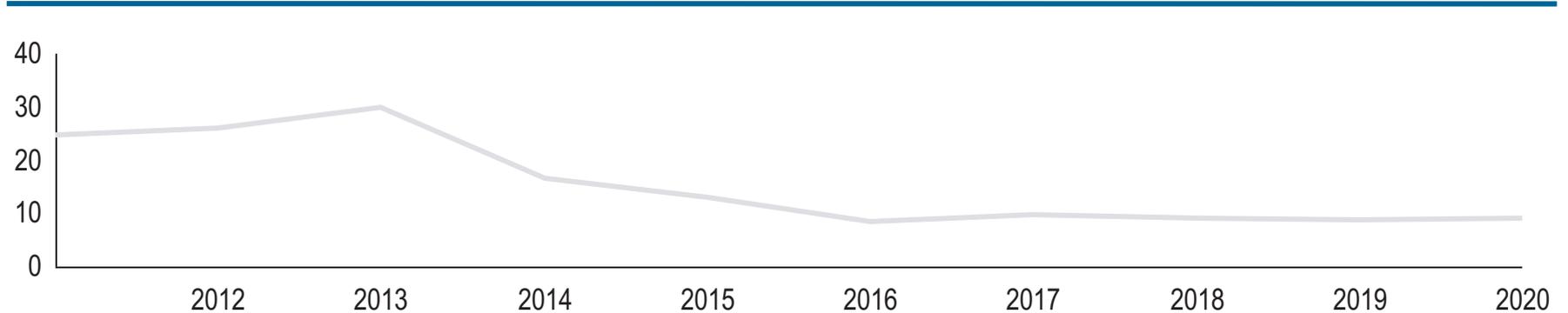
Level of impact

1. Consumer prosperity

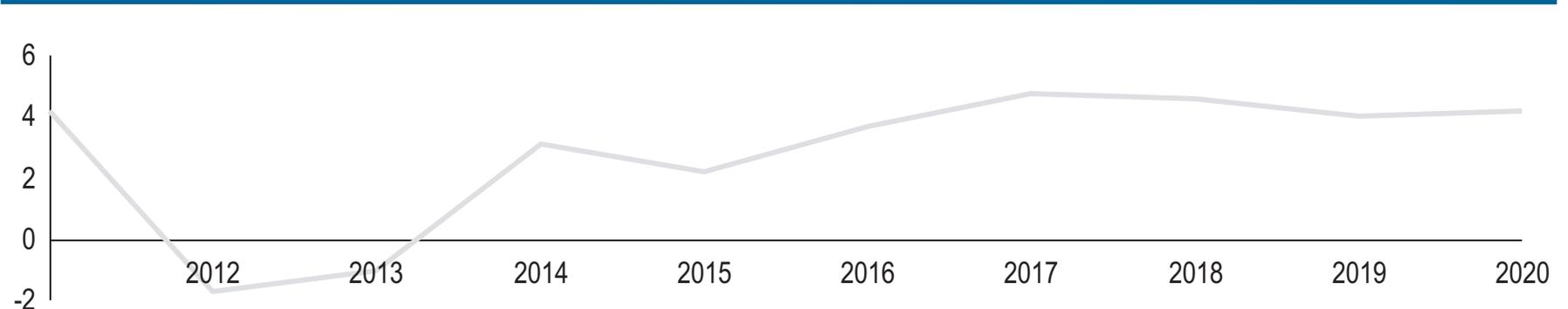
The growth of the average household income is expected to slow down – Yet, the consumer spending rate will increase even more

Forecast of consumer indicators

HOUSEHOLD INCOME GROWTH, 2011-2020 [%]



CONSUMER SPENDING GROWTH, 2011-2020 [%]



There are four key service aspects on which consumers base their decision for a transport mode

Key characteristics of transport services

	Price 	Time 	Frequency 	Connectivity 
Competitive advantage				
Potential for improvements	<ul style="list-style-type: none"> > Lowering the prices would make rail services more attractive to price-sensitive customers who have chosen buses over trains in the past 	<ul style="list-style-type: none"> > Increasing the average speed would lead to a reduction of travel time which would make rail services more preferable for time-sensitive customers 	<ul style="list-style-type: none"> > Increasing the number of daily train services would attract consumers who value flexibility with regard to departure time 	<ul style="list-style-type: none"> > By adding more direct connections to the current route network, operators could reach out to untapped customer groups

2. Service improvements

For long-distance travel, bus services are cheaper on most routes while flight services are faster – Rail offering is stuck in the middle

Prices and traveling time of public transport modes

Route and distance [km] ²⁾		Price ['000 IRR] ¹⁾			Travel time [hh:mm]		
Tehran to Mashhad	900	570	540	2,200	10:10	14:00	01:30
Tehran to Shiraz	930	672	540	1,800	15:00	13:00	01:30
Tehran to Ahvaz	850	410	550	1,650	16:30	13:00	01:30
Isfahan to Bandar Abbas	950	664	600	2,200	14:30	16:00	01:30
Isfahan to Mashhad	1,100	910	510	2,450	18:00	16:00	01:30
Isfahan to Tehran	450	324	330	1,500	07:30	06:00	01:00

 Train service more expensive than bus service Train service slower than bus service

1) Average prices for each mode

2) Travel distance by road transport

- > Due to a strict speed limit policy, busses are not allowed to drive faster than 80 km/h – Yet, it still takes longer to use rail services on more than half of all shared routes
- > Rail services are often more expensive than respective bus services, but cheaper than flights
- > To justify the price gap between rail and bus services, rail services need to focus their marketing activities on their safety advantages

In addition to price and travel time, comfort in trains can be further improved (e.g. restaurant offering, wireless internet)

By introducing high speed services, Iran's railway could improve its market position – The first high speed line is currently being built

High speed rail project

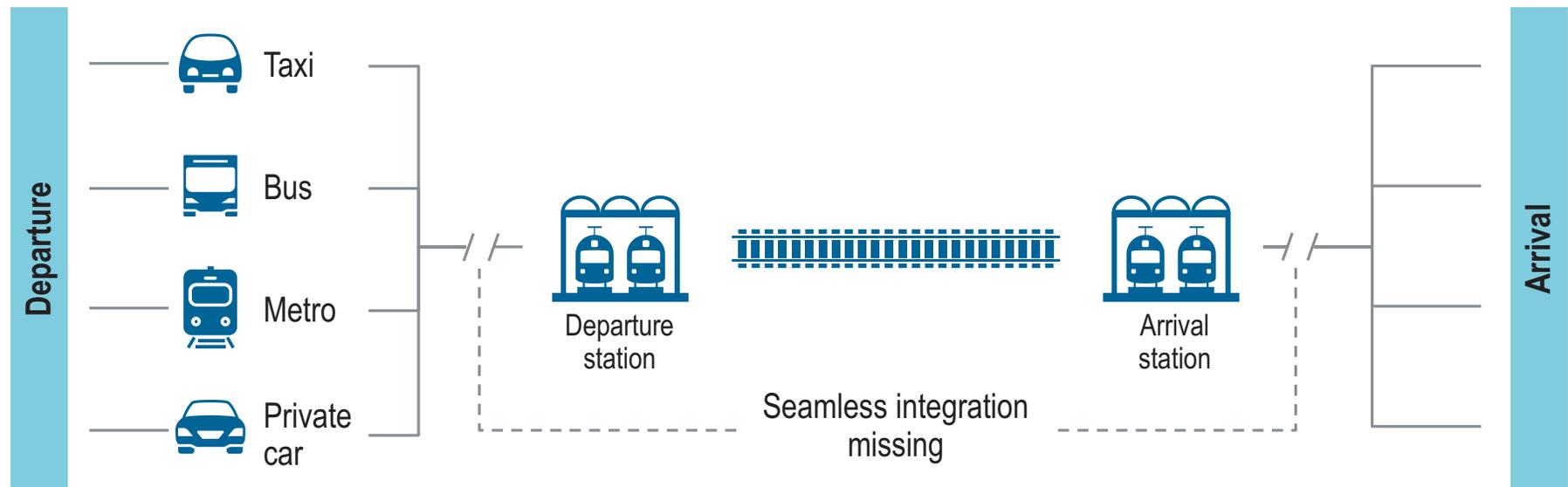


----- High speed rail line under construction

- > Iran's first high speed rail line is currently under construction
- > It will connect the cities of Tehran, Qom and Isfahan on a length of 422 km
- > The entire route will be electrified with overhead catenary allowing high speeds of up to 300 km/h
- > Due to the increase in speed, the traveling time between Tehran and Isfahan will be reduced significantly
- > Further potential high speed rail lines are currently under investigation

Currently, business opportunities through intermodal connections in stations are not exploited

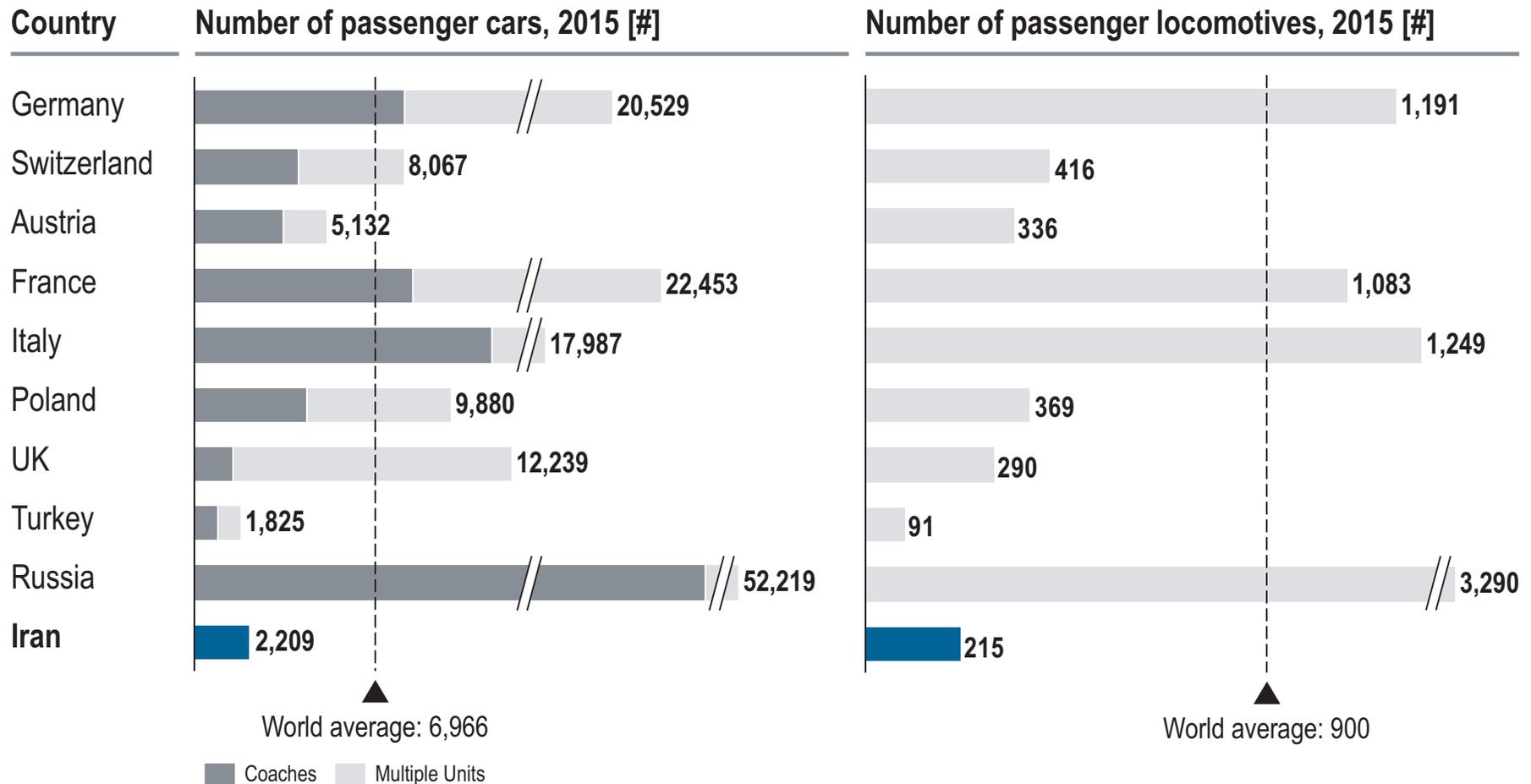
Intermodal integration



- > Many station in the Iranian rail network lack integration of other transport modes – Seamless integration would increase customer experience and in turn increase rail modal share
- > Moreover, the integration of other transport modes in and around stations offers additional business opportunities, e.g. creation of intermodal ticket and payment solution. First attempts on intermodal integration have been started, e.g. together with mobile ride-sharing application Snapp

RAI's passenger fleet is fairly small compared to other passenger railway companies

Fleet size



Overall, Iran's passenger coaches are relatively old compared to other countries

Fleet age

Country	Average age of passenger coaches ¹⁾ , 2015 [years]	Remarks
Germany	17	<ul style="list-style-type: none"> > According to interviews with passenger operator companies, the quality of rail services is low due to the fact that passenger coaches are outdated and not modernized > Compared to railways in other countries, the average age of coaches in Iran is relatively high > This is even more relevant given the higher frequency of interior modifications (in average between 5 to 10 years) and major body overhauls (every 15 to 20 years) at European railways
Switzerland	21	
Austria	23	
France	24	
Italy	30	
Poland	37	
UK	18	
Turkey	18	
Russia	32	
Iran	>25	

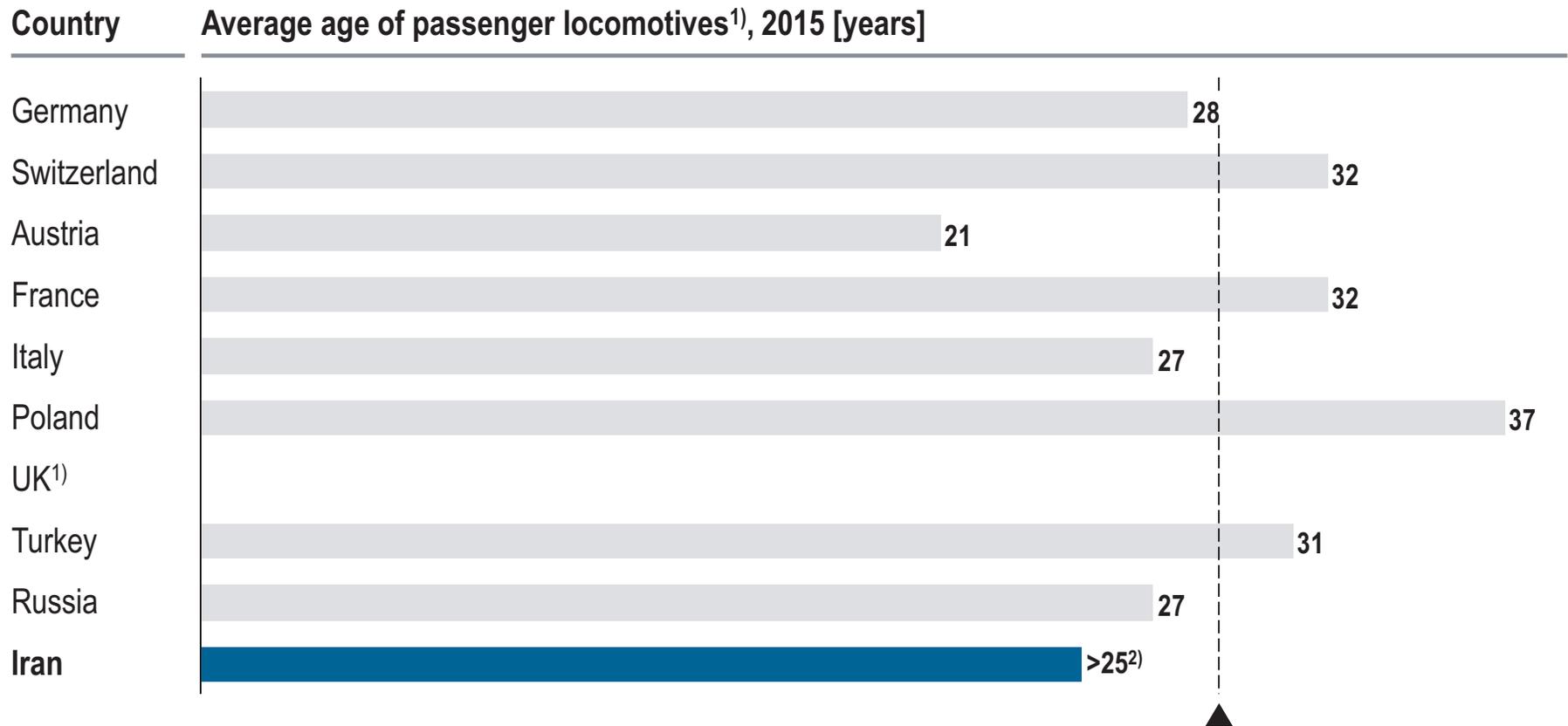
Average of displayed countries excl. Iran: 23

If only coaches are taken into consideration, the UK age is higher. However, we also include multiple units which are significantly younger than in the UK than coaches. Thus, 18 years is the correct number

1) The number and average age of passenger cars includes all wagons and multiple units

Evaluation of the average age of passenger locomotives in Iran was not possible as data for Iran has not been given as exact number

Fleet age

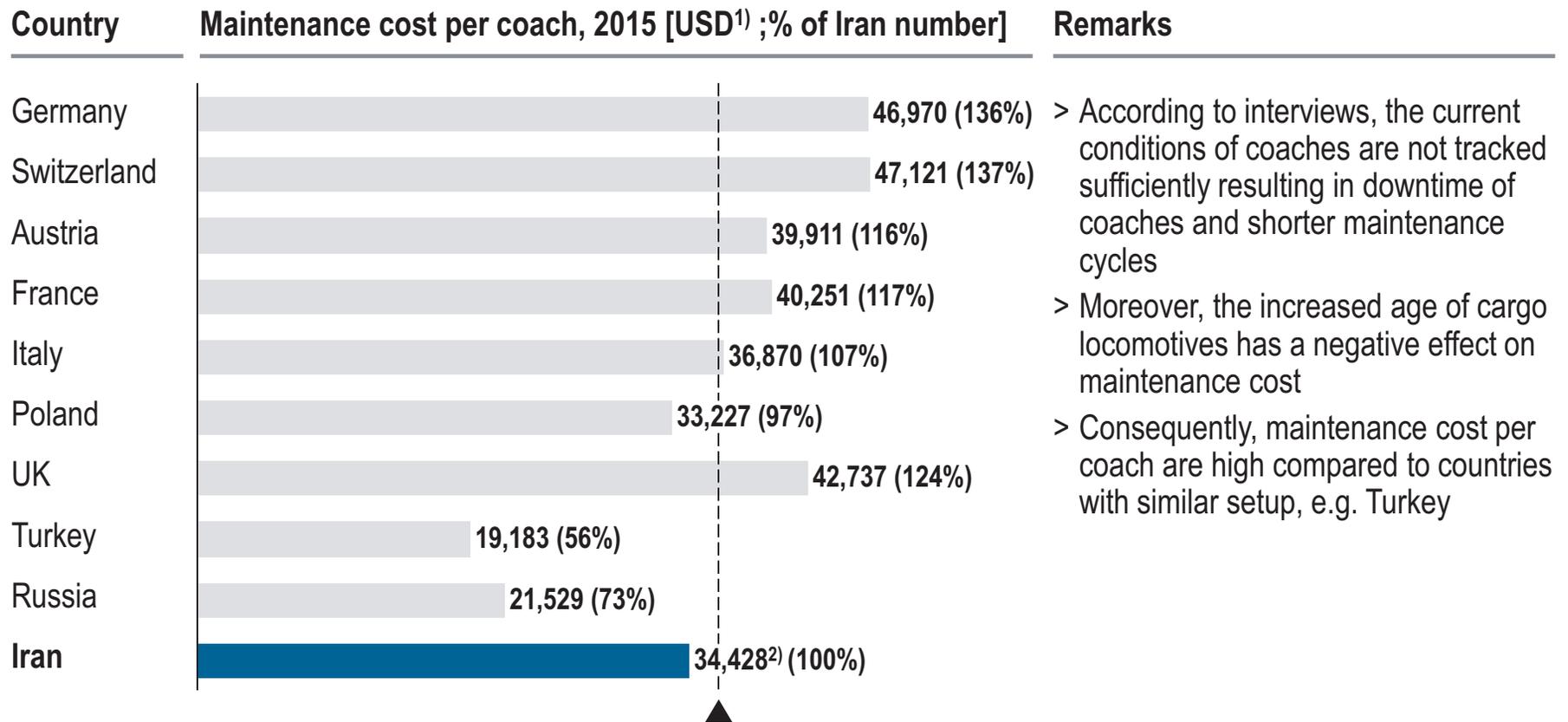


Average of displayed countries excl. Iran: 29

1) No data available 2) No exact calculation possible as only average numbers have been provided

As a result of the high average age, RAI's cost of maintenance for coaches are relatively high compared to neighboring countries

Coach maintenance



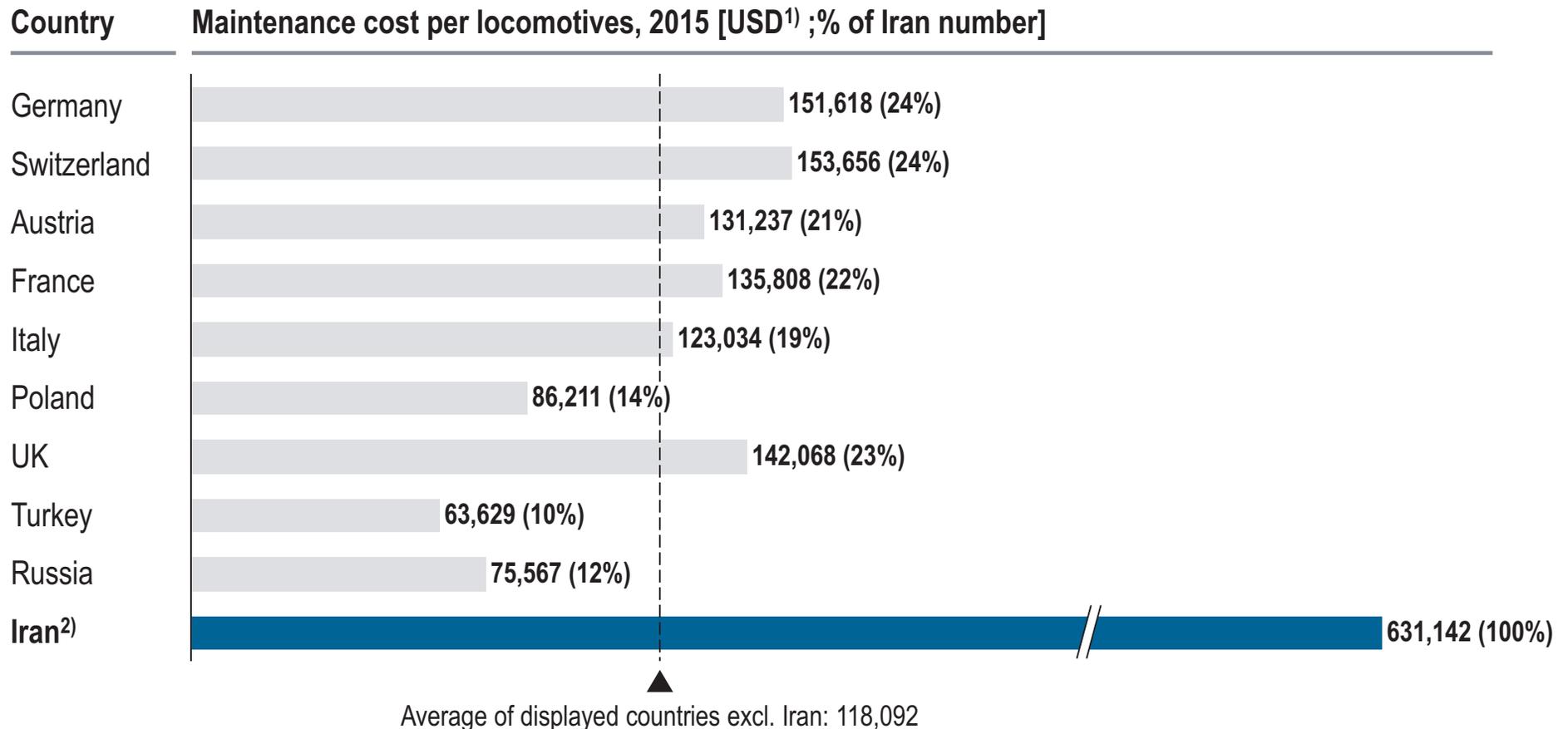
Average of displayed countries excl. Iran: 36,500

1) PPP-adjusted

2) Iran data from 2014. Only 50% of maintenance cost for Iran have been PPP-adjusted; the other 50% are for spare parts that are sourced internationally

In addition, maintenance cost for passenger locomotives are significantly higher than international average

Locomotive maintenance

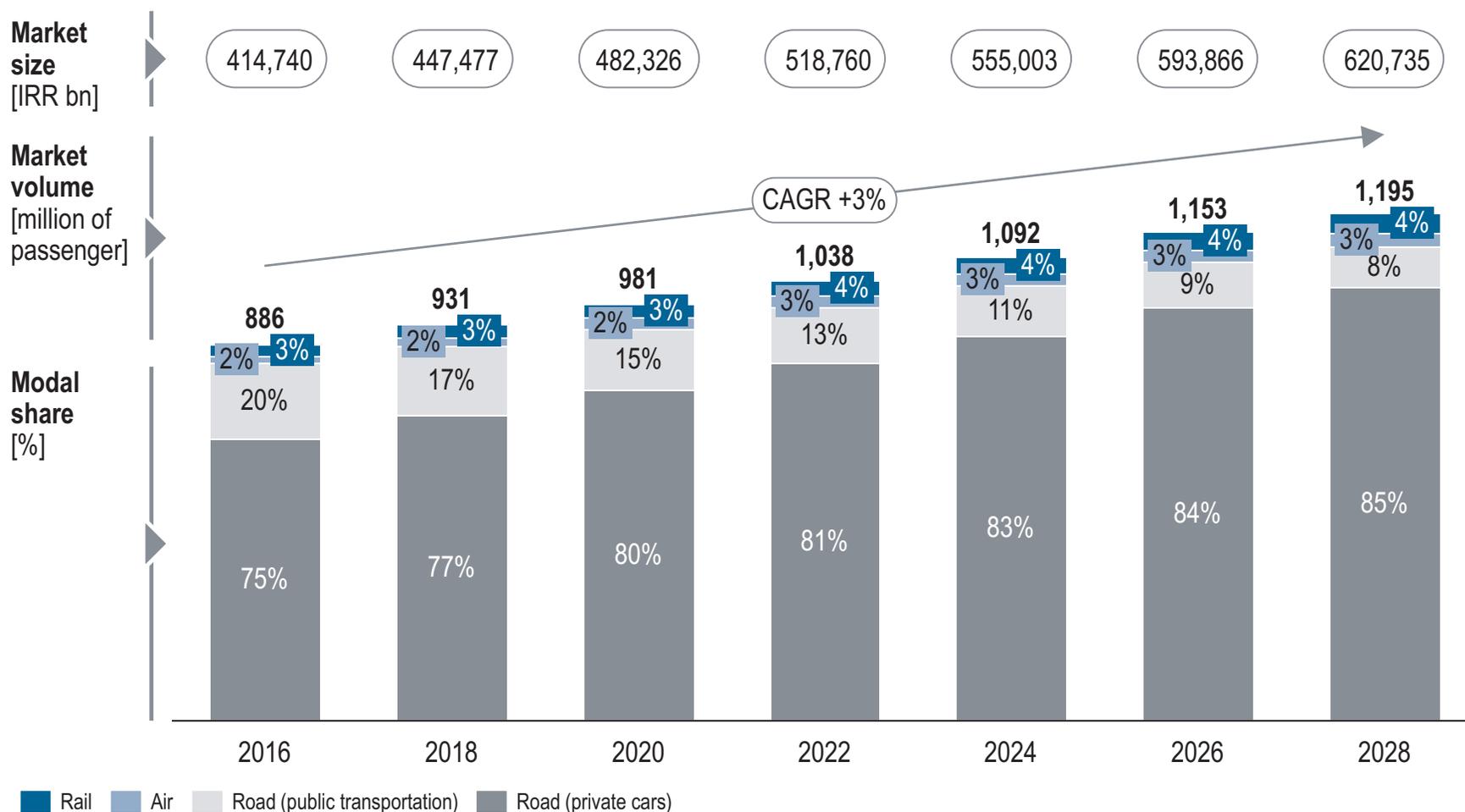


1) PPP-adjusted

2) Data based daily rate for Siemens locomotive. Only 35% of maintenance cost for Iran have been PPP-adjusted; the other 65% are for spare parts that are sourced internationally

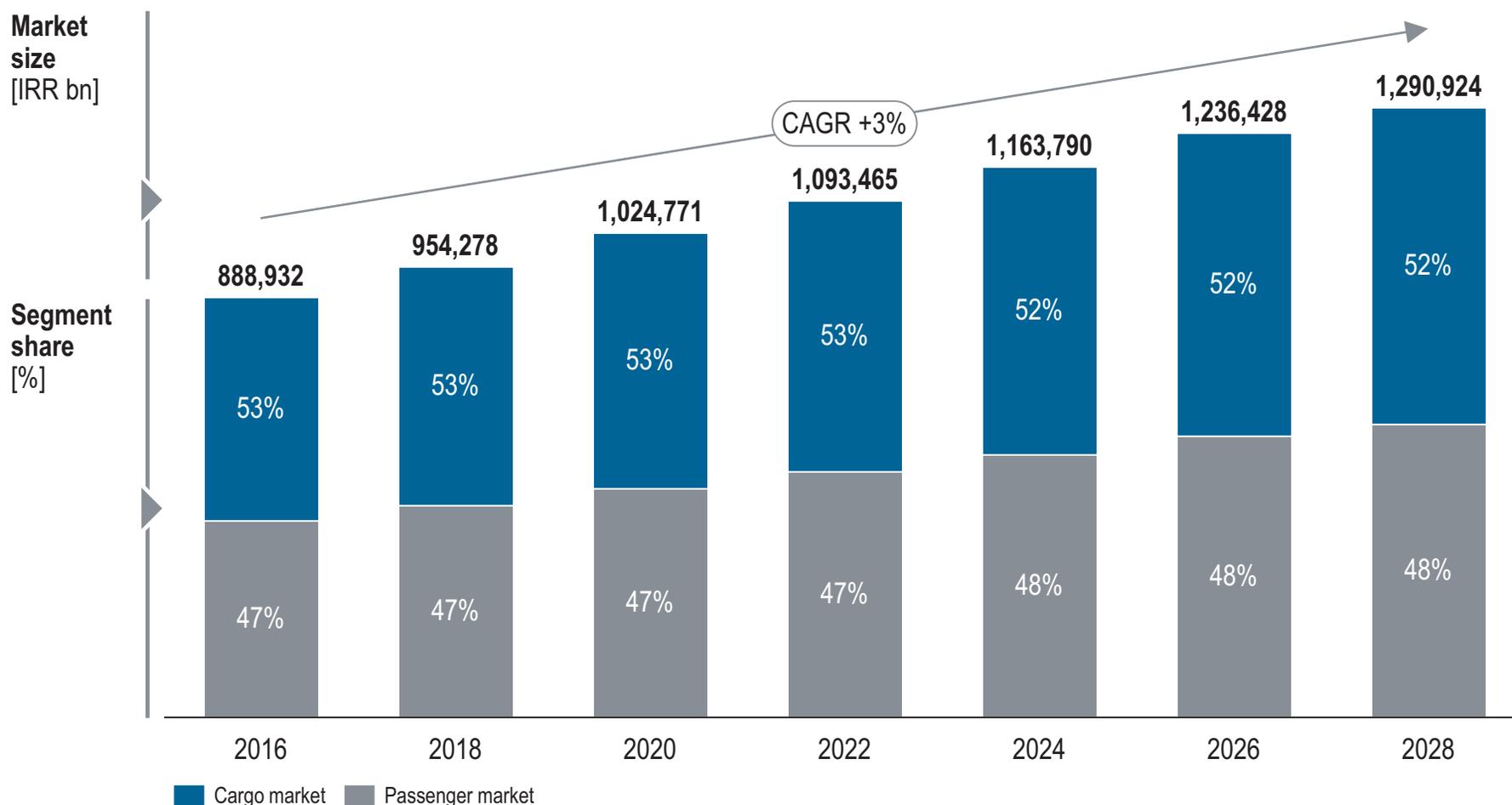
We expect the passenger transportation market in Iran to grow by an average annual rate of 3% from 2016 to 2028

Passenger transportation market forecast



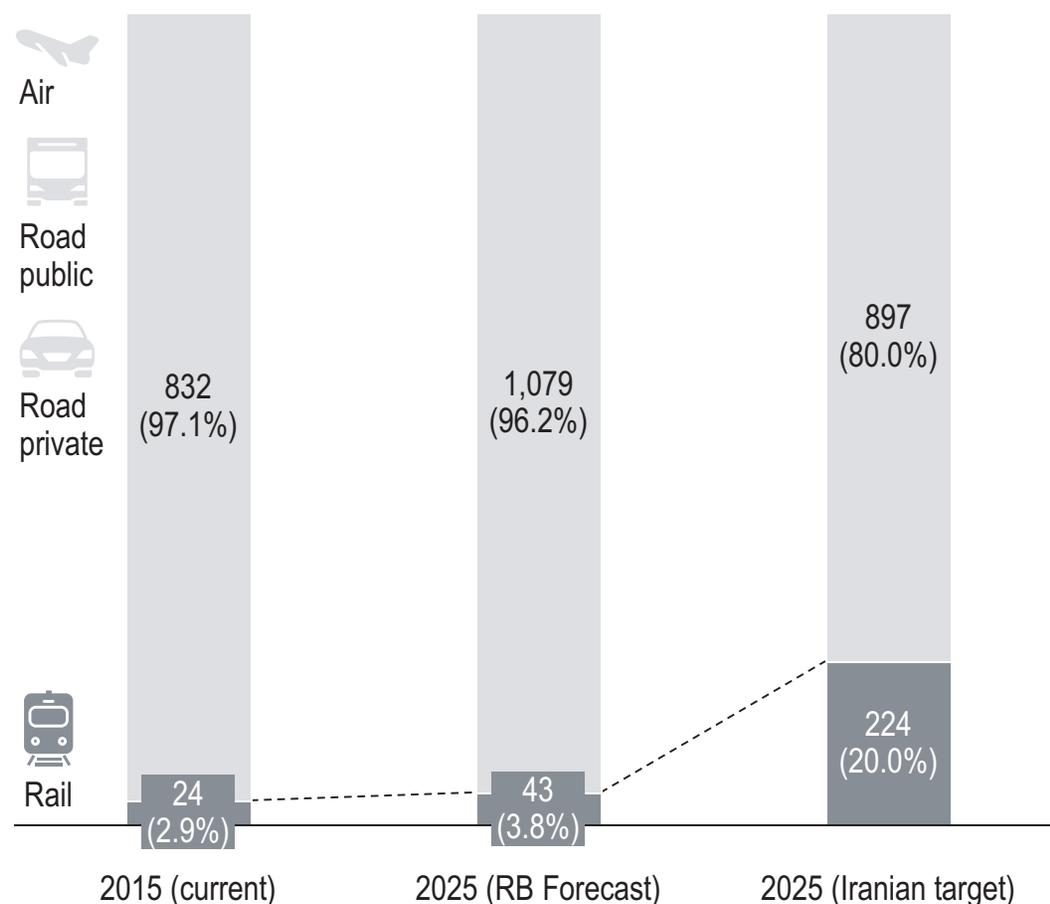
Taking the cargo market into account, we forecast the total transport market in Iran to have a value of 1,290,924 IRR bn in 2028

Iranian public transportation market forecast



Our forecast suggests that rail's market share will increase to 3.8% until 2025 – Strategic measures are needed to reach target share

Target comparison [million passenger]



- > Without further strategic measures, the organic growth of the Iranian passenger market leads to an intermodal share of rail transport of 3.8% in 2025
- > Compared to the official target of the sixth development plan, rail needs to acquire 181 m passengers in addition to the organic market growth
- > The additional growth should be created through the new strategy, in particular in the areas with strategic need for action

-  Market position
-  Operations
-  Fleet

B.2 RAI's position, strengths and weaknesses



We have performed an extensive analysis of RAI and its competitive environment in four key directions

Structure of analysis



Business Model

- > Analysis of RAI's position in overall logistics value chain in Iran
- > Segmentation of most important customers for passenger and cargo segment
- > Ranking of customer requirements



Infrastructure & Assets

- > Analysis and benchmark of fleet structure for passenger and cargo segment
- > Market potential of railway stations
- > Overview on current state of infrastructure in comparison to other major railways



Operations

- > Overview on transport performance in comparison to other major railways
- > Analysis of current staff and its productivity
- > Benchmark of maintenance cost for locomotives and wagons



Financials

- > Benchmark of revenue development for passenger and cargo segment
- > Breakdown of top-line performance
- > Comparison of current cost efficiency to other major railways

RAI's tasks include both operations and regulatory activities, some of which are outside the scope of current legislation

Distribution of rail responsibilities

	General transport policy	Track access charges/fare setting	Tracks/ infrastructure	Wagons and locomotives	Transport
Ministry of Roads and Urban Dev. 	<ul style="list-style-type: none"> > Set general transport policy and strategy (<i>in practice only approval</i>) > Approve tariffs > Incentivize private sector participation¹⁾ 	<ul style="list-style-type: none"> > Approve tariffs 	N/A	N/A	<ul style="list-style-type: none"> > Final approval of licenses to private operators
Iran Railways 	<ul style="list-style-type: none"> > Set transportation tariffs (both cargo and passenger) > Set general transport policy and strategy 	<ul style="list-style-type: none"> > Set track access charges for operators > Set guidelines for passenger fares to be followed by operators 	<ul style="list-style-type: none"> > Maintain and extend rail network > Own main tracks > Develop and maintain infrastructure > Manage network and plan traffic 	<ul style="list-style-type: none"> > Regulate production, import and maintenance > Set safety requirements > Provide locomotives to private operators 	<ul style="list-style-type: none"> > Issue licenses to private operators and monitor performance > Regulate standards for rail tickets / bills of lading > Resolve operational issues with clients
Private Operators 	N/A	N/A	<ul style="list-style-type: none"> > May own subsidiary tracks for 10-20 years > Pay access charges for using infrastructure 	<ul style="list-style-type: none"> > Provide rolling stock > Provide wagon maintenance 	<ul style="list-style-type: none"> > Responsible for passengers / cargo from the moment passenger ticket / bill of lading is issued

Regulatory activities *Activities not based on legislation but carried out in practice*

1) Not done in practice

Source: RAI response to Q. 75, Roland Berger analysis

Cumulative ton-km over the last decade per freight company show a comparatively high market fragmentation

Cargo segment – Customer structure

Importance of rail freight companies

Company	Share of ton-km 2005-2016	
Toka rail	21%	
Bahtash Sepahan	13%	
FooladRail Jonub	12%	
Railway Transportation	10%	
Asia Seir Aras	6%	60% of total traffic
Parsian Int. Transportation Development Co.	5%	
Joyar Passenger and Freight Cars Co.	4%	70% of total traffic
SamandRail Co.	3%	
Railways	3%	
Shipping Multimodal Transportation Co.	3%	
Railtarabar Fajr	2%	80% of total traffic

- > Market for rail freight highly fragmented – Roughly 40 companies currently active in rail freight transportation
- > However, eleven companies account for more than 80% of the total traffic – Focus of marketing should be on those companies
- > Problematic are high fluctuations in rail freight companies shares, i.e. future dominant companies still to be identified

According to freight owners, obstacles for using rail are inflexible tariffs, long transportation times and missing network density

Cargo segment – Customer requirements

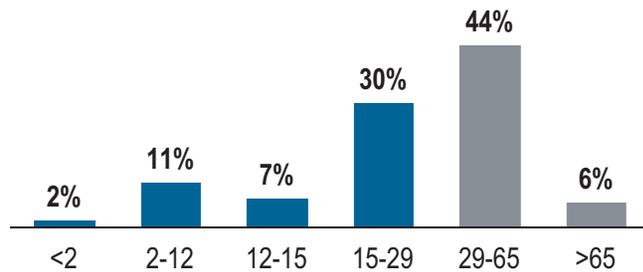
Requirements of freight owners	Importance
Flexible tariffs	 <ul style="list-style-type: none"> > Inflexible and/or high tariffs constitute the most important obstacle for freight owners in choosing rail over road
Less transportation time	 <ul style="list-style-type: none"> > Average speed of trains has to be increased to get more competitive to road > Processes take too long, in particular the loading/un-loading processes
Sufficient network density	 <ul style="list-style-type: none"> > Direct rail access to production facilities would increase rail freight usage > Also, important routes to neighboring countries are not yet covered by rail
Multimodal integration	 <ul style="list-style-type: none"> > Competitive multimodal offering from one integrated provider necessary > Cost of multimodal offerings currently higher than road-only solutions
Suitable wagons	 <ul style="list-style-type: none"> > For specific products, suitable wagons are currently not available or offer insufficient capacity, e.g. for transport of gasoline
Holistic monitoring	 <ul style="list-style-type: none"> > Lack of adequate monitoring of goods during transportation has been named as a smaller obstacle

The typical traveler on the train is young and travelling for leisure – Potential of business trips not exploited sufficiently

Passenger segment – Customer segmentation

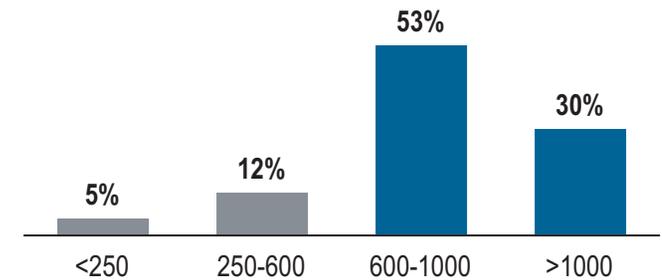
Age

> 50% of travelers are younger than 30



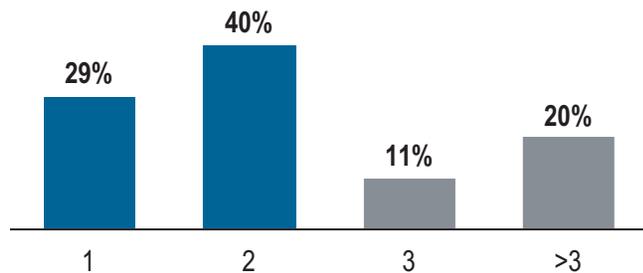
Travel distance [km]

> 83% travel more than 600 km on one ride



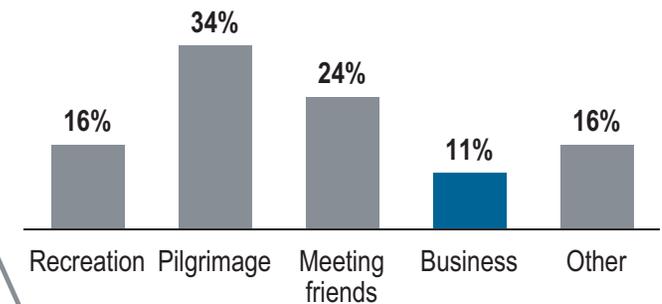
Frequency [# of trips per year]

> Approx. 70% travel only once or twice per year



Reason of travel

> Only 10% travel for business purpose



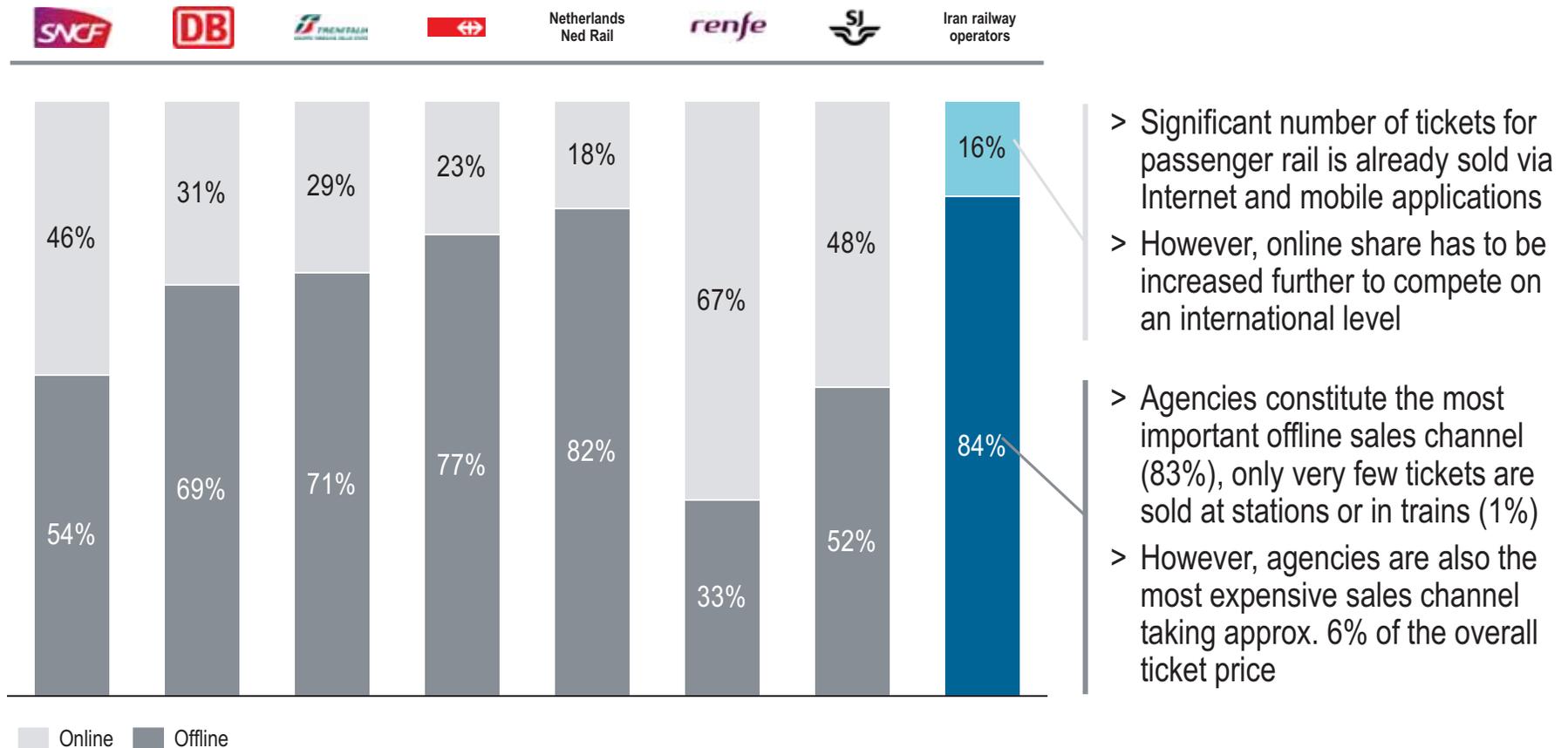
In the passenger segment, customer require higher travel speed and frequent connections

Passenger segment – Customer requirements

Requirements of passengers	Importance
Ticket price	 <ul style="list-style-type: none"> > Competitive pricing necessary in order to attract passengers currently using private cars – Incentives and loyalty schemes as popular options
Travel speed	 <ul style="list-style-type: none"> > Depending on the reason of travel, the travel speed is an important criteria for passengers – In particular, business travelers are time-sensitive
Comfort	 <ul style="list-style-type: none"> > Compared to other modes of travel, rail should be first in customer comfort > Examples for comfort services are wireless internet, food and entertainment
Frequency	 <ul style="list-style-type: none"> > Currently, there is a lack in frequency on some routes – In particular, business travelers are sensitive to frequent connections
Booking method	 <ul style="list-style-type: none"> > Online booking is the preferred option of modern travelers – Rebooking and booking of connecting travel, e.g. by bus or taxi are further requirements
On-time performance	 <ul style="list-style-type: none"> > In particular for time-sensitive travelers (e.g. business travel) on-time performance is a key criterion for choosing among transport modes

Tickets are already offered via Internet and mobile applications – Yet, agencies remain the most important sales channel

Sales channel mix¹⁾



- > Significant number of tickets for passenger rail is already sold via Internet and mobile applications
- > However, online share has to be increased further to compete on an international level
- > Agencies constitute the most important offline sales channel (83%), only very few tickets are sold at stations or in trains (1%)
- > However, agencies are also the most expensive sales channel taking approx. 6% of the overall ticket price

1) Numbers for Iran are based on first six months of 2016; numbers for European competitors are based on 2014 sales data

For both regional and long-distance traffic, intermodal door-to-door travel solutions are necessary

International examples of intermodal integration

Exemplary solutions



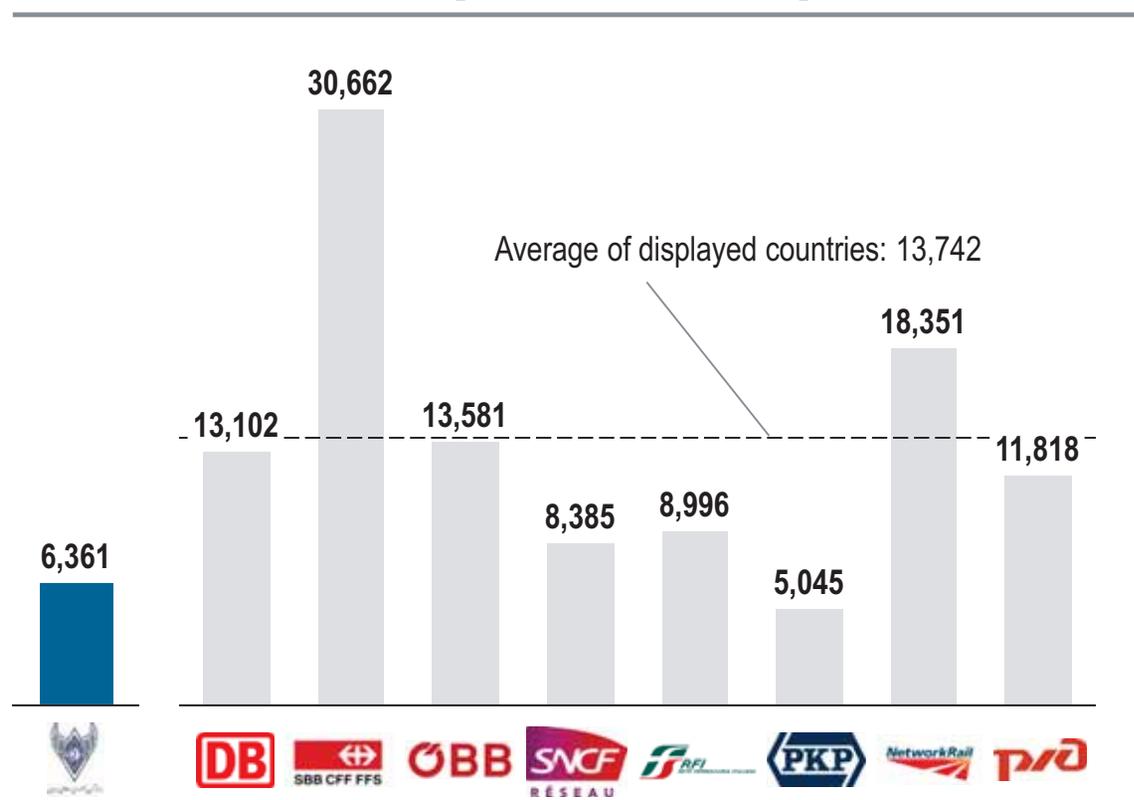
Features

- > International peers offer **integrated tickets** (e.g. one ticket for long-distance and public transport), available via comprehensive web-/app-based solutions
- > Beyond integrated ticket solutions, international peers offer **further intermodal products** via their offline and online platforms
 - Trip planning
 - Navigation services
 - Taxi & chauffeur services
 - Rental cars
 - Shared cars
 - Rental bikes
 - Parking spaces
- > Equally important as integrated ticketing is an integrated offer as a prerequisite (feeder, aligned time tables, integrated travel information)

Currently, RAI does not make full use of its rail infrastructure as the network utilization is considerably lower than in other countries

Network utilization

Network utilization, 2014 [train-km/track-km¹⁾]



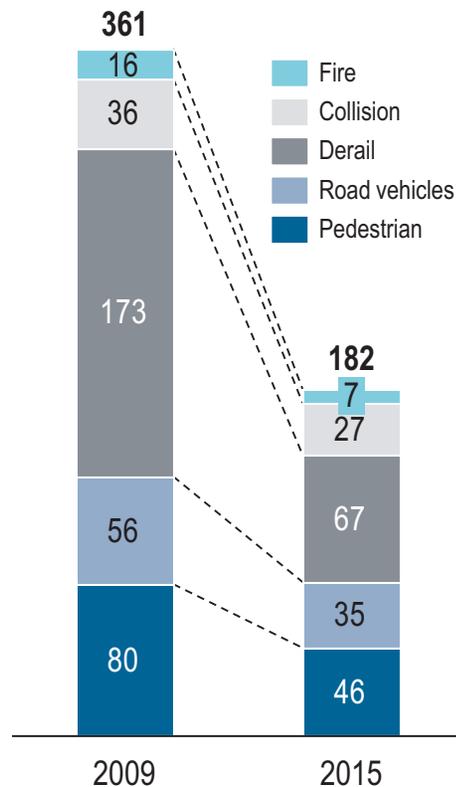
- > RAI's rail network bears the risk of capacity bottlenecks as the majority of routes are only single-tracked
- > Nevertheless, the utilization rate is relatively low compared to international rail network operators (equaling less than one train per hour on average at any location in the network)
- > Potential reasons for the low utilization rate are lower average speed, capacity bottlenecks in loading/unloading operations as well as non-harmonized train services

1) Includes single and double-tracks

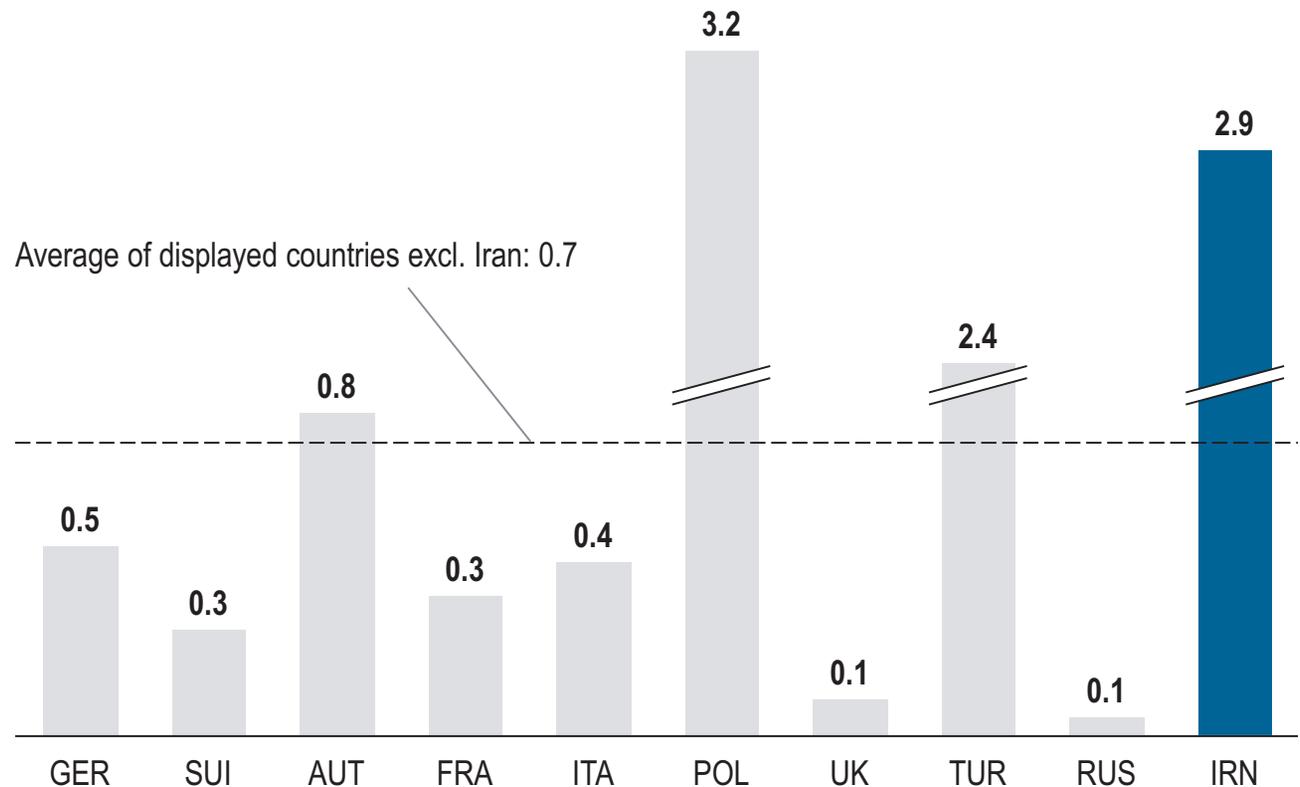
Infrastructure upgrades are needed to reduce infrastructure-related rail accidents – Accident level far above best practice

Railway safety

Rail accidents Iran, 2015¹⁾



Benchmark of rail accidents per train-km m, 2014



1) Excl. accidents caused by staff, passengers and discovery of corpse

Awareness on asset conditions has to be improved – Comprehensive audit of tracks, rail control and stations necessary

Infrastructure audit

Approach

- > Assets have a major influence on customer satisfaction and are essential for the financial success of the infrastructure operator
- > In order to allow for enhanced resource allocation, a regular report on asset conditions needs to address at least four main objectives
 - Identification of appropriate network size
 - Calculation of resource requirements
 - Definition of actions to enhance operational performance
 - Development of asset management processes
- > Ideally, the report covers the whole array of railway infrastructure
 - Track and electrification
 - Signaling and control
 - Rail power facilities
 - Civil works
 - Passenger stations
 - Other assets

Best practices

- > International railways are publishing annual reports on asset conditions



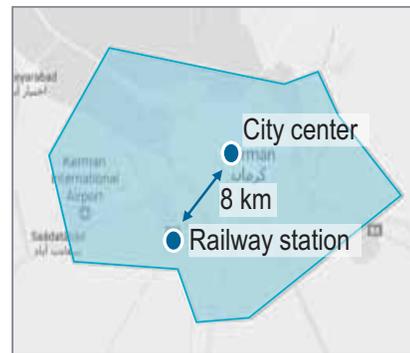
Central stations in some important Iranian cities are located outside of city centers – Other transport modes needed to reach city center

Location of stations

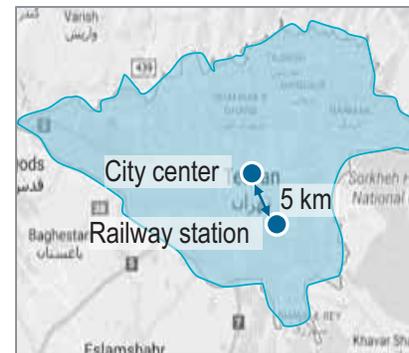
Isfahan



Kerman



Tehran



Tabriz



Shiraz



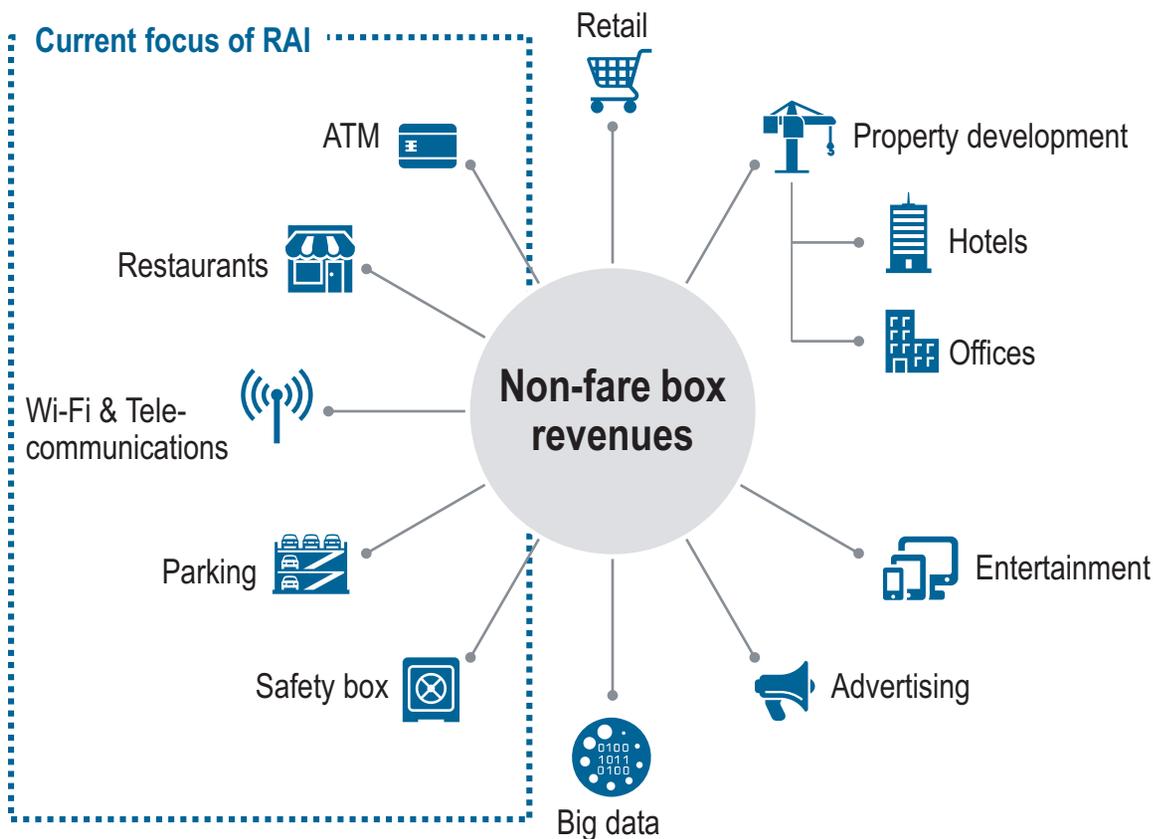
Mashhad



- > The distance between city center and railway station varies greatly among different cities
- > Only major cities, e.g. Tehran and Mashhad, operate a rapid transit system which connects the railway station with the city center
- > In most cities, passengers have to take either a bus or taxi to reach the city center
- > A bad or non-existent connection between the railway station and the city center poses an inconvenience for passengers

So far, stations do not offer state-of-the-art facilities – Significant untapped potential for non-fare box revenues

Revenues from stations and real estate



- > Stations are functional, but miss out on non-fare box revenues
- > However, non-fare box revenues are becoming increasingly relevant as revenue contributor. e.g. at DB they account for 30% of station revenues¹⁾
- > In a first step, retail and advertising opportunities can be exploited
- > Later stages could focus on community development in and around stations (transit-oriented development) as a key lever to attract ridership and increase intermodal share of rail in Iran

1) Annual report of DB Station & Service AG 2015, p.33. The other revenues are fees for stations usage (per train stop)

RAI needs to improve its cargo operations to reach an internationally competitive level

Selected drawbacks in current cargo operations



Transportation speed

- > According to interviews with cargo operators, duration of rail freight transportation is too long when compared with road transport
- > Low average speed is mainly caused by waiting time on single tracks and inefficient traffic control



Loading/unloading capacities

- > Major bottleneck in current network is the process of loading and unloading wagons
- > Due to insufficient capacities and slow operations of loading equipment, wagons often have to wait until loading/unloading is available



Timetable and scheduling

- > According to cargo operators, creation of a reliable timetable for cargo trains is currently not possible
- > Cargo operators have to wait up to one week until locomotives are dispatched from RAI



Monitoring of wagon usage

- > Wrong loading equipment is used leading to damages of fleet and the rail infrastructure, e.g. tracks
- > Missing capacity for some wagon types leads to dual usage of wagons (e.g., petrochemicals and petroleum) – Significant cleaning efforts necessary

The main levers for increasing the average speed of Iranian freight trains are operational improvements

Background on average speed¹⁾

International rail freight speed benchmark

- > A low average speed for rail freight trains has been a recognized problem in other countries, too
- > In particular on cross-border routes, the average speed of freight trains suffers from weak cooperation among national infrastructure managers (e.g. on cross-border European routes trains run at 18km/h only)

Region Average speed of freight trains

	20-30 km /h
	20 km/h
	25 km/h

Background and potential solutions

- > The actual maximum speed of rail freight trains in the mentioned countries is significantly higher than the current average speed – Also, the infrastructure allows for higher speeds
- > However, the major reason for low average speed are operational drawbacks
 - Scheduling issues and waiting times due to single shared tracks with passenger trains
 - Ongoing maintenance works causing temporary speed limitations on freight routes
 - Missing capacity and slow loading and unloading processes
- > Suggested solutions in other countries are to use high-speed passenger lines outside peak hours for transporting freight or to eliminate stops and offer express freight trains between two stations on dedicated tracks

1) Average freight train speeds are measured from the departure at the station of origin until the arrival to the station of destination of a freight train

On the other side, RAI also needs to improve its passenger operations to enhance its product and service quality

Selected drawbacks in current passenger operations



Transportation speed

- > According to interviews, the average speed of passenger trains is approx. 60-70 km /h which is not competitive in comparison to private cars and busses
- > Increasing the average speed would reduce travel time and thereby make rail services more preferable for time-sensitive customers



Frequency of connections

- > Currently, only 10% of all passengers travel for business purpose – Also, approx. 70% of all passengers travel only once or twice per year by rail
- > Increasing frequencies of train services on major business routes would attract further travelers and commuters



Marketing and sales

- > Agencies constitute the most important offline sales channel (83%) – However, agencies are the most expensive channel taking 6% of the overall ticket price
- > Number of tickets for passenger rail sold via Internet and mobile applications could be further increased

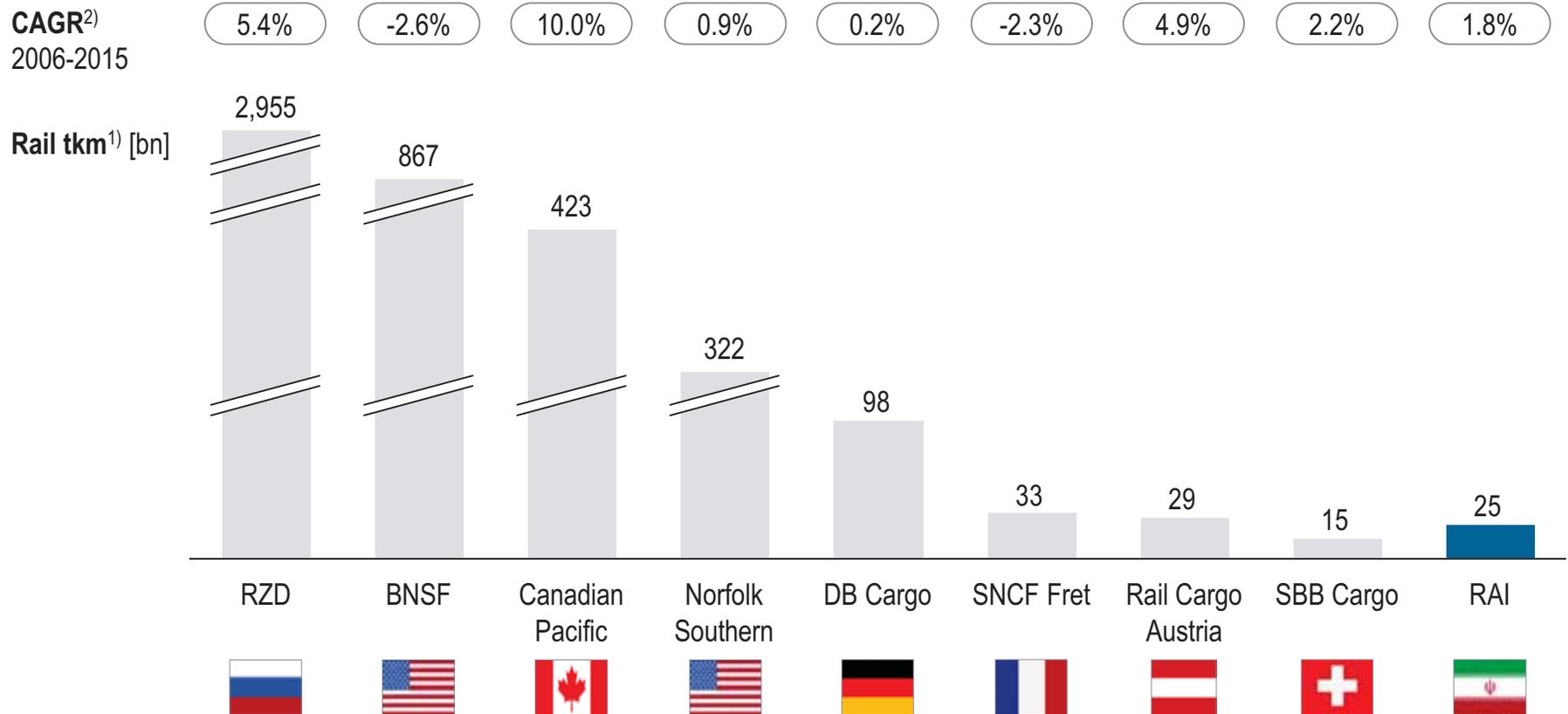


Maintenance tracking

- > According to interviews, conditions of locomotive and coach parts are not documented resulting in insufficient maintenance
- > General standards for maintenance works are not enforced leading to safety issues

Iran's rail cargo volume is larger than the cargo volume of the Swiss federal cargo operator – CAGR is at a mediocre level

Freight performance, 2015



1) 2014 for RZD; 2009 for BNSF 2) 2006-2014 for RZD; 2006-2009 for BNSF

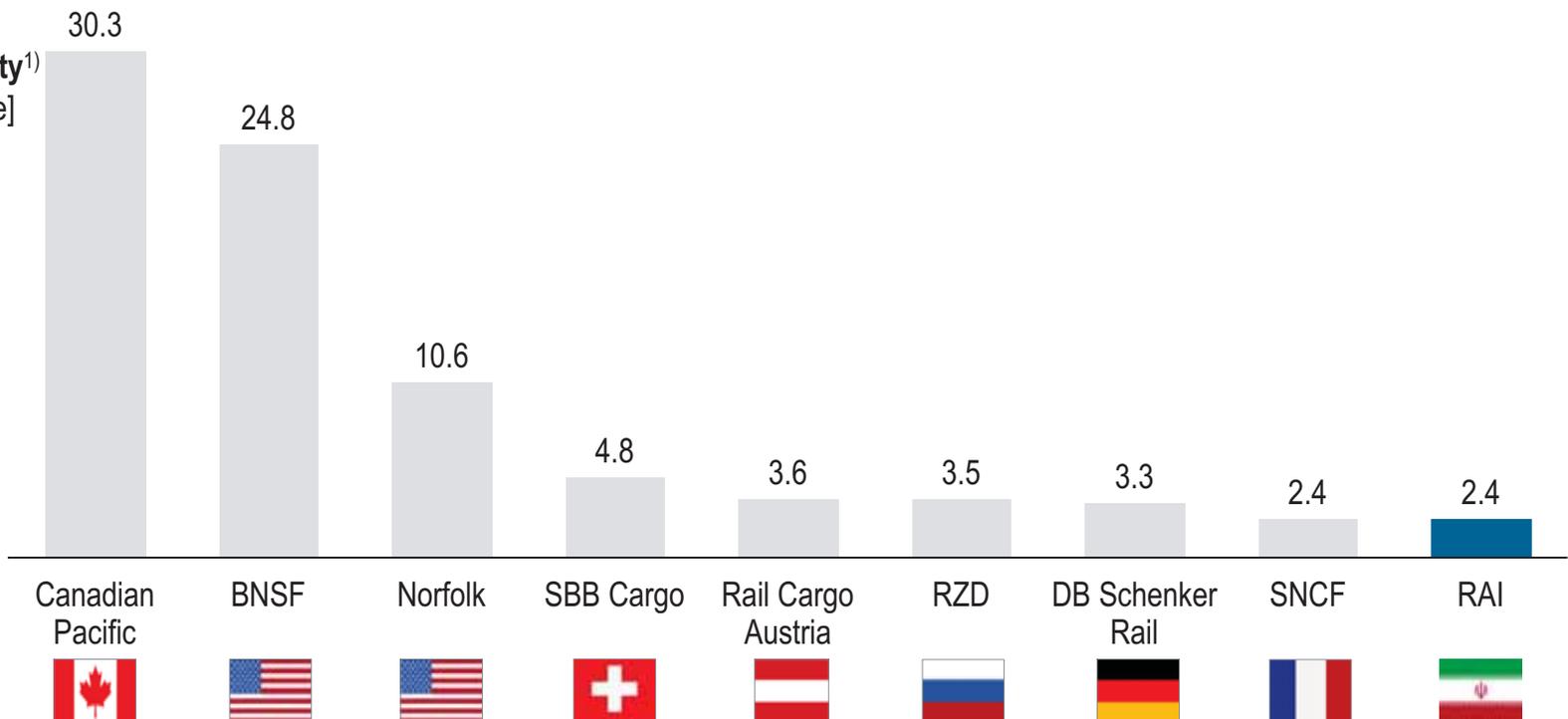
Despite an annual growth rate of 1.7%, RAI's staff productivity is still lagging behind compared to international rail freight operators

Freight operational efficiency, 2014

CAGR²⁾
2006-2014



Staff productivity¹⁾
[tkm m/employee]



1) 2015 for Norfolk; 2012 for SNCF 2) 2006-2015 for Norfolk; 2008-2014 for RCA; 2013-2014 for RZD; 2006-2012 for SNCF

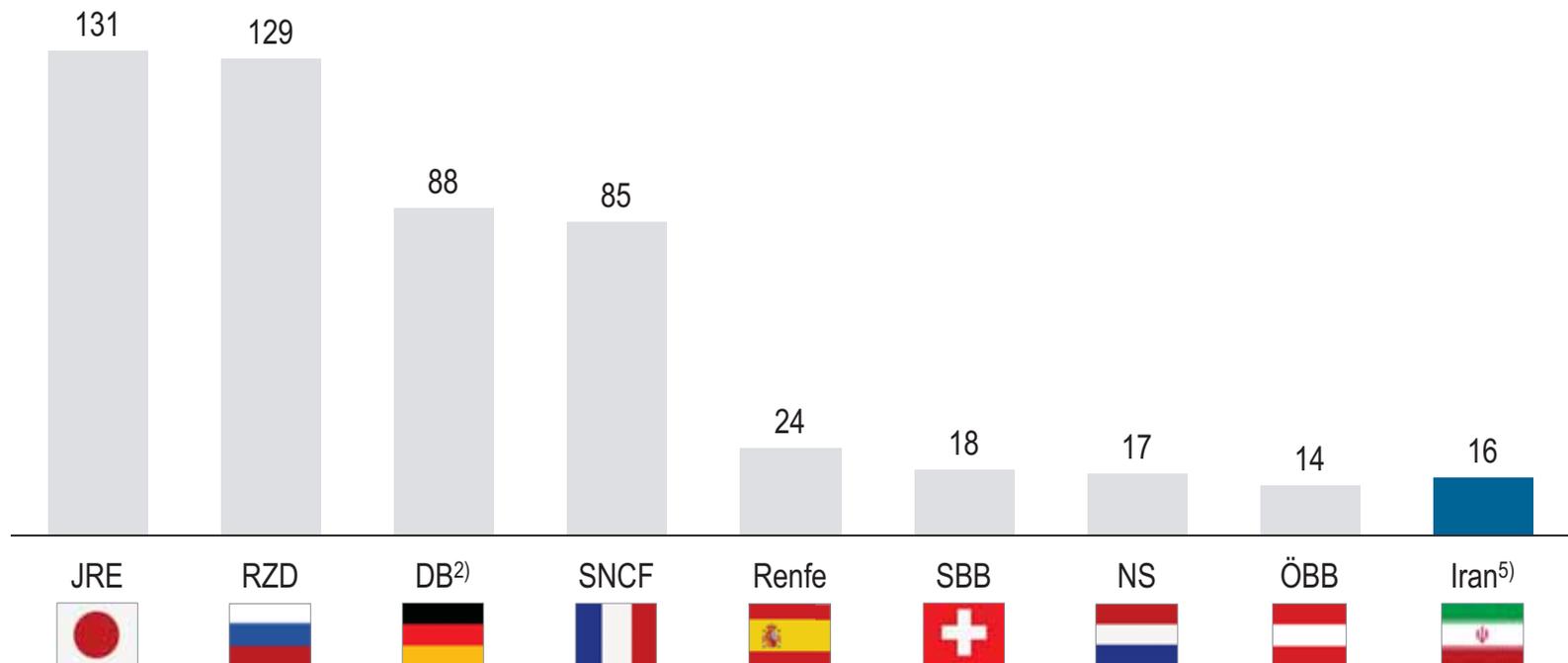
In terms of passenger volume, Iran's rail market is slightly smaller than the national railways of Switzerland and the Netherlands

Passenger performance, 2014

CAGR²⁾
2006-2014



Rail pkm¹⁾
[bn]



1) 2013 for NS; 2010 for SNCF 2) 2008-2013 for NS; 2008-2010 for SNCF 3) Incl. all operators (e.g. RAJA)

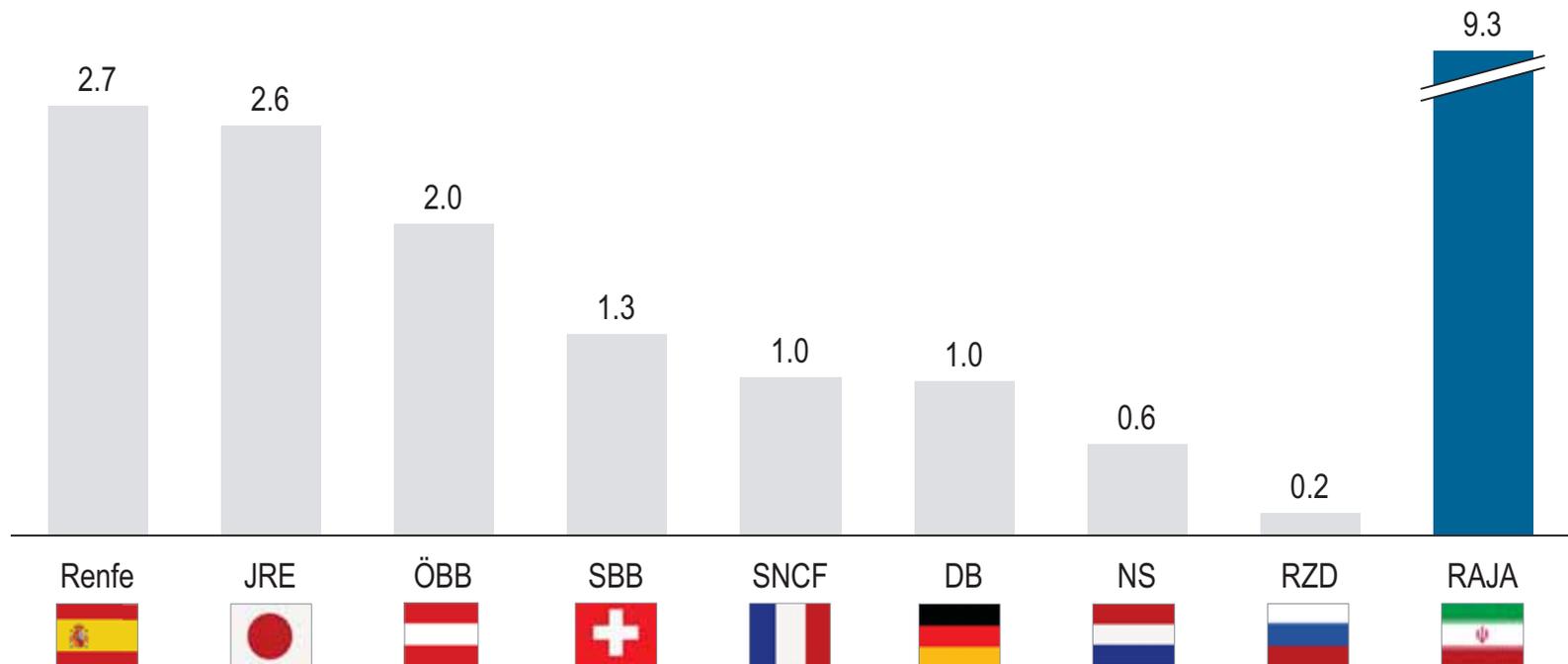
RAJA's staff productivity is extremely high compared to international rail passenger companies

Passenger operational efficiency, 2014

CAGR²⁾
2008-2014



Staff productivity¹⁾
[m pkm/Empl.]



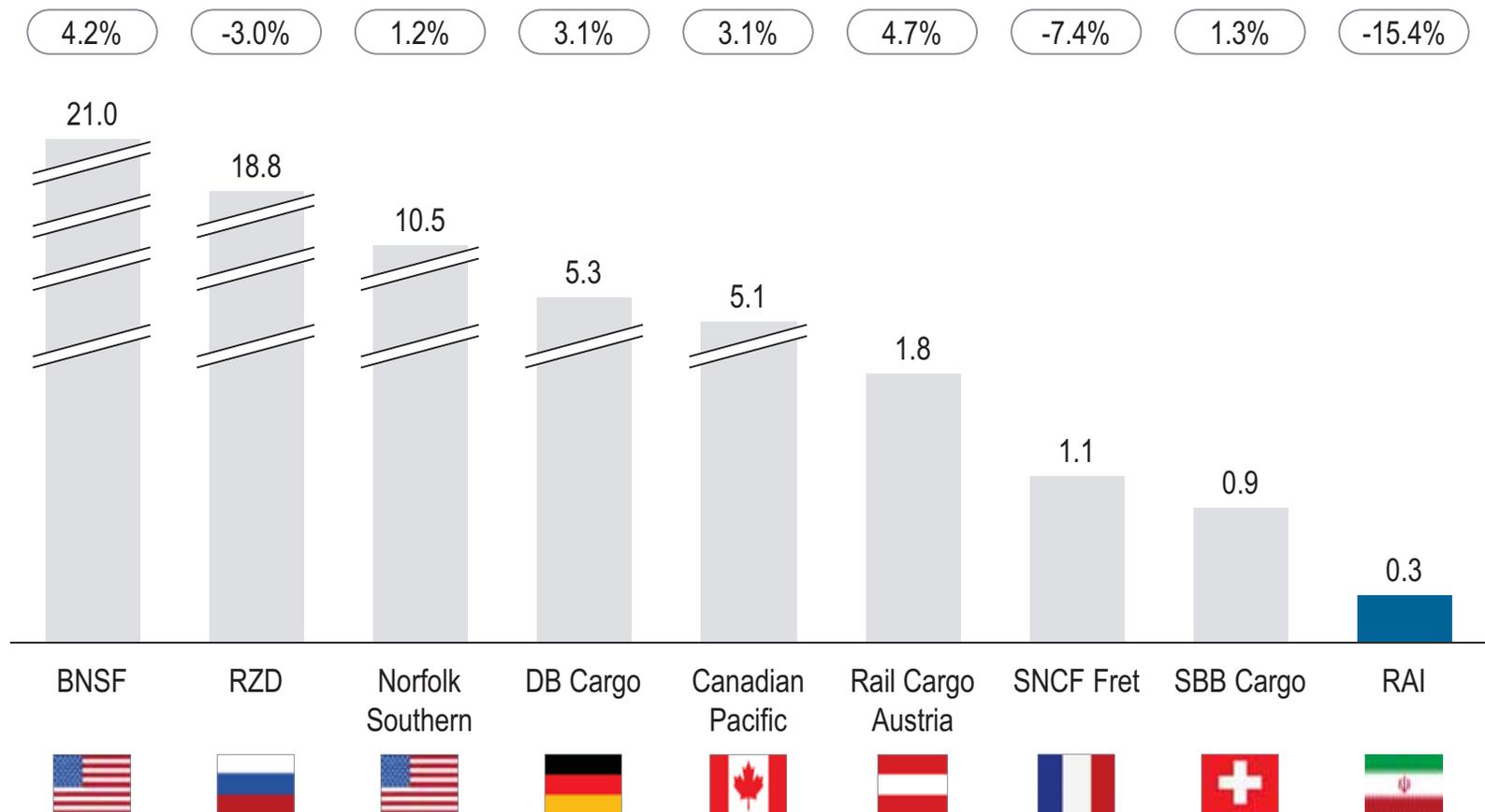
1) 2013 for NS; 2010 for SNCF 2) 2008-2013 for NS; 2009-2010 for SNCF; 2009-2014 for JRE

In terms of total annual turnover, RAI's freight business cannot keep up with international rail freight companies

Freight financial performance, 2015 (I/III)

CAGR²⁾
2006-2015

Net revenue¹⁾
[USD bn]



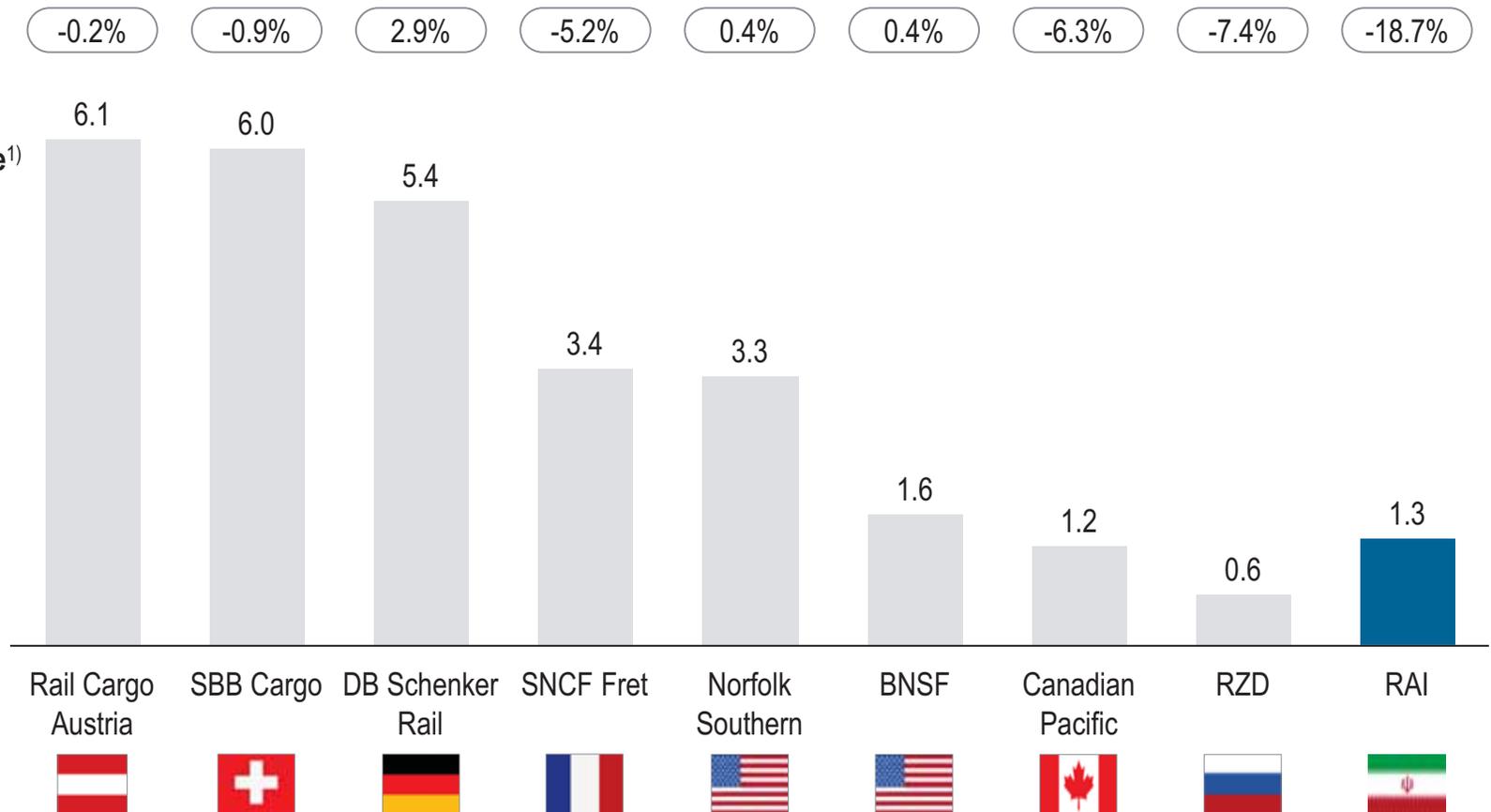
1) 2012 for RAI 2) 2012-2015 for RAI

RAI's average cargo traffic revenue is at the same level as the traffic revenue of large North American rail freight operators

Freight financial performance, 2015 (II/III)

CAGR²⁾
2006-2015

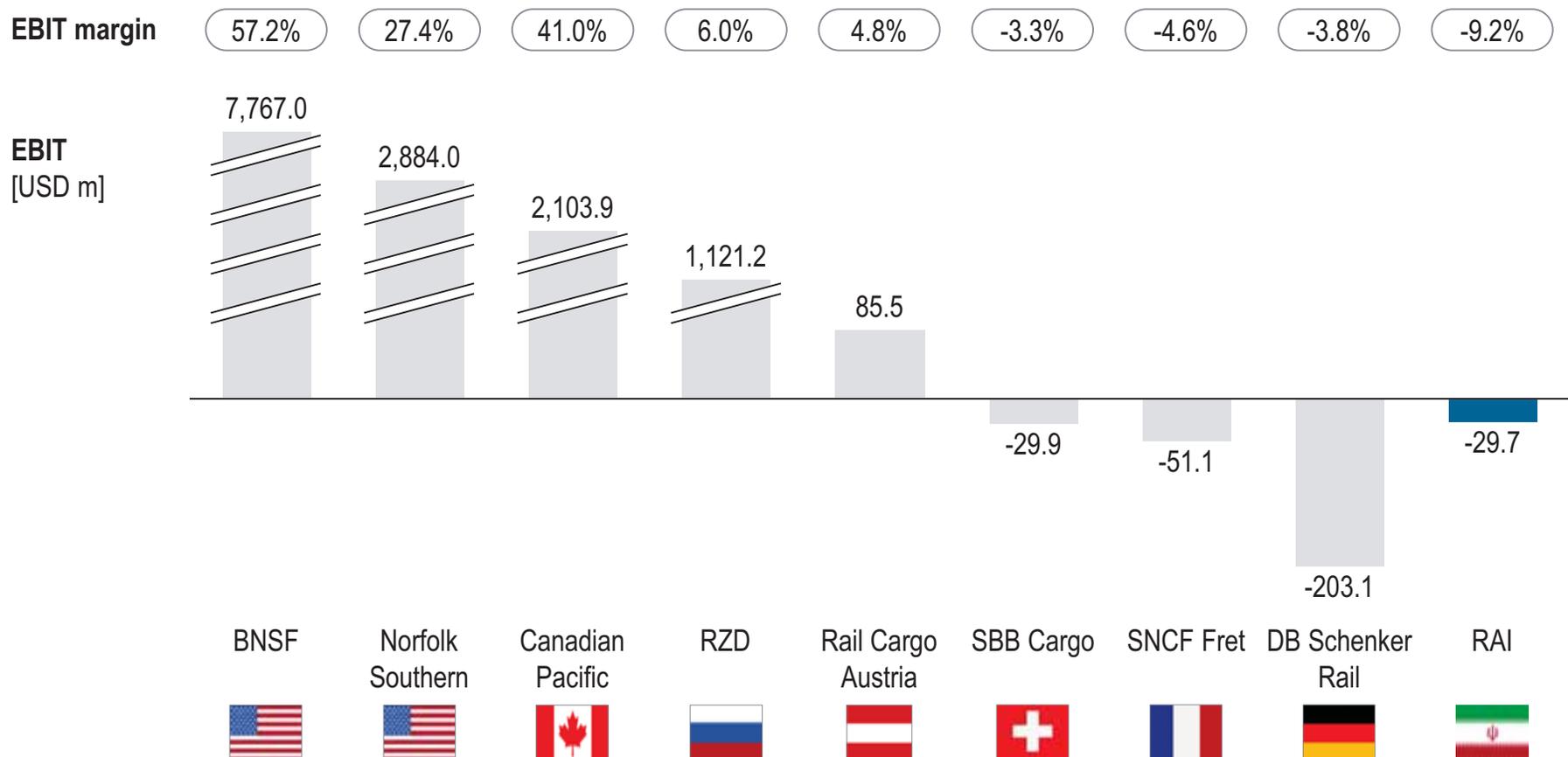
Traffic revenue¹⁾
[USD ct./tkm]



1) 2014 for RZD; 2009 for BNSF 2) 2006-2014 for RZD; 2006-2009 for BNSF; 2012-2015 for RAI

Unlike several European freight operators, RAI managed to be profitable in 2015 – North American freight operators are out of sight

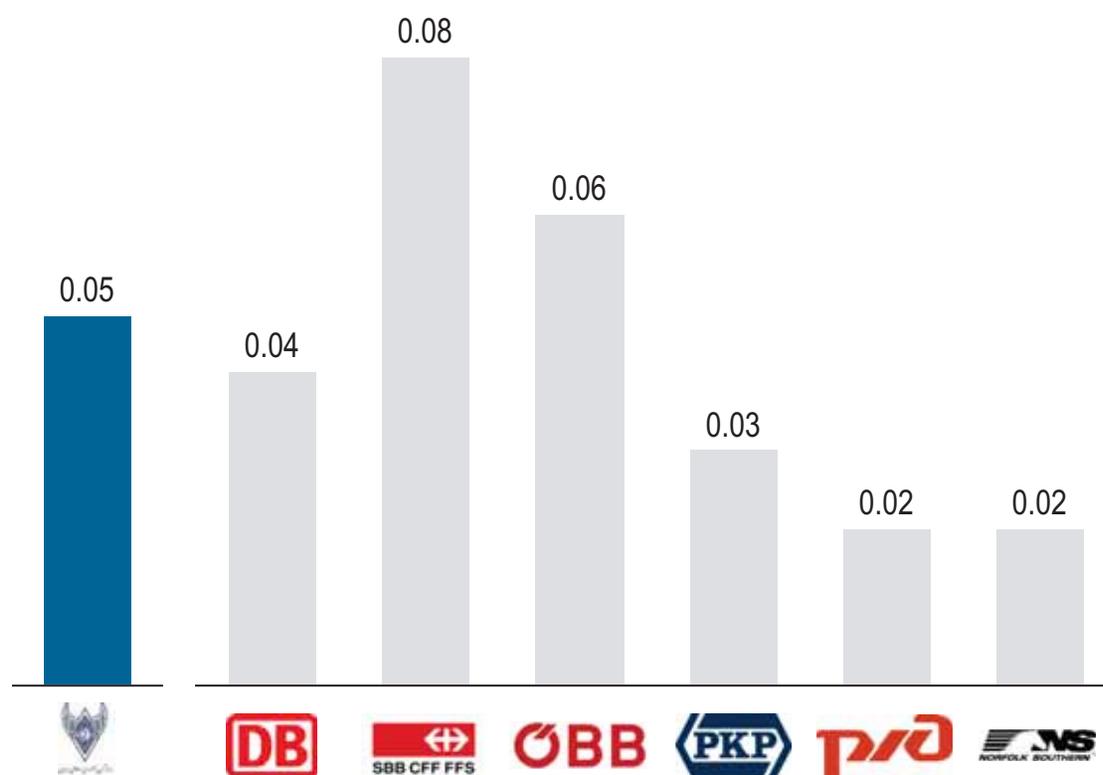
Freight financial performance, 2015 (III/III)



Overall, operational cost of rail freight services in Iran are lower than operational cost of rail freight services in Austria and Switzerland

Operational expenditure

Operational expenditure, 2015 [USD/ton-km]¹⁾

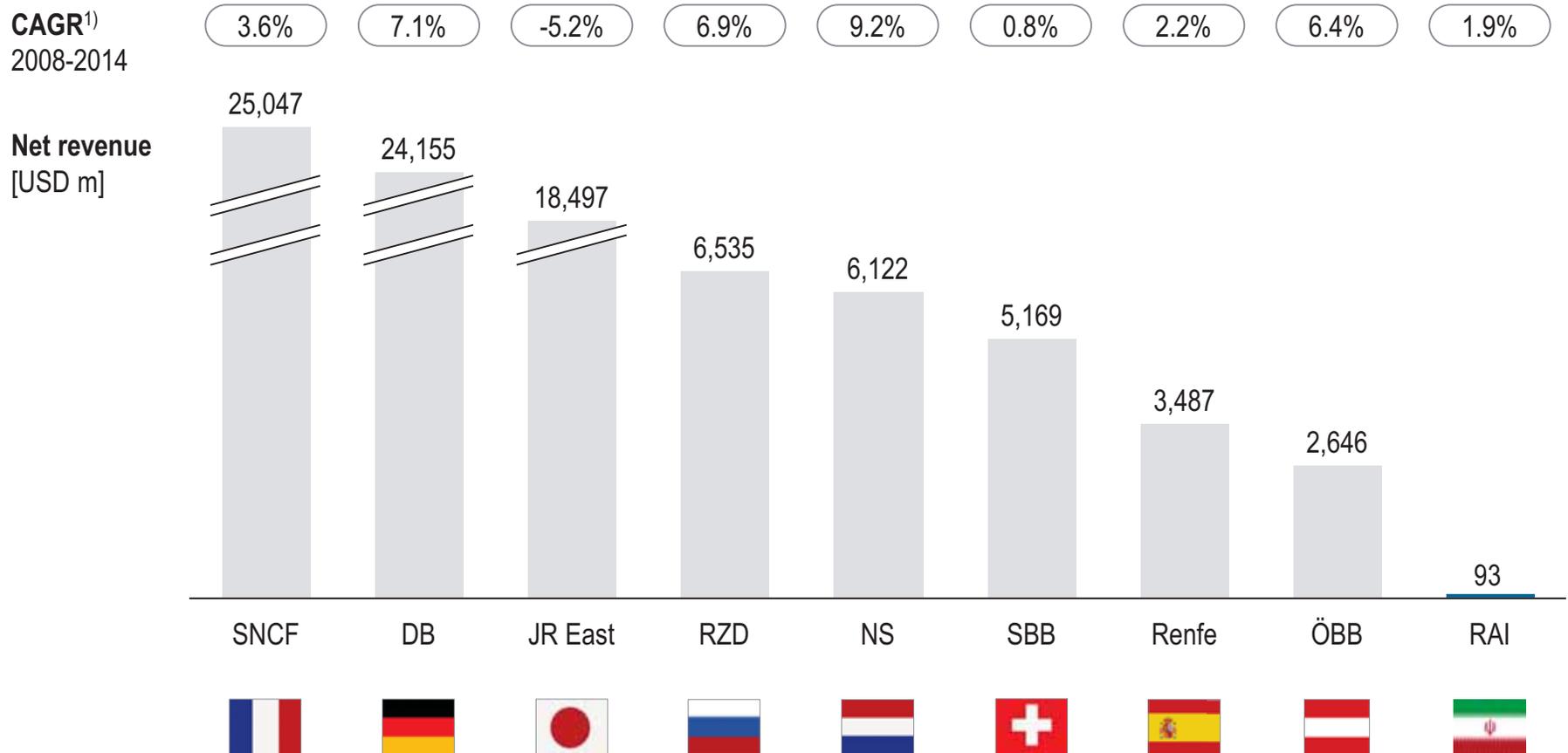


- > Operational cost has a direct impact on the profitability of rail freight operator
- > To increase comparability of operational cost among different freight operators, we divided the annual sum of operational cost by the annual cargo transport performance
- > RAI's operational cost per ton-kilometer are on an average level compared to international rail freight operators

1) PPP-adjusted. Data for France not available

Despite a slight increase over the past four years, RAI's annual net revenue is only marginal compared to international railways

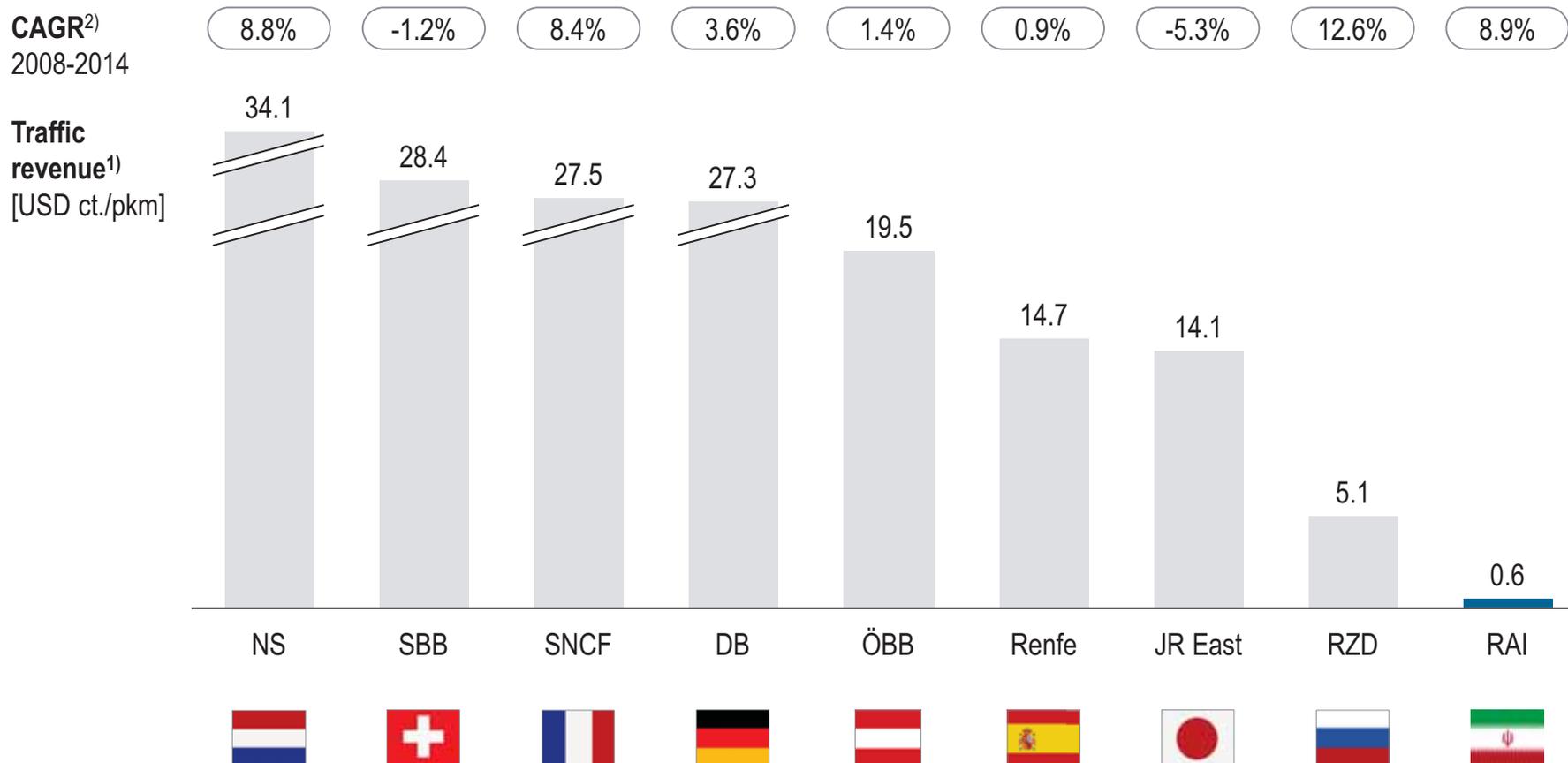
Passenger financial performance, 2014 (I/III)



1) 2011-2014 for RAI

Due to the privatization of passenger operations, RAI's passenger traffic revenue is very low in comparison with international railways

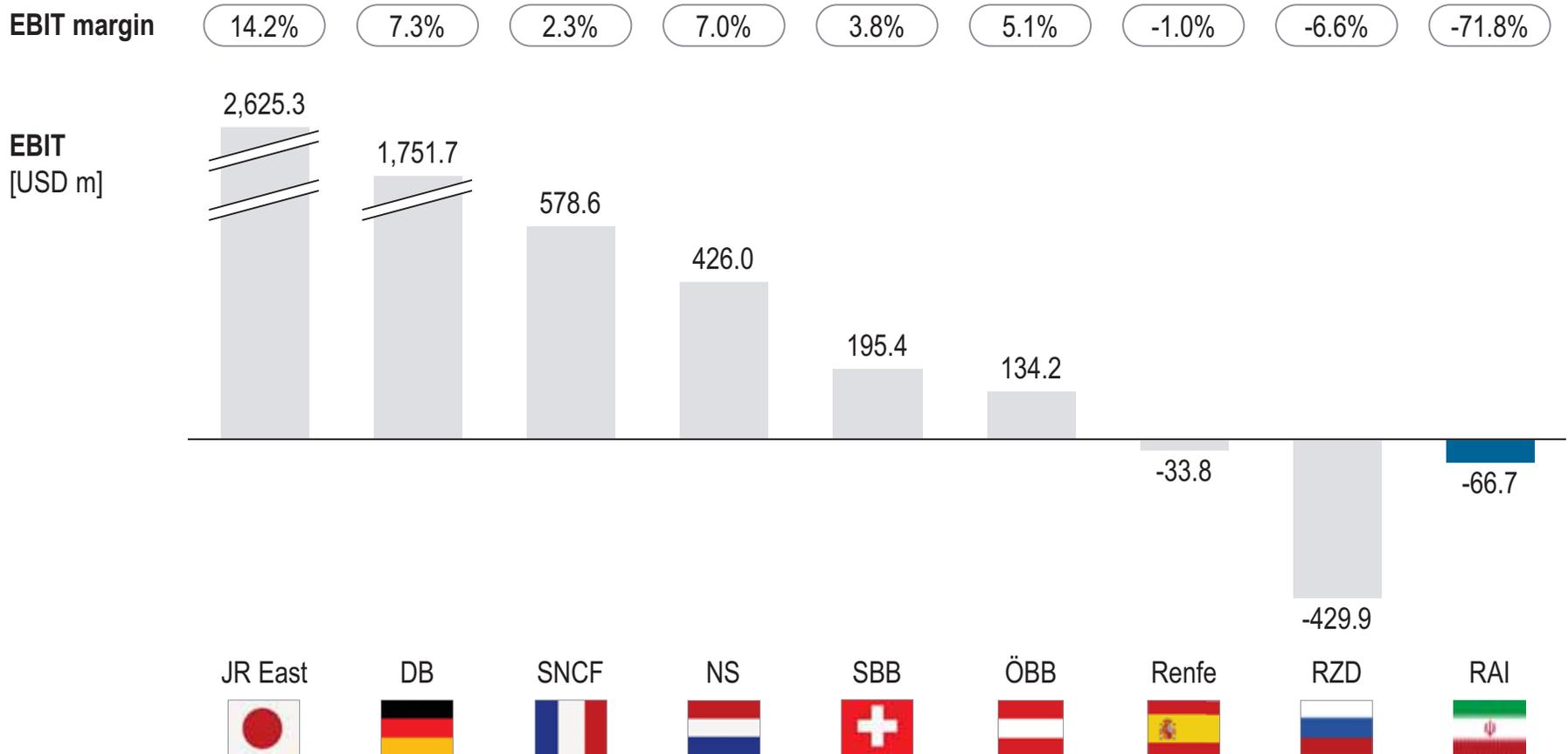
Passenger financial performance, 2014 (II/III)



1) 2010 for SNCF, 2013 for NS 2) 2012-2014 for RAI, 2008-2013 for NS, 2008-2010 for SNCF

Contrary to the cargo segment, RAI's passenger segment is not profitable – EBIT margin is extremely negative due to low turnover

Passenger financial performance, 2014 (III/III)



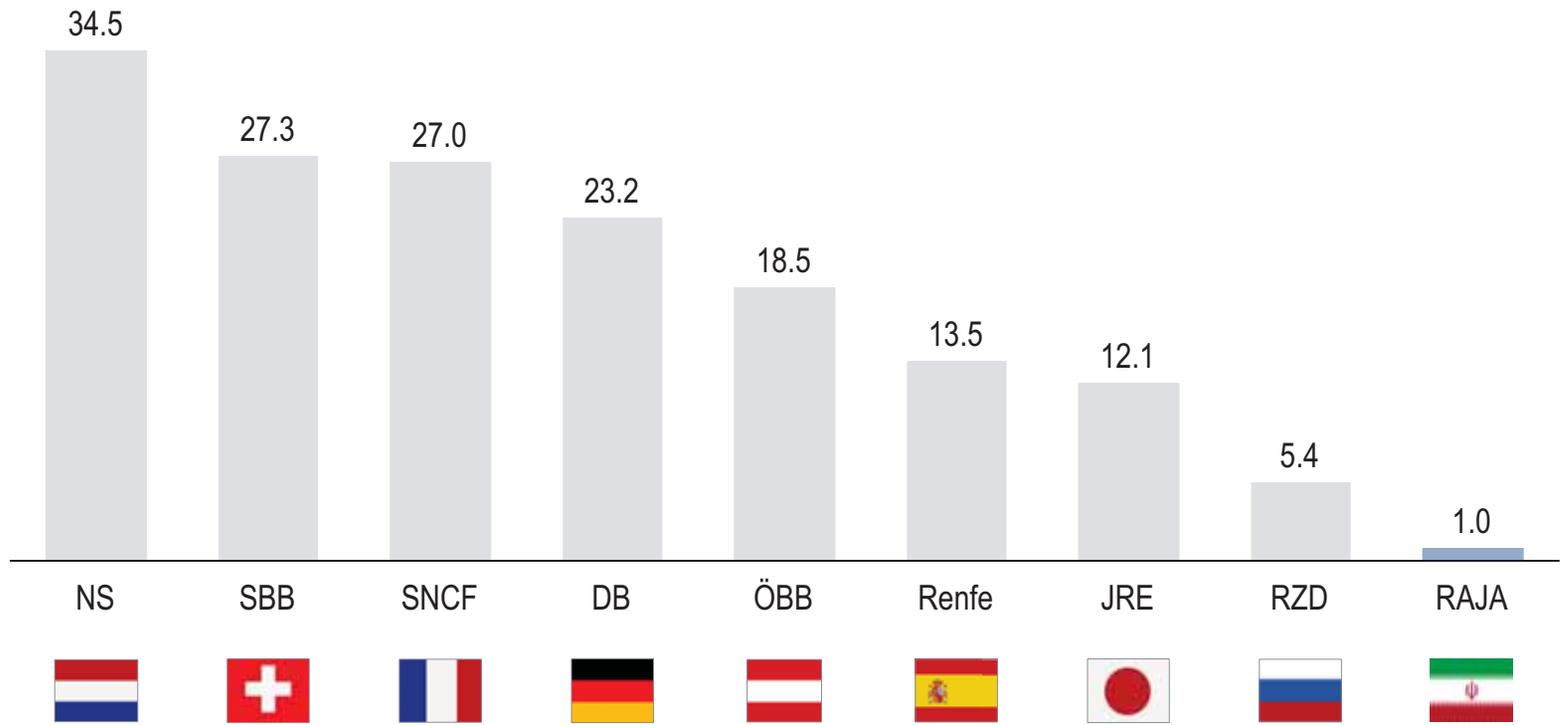
Average operating cost per passenger-kilometer is significantly lower than those of European railway companies due to low wages

Passenger operating cost efficiency, 2014

CAGR²⁾
2008-2014



Operating cost¹⁾
[USD ct./pkm]



To attract international rail cargo flows, Iran needs to further expand its network and invest in intermodal terminals and dry ports

SWOT analysis cargo segment

Strengths

- > Financially profitable rail segment
- > High productivity of freight locomotives
- > Existing network with connections to all major cities
- > Strong commercial ties to neighboring trade partners

Weaknesses

- > Low speed and high tariffs
- > Lack of intermodal terminals and dry ports
- > High maintenance cost for locomotives and wagons
- > Relatively high average age of locomotives

SWOT

- > Ideal geographical location for transit traffic from Asia to Europe
- > Release of economic sanctions
- > Investment in infrastructure expansions
- > Growth of mining sector and international trade

- > Volatility of oil price
- > Rise of political conflicts or economic sanctions
- > Alternative international commercial routes bypassing Iran
- > International players entering the Iranian market

Opportunities

Threats

In the passenger segment, RAI needs to leverage its core assets and expand into further mobility market segments

SWOT analysis passenger segment

Strengths

- > High utilization of trains in terms of seat load factor
- > Very good productivity of own passenger locomotives
- > Current infrastructure as valuable asset
- > Rail network connections to all major cities in Iran

Weaknesses

- > Missing intermodal integration at stations
- > High maintenance cost due to old locomotives, coaches and stations
- > Financially unprofitable passenger transport segment
- > High dependence on agencies for ticket sales

SWOT

- > Chance of being the first mover in intermodal mobility
- > Huge market potential for commuter train services
- > Further roll-out of direct online and mobile sales
- > Investment in new high speed rail technologies

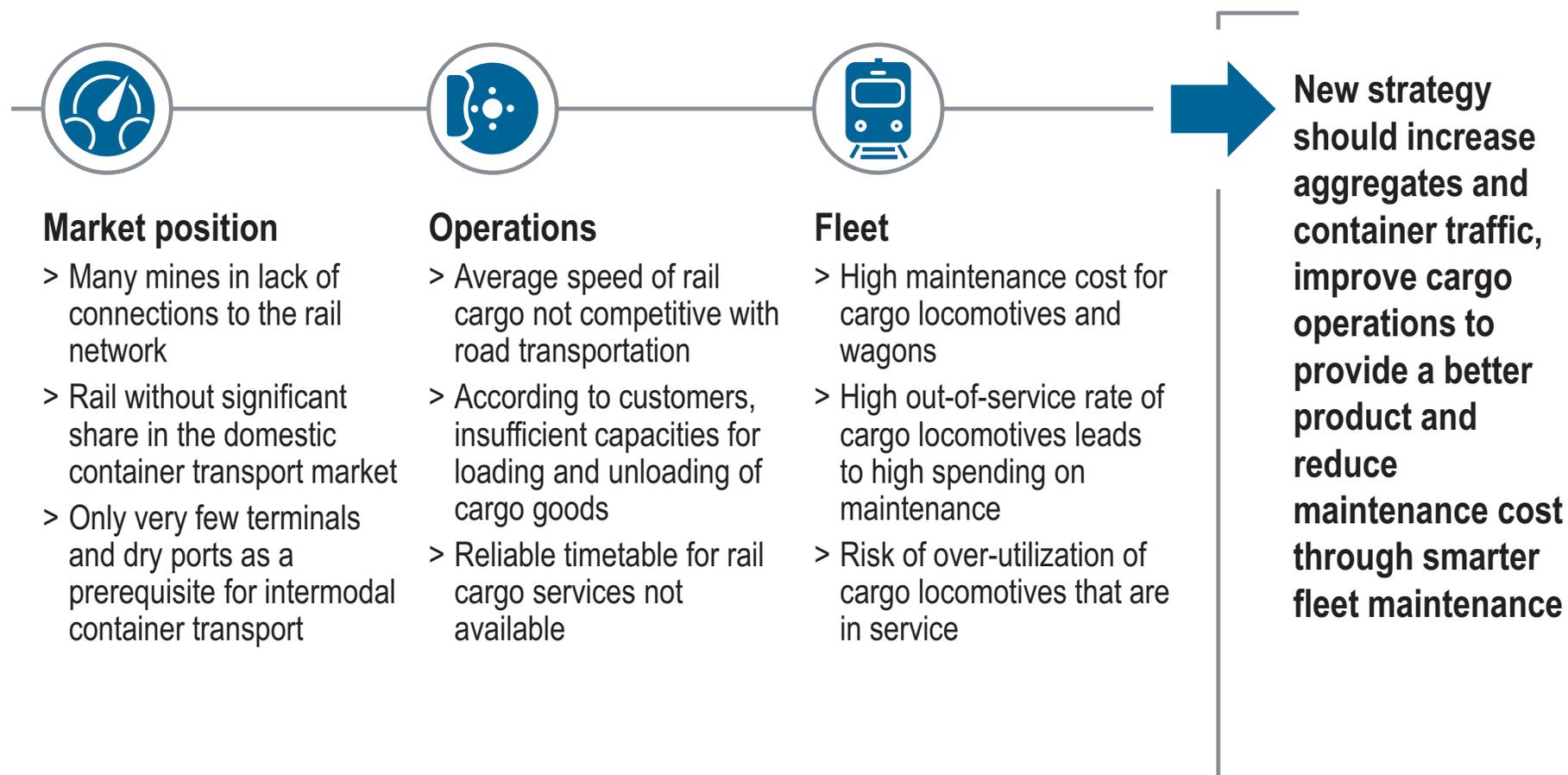
- > Low oil price increasing competitiveness of road
- > Air travel getting cheaper and more popular
- > Reenforcement of economic sanctions
- > Increasing consumer wealth stipulating car sales

Opportunities

Threats

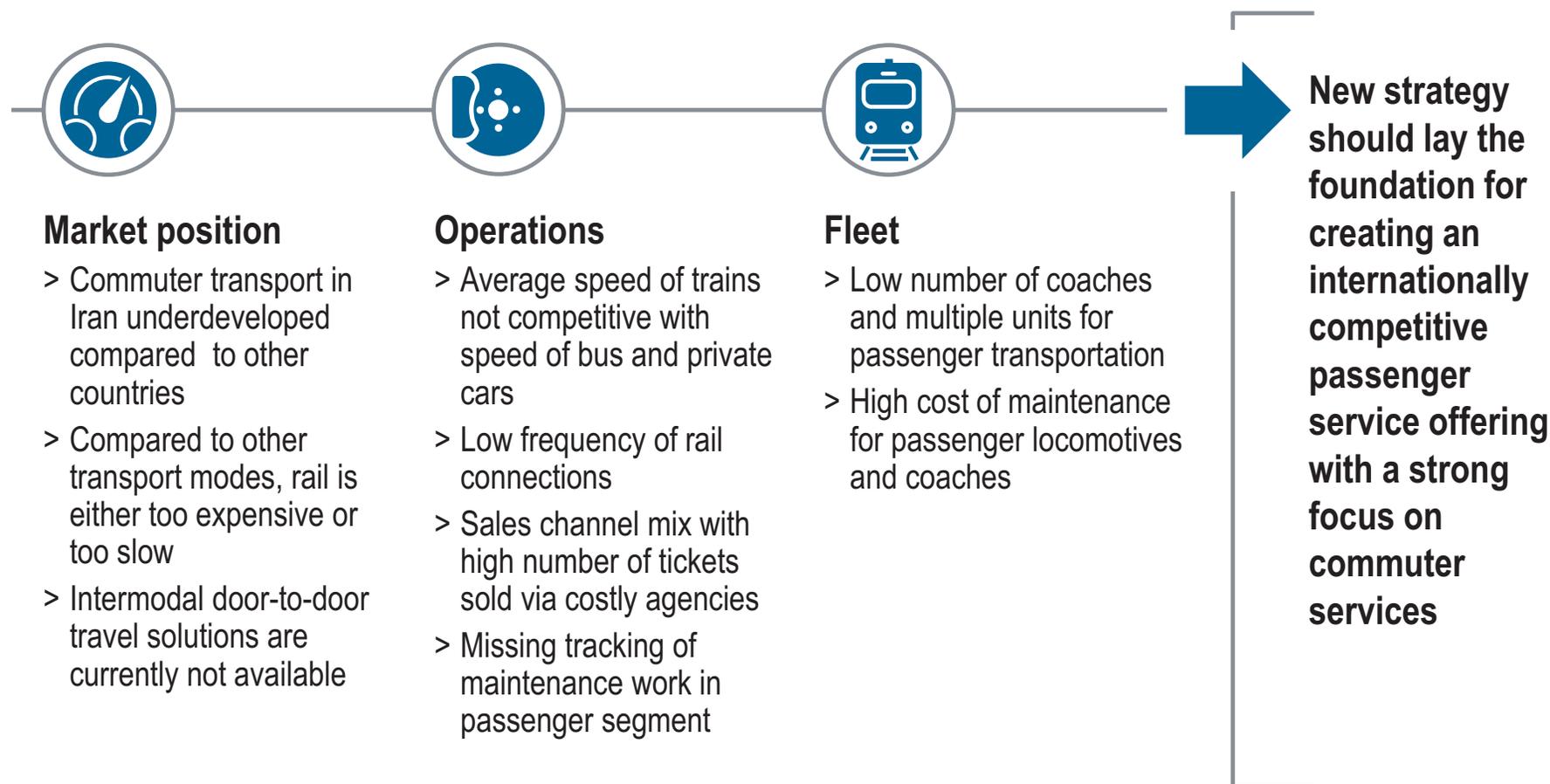
For cargo, RAI's new strategy should focus on increasing mining and container traffic, improving operations and enhancing fleet maintenance

Cargo segment – Main areas for improvement



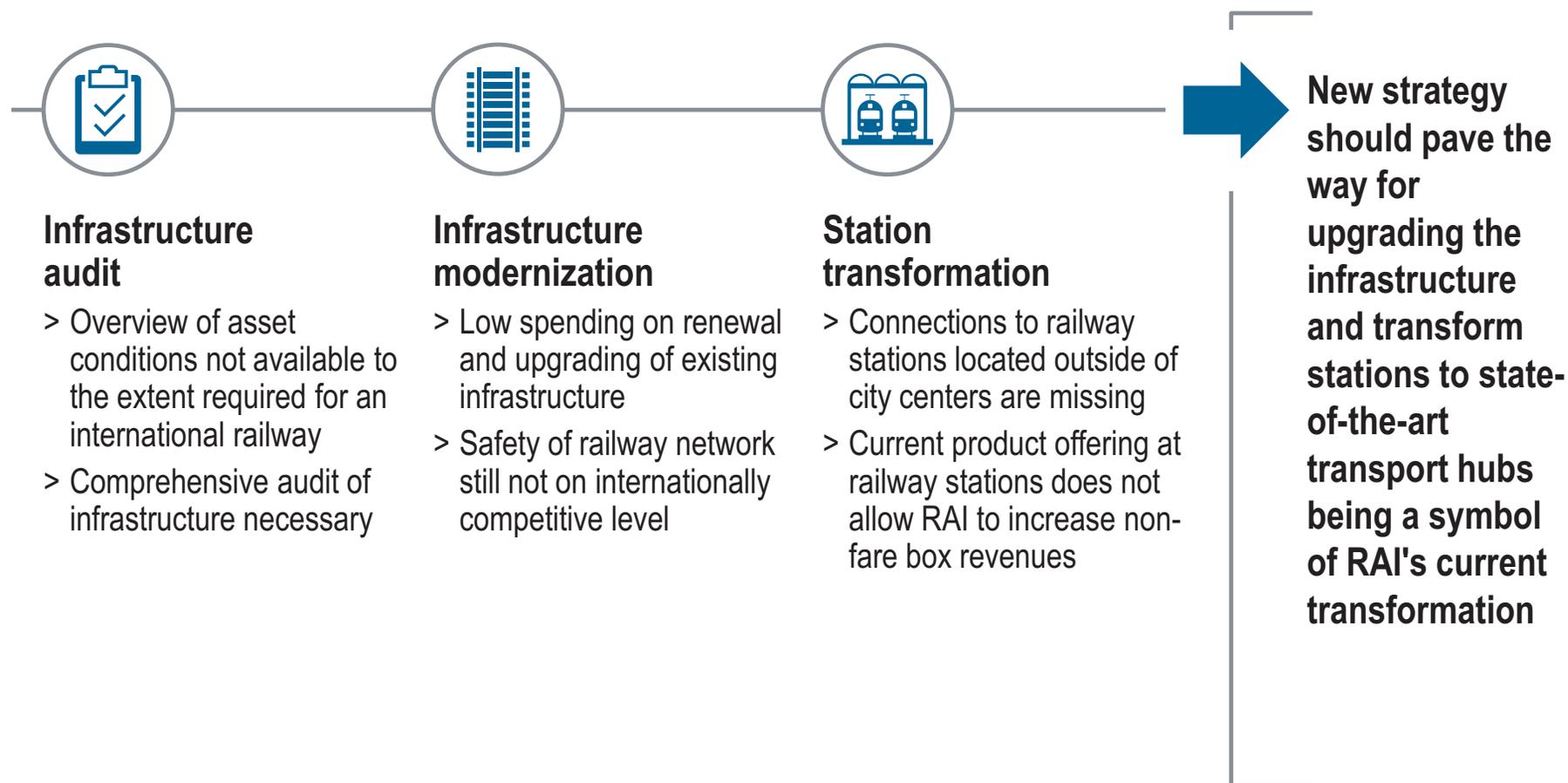
For passengers, RAI's new strategy should create a competitive service offering through new services, solid operations and an attractive fleet

Passenger segment – Main areas for improvement



For infra, RAI's new strategy should address insufficient infrastructure conditions, ensure safety and exploit the full potential of railway stations

Infrastructure and stations – Main areas for improvement



Within a similar railway reform process, DB managed to increase rail modal share and improve its organization through its new strategy

Best practices how other railway companies coped with similar challenges (1/2)

Effect of new DB strategy during German rail reform (1994-2012)

1 Traffic development



- > Steep increase of traffic capacity between 1994 and 2012: Passenger rail +36% (commuter rail traffic +68%); cargo rail +58%¹⁾
- > Increase/stabilization of intermodal market share: Increase of passenger rail +1.5 percentage points, cargo rail +0.4 percentage points after a slump between 1950-90

2 Other indicators of success



- > Revenues and results increased due to organizational improvements
- > Productivity clearly increased in all areas



- > Relative emissions reduced by 40% (absolute by more than 10%¹⁾)
- > Considerable noise abatement efforts made



- > Range of products and journey times improved
- > Vehicle fleet was modernized significantly



- > Total employee number dropped by approx. 10%
- > In main rail segment, employee number dropped by approx. 50%

1) Incl. third party railway operating companies

Best practices how to deal with challenges in strategy development during a railway reform should be reflected

Best practices how other railway companies coped with similar challenges (2/2)

Exemplary challenges for railway strategy during reform processes

Ressource shortage

.....

- > Shortage of skills and human resources during the reform process
- > **Solution:** Clear upfront planning of required resources

Slow implementation

.....

- > Clear concept for new railway strategy but no stringent implementation
- > **Solution:** Rigorous tracking and constant measurement of implementation

Inflexibility

.....

- > No adaption of passenger and cargo strategies to new market situations
- > **Solution:** Constantly evaluate current strategy within reform process

Missing focus

.....

- > Too many simultaneous initiatives that cannot be managed by one organization
- > **Solution:** Setting a clear focus during strategy development

Insufficient funding

.....

- > Well-founded strategy but no sufficient financial backing for necessary investment
- > **Solution:** Development of comprehensive funding model for new strategy

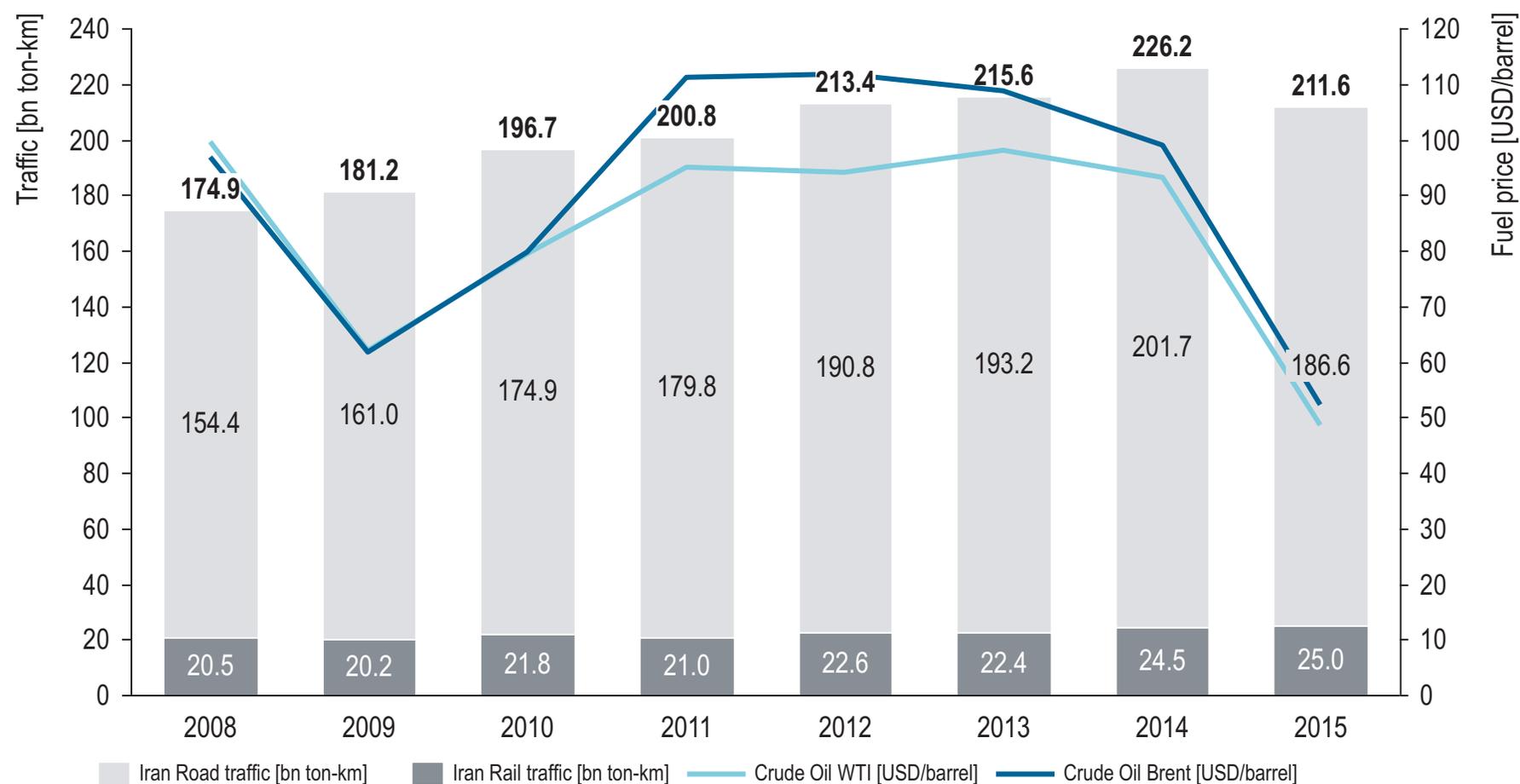
No cultural transition

.....

- > New vision and strategy is not accepted by company management
- > **Solution:** Cultural change management based on new vision and objectives

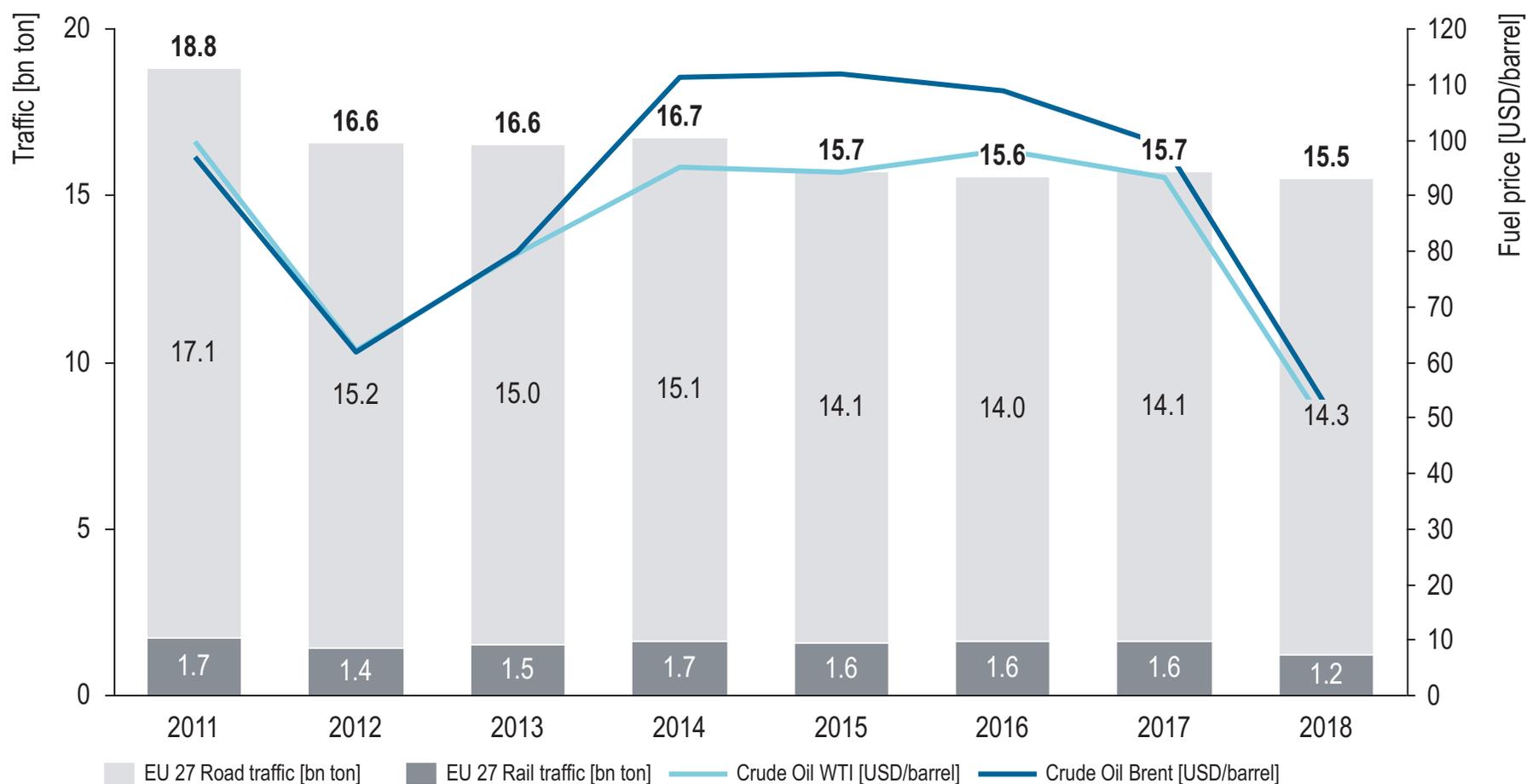
Based on historic data, no correlation could be found between fuel price development and conversion of traffic from road to rail

Development of Iranian transport and fuel price



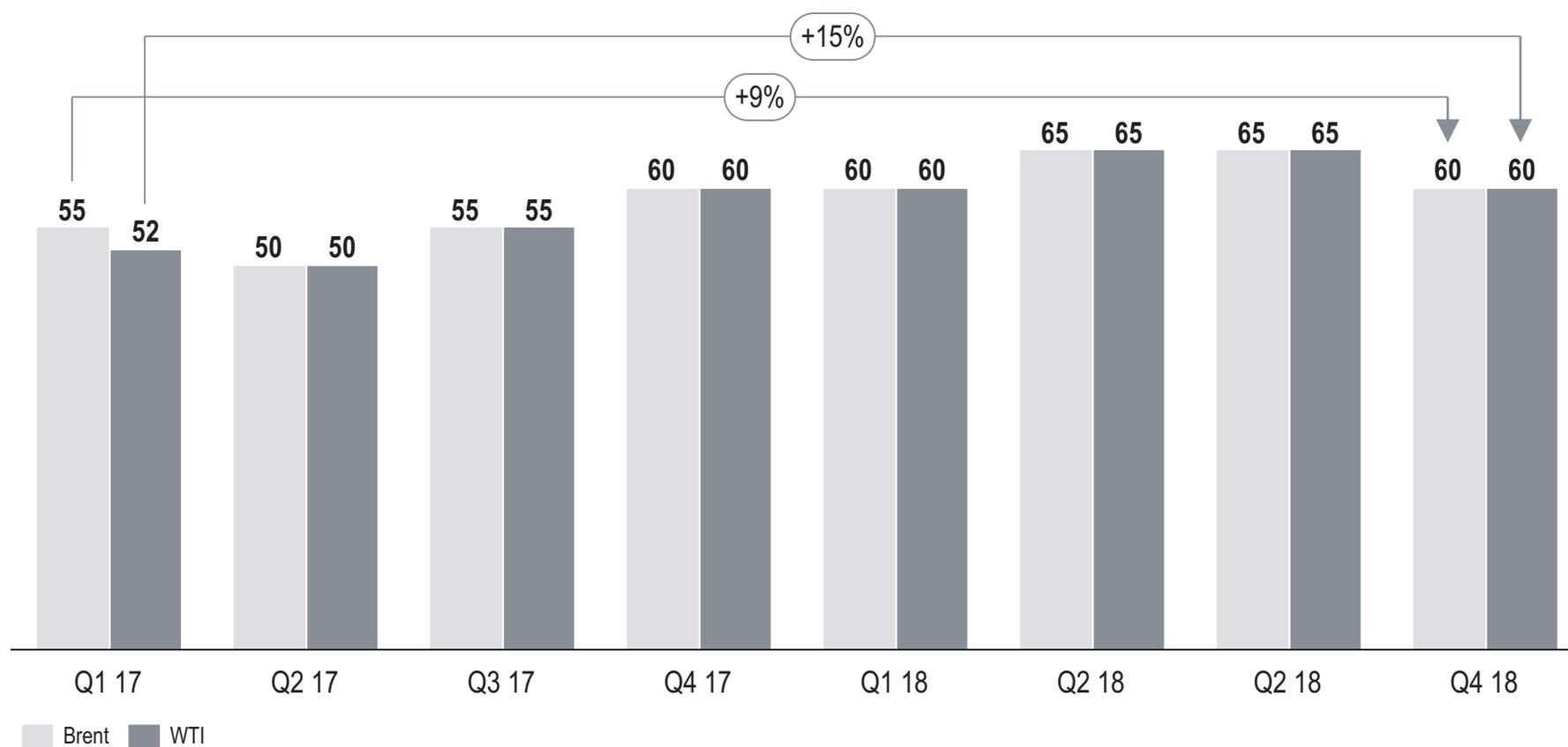
The same goes for the EU, where also no correlation could be found between fuel price development and the share of rail cargo traffic

Development of EU-27 transport and fuel price



According to current forecasts, the fuel price will increase by 9% for Brent and 15% for WTI until the end of 2018

Fuel price forecast [USD/barrel]

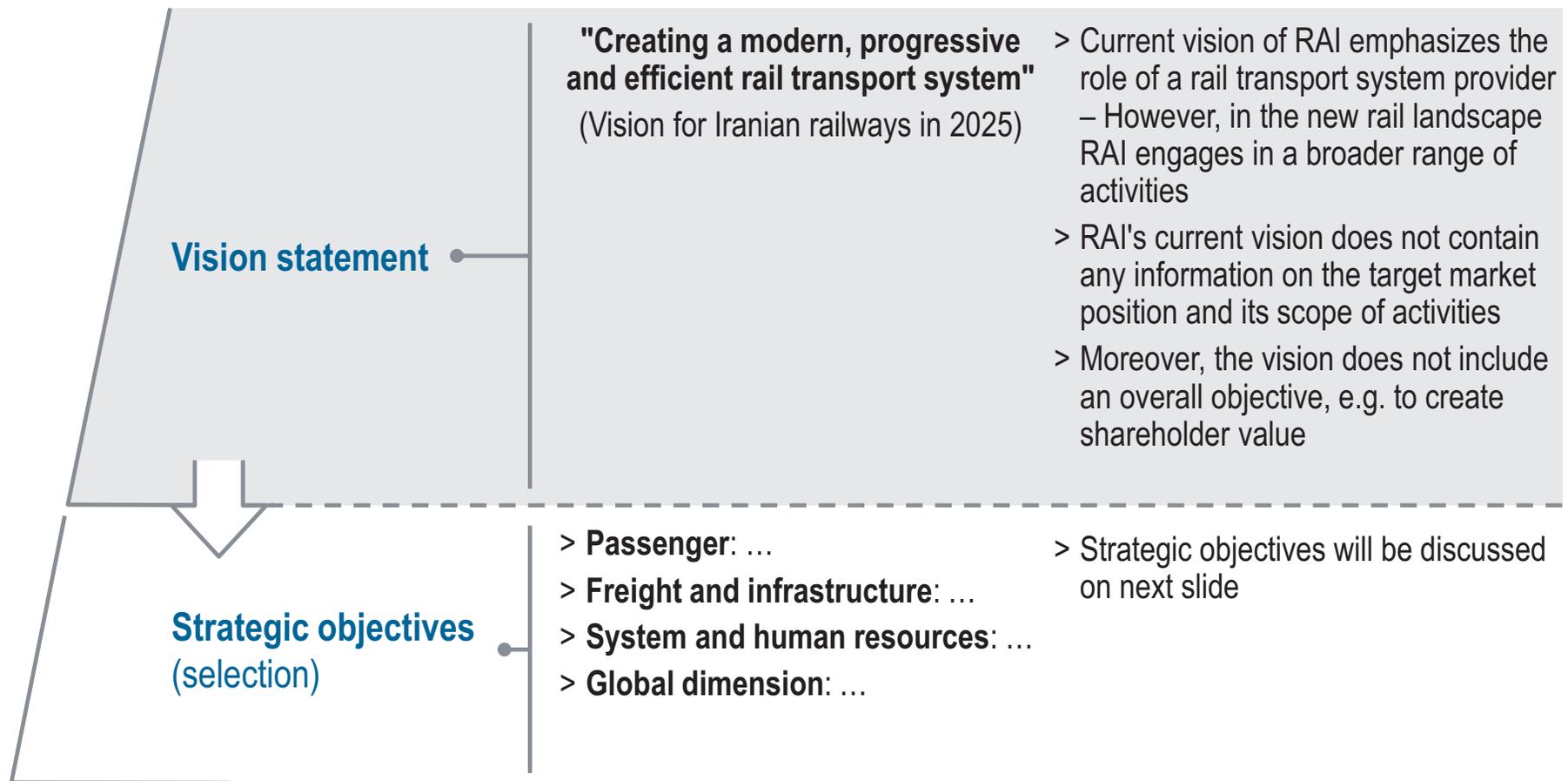


B.3 Definition of vision and strategic objectives



The current vision of RAI needs to be adapted to the new mission discussed in management workshops

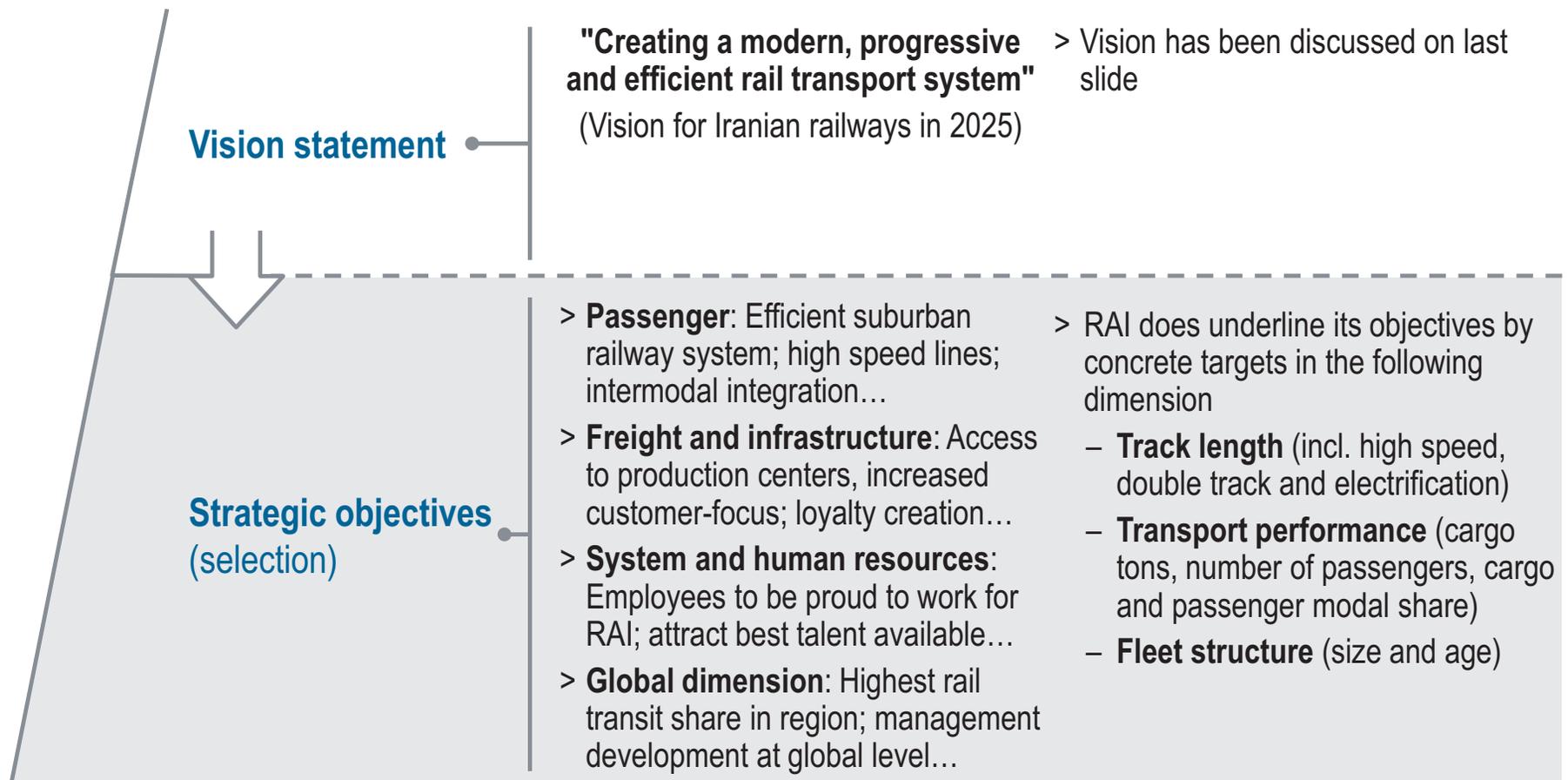
Current vision of RAI



Focus of this chapter

RAI's current strategic objectives contain some important and well-considered goals – However, a clear focus is missing

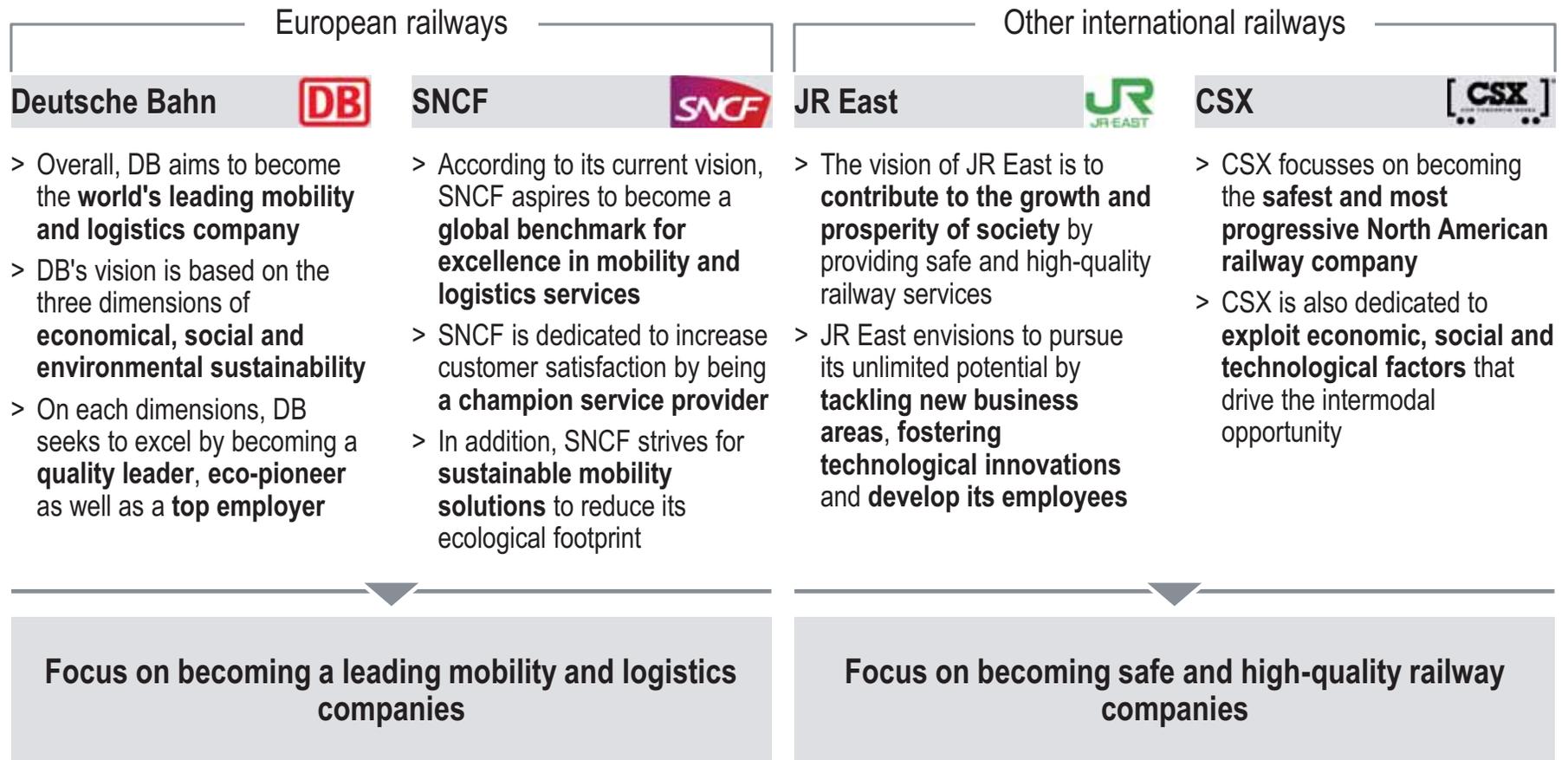
Current strategic objectives of RAI



Focus of this chapter

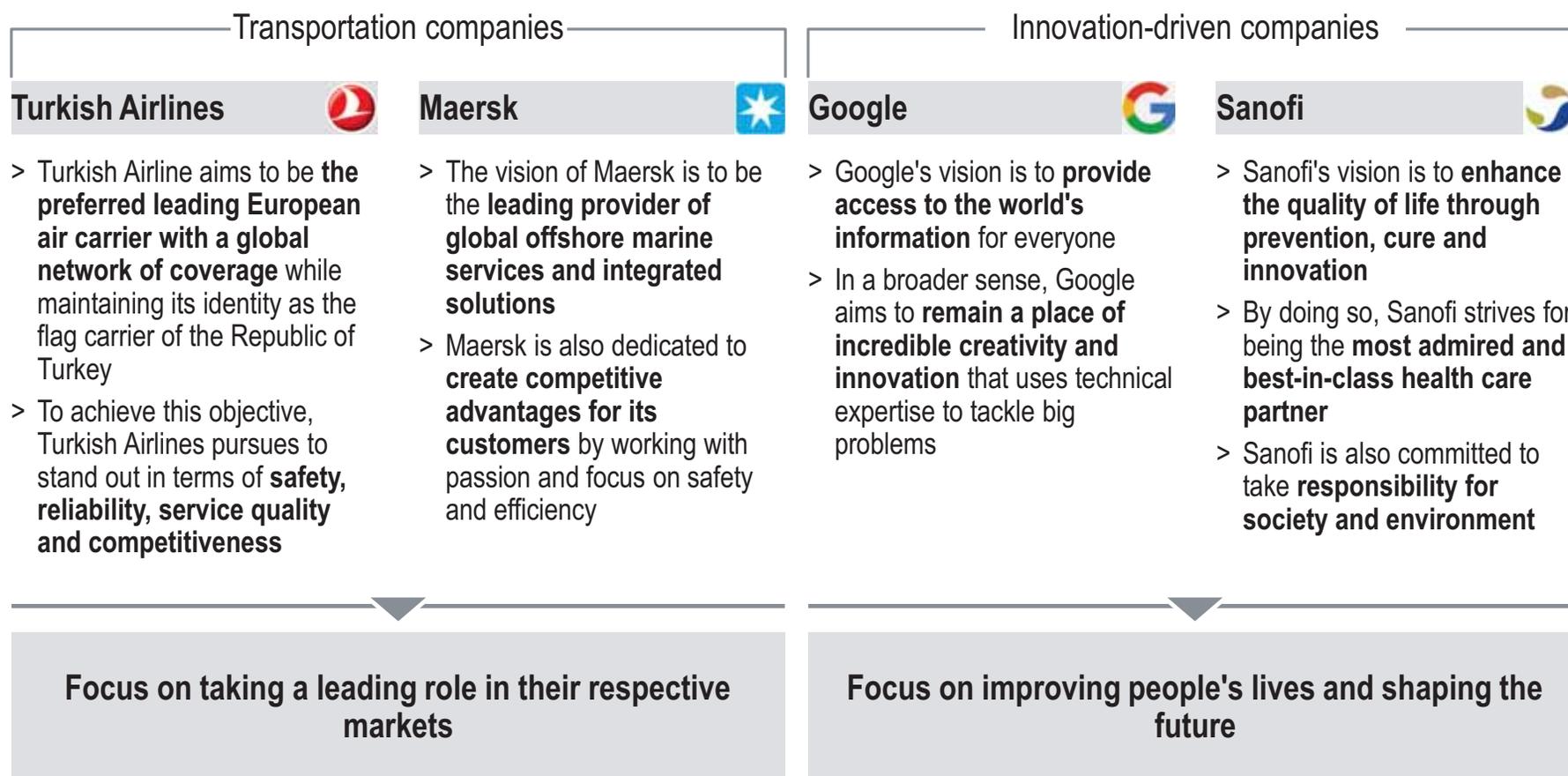
While RAI's vision primarily focusses on rail transport, European railways aim to be leading providers of mobility and logistics services

Best practices – Railways



In general, transportation companies use the vision to define the market position they are trying to achieve or maintain

Best practices – Other industries



Other railways focus on three to four key dimensions of strategic objectives along which they are implementing their vision

Best practices – Railways

European railways		Other international railways	
Deutsche Bahn 	SNCF 	JR East 	CSX 
<ul style="list-style-type: none"> > Under its vision, DB has strategic objectives in three dimensions <ul style="list-style-type: none"> – Economical (e.g. ROCE, level of debt, customer satisfaction, punctuality) – Social (e.g. employee satisfaction and employer branding) – Ecological (e.g. level of emissions, use of renewable energies) 	<ul style="list-style-type: none"> > SNCF translates its vision in strategic objectives in the following dimensions <ul style="list-style-type: none"> – Financial (e.g. revenue growth, EBITDA growth, reduction in net debt) – Quality (e.g. operational efficiency indicators) – Innovation (e.g. level of spending on R&D) – Human development (e.g. acquire new competencies) 	<ul style="list-style-type: none"> > JR East uses two main dimensions for its strategic objectives <ul style="list-style-type: none"> – Eternal mission (rail network enhancement, collaboration with local communities) – Unlimited potential (improving speed, fostering globalization, digitalization, technological innovation) 	<ul style="list-style-type: none"> > CSX uses four dimensions of strategic objectives under its vision <ul style="list-style-type: none"> – Network improvement (e.g. network expansion, partnerships with public) – Service excellence (e.g. new intermodal terminals) – Automation (e.g. level of automation of operations) – Team (e.g. employee development)

**Strategic objectives are usually structured along key dimensions
Each dimension contains targets in the form of performance indicators**

To ensure long-term success within the new industry structure, a new vision for RAI has been developed

Vision of RAI



راه آهن ایران - ایران در حرکت
RAI – Moving Iran

The new vision has then been broken down into a comprehensive set of strategic objectives

Strategic objectives¹⁾

RAI – Moving Iran

Overall goal: Increase modal share of rail in passenger business to 10% and cargo business to 20%

1 Operational excellence

A Safety

Reduce number of rail accidents involving injuries of people and fatalities to zero

B Fleet

Adopt average fleet age of locomotive and coaches inferior to industry standards

C Average speed

Increase average speed of passenger trains by 25 km/h and cargo consignments by 5 km/h

2 Customer loyalty

A Seamless travel

All major cities in Iran have integrated ticketing system

B Customer satisfaction

Increase satisfaction score of customer opinion polls by 20%

C Brand perception

Become one of the top ten brands in Iran²⁾

3 Social impact

A Employer attractiveness

Become one of the top ten employers in Iran²⁾

B Socioeconomic benefits

Reduce CO₂ emissions per ptkm by 30%

C Regional development

Increase real estate price at and around stations by 30%

4 Financial sustainability

A Profitability

Achieve overall EBITDA margin of 15%

B Investment level

Execute the infrastructure investment plan with zero tolerance

C Effective subsidy system

Fulfil all conditions of network and commuter performance contracts

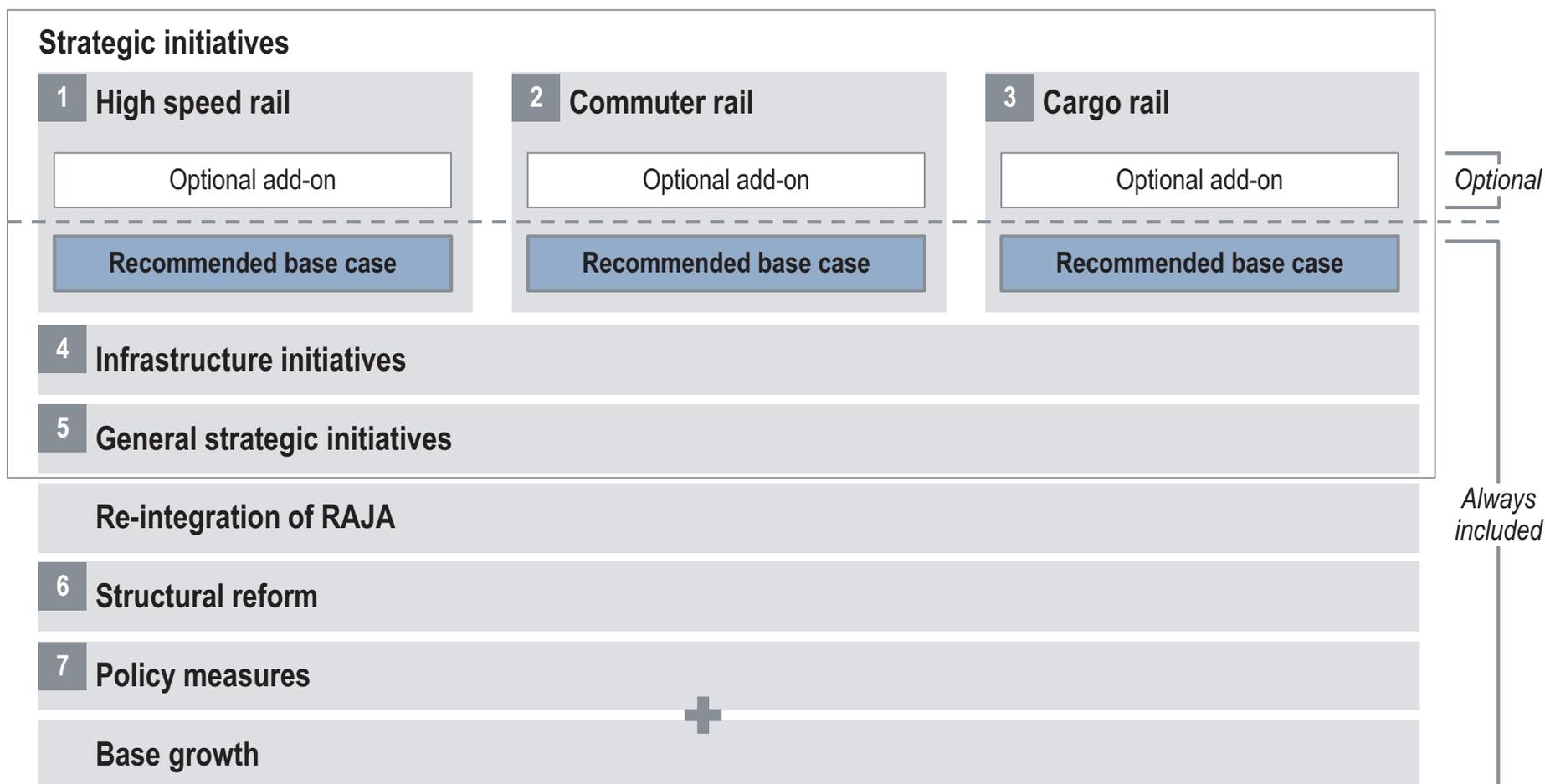
1) Time horizons of individual targets depend on level of investment 2) In case there is no industry measurement available, RAI should develop own polls for measurement

B.4 Assessment of strategic options



To select the strategic option, RAI can choose between a base and a focus option in high speed, commuter and cargo rail

Approach



All initiatives, the reform and the policy measures have been evaluated with regards to modal share effect and investment need

Evaluation of initiatives

Strategic initiatives					
1	High speed rail	Add-on	+2.8% Passenger modal share	13.7 bn USD investment	32.9 additional m pax
		Base	+2.2% Passenger modal share	6.5 bn USD investment	26.0 additional m pax
2	Commuter rail	Add-on	+6.6% Passenger modal share	6.1 bn USD investment	78.8 additional m pax
		Base	+2.5% Passenger modal share	0.6 bn USD investment	30.3 additional m pax
3	Cargo rail	Add-on	+2.7% Cargo modal share	3.9 bn USD investment	9.2 additional ton-km bn
		Base	+1.8% Cargo modal share	2.9 bn USD investment	6.0 additional ton-km bn
4	Infrastructure initiatives	-	-	2.4 additional ton-km bn	3.4 bn USD investment
5	General strategic initiatives	2.4 additional m pax	0.7 additional ton-km bn	+0.2% Passenger modal share	+0.2% Cargo modal share
	Re-integration of RAJA	-	-	-	0.02 bn USD investment
6	Structural reform	5.9 additional m pax	1.8 additional ton-km	+0.5% Passenger modal share	+0.5% Cargo modal share
7	Policy measures	5.9 additional m pax	1.8 additional ton-km	+0.5% Passenger modal share	+1.0% Cargo modal share
	Base growth	23.4 additional m pax	22.9 additional ton-km bn	+0.8% Passenger modal share	+2.2% Cargo modal share

Optional

Always included

For high speed rail, we recommend choosing the base case option in an initial step – Add-on option to be exploited after 2028

Strategic initiatives for high speed rail

Calculations on this and the following pages are made under the assumption that the proposed measures are implemented properly without delay

High speed rail

Recommended base case

- > Construction of **three high speed lines**, e.g.
 - Tehran-Isfahan
 - Tehran-Zanjan
 - Qom-Arak
- > Purchase and operation of high speed trains on each of these lines

6.5 bn USD investment	+2.2% Passenger modal share	+0.3% Modal share per bn USD
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Optional add-on

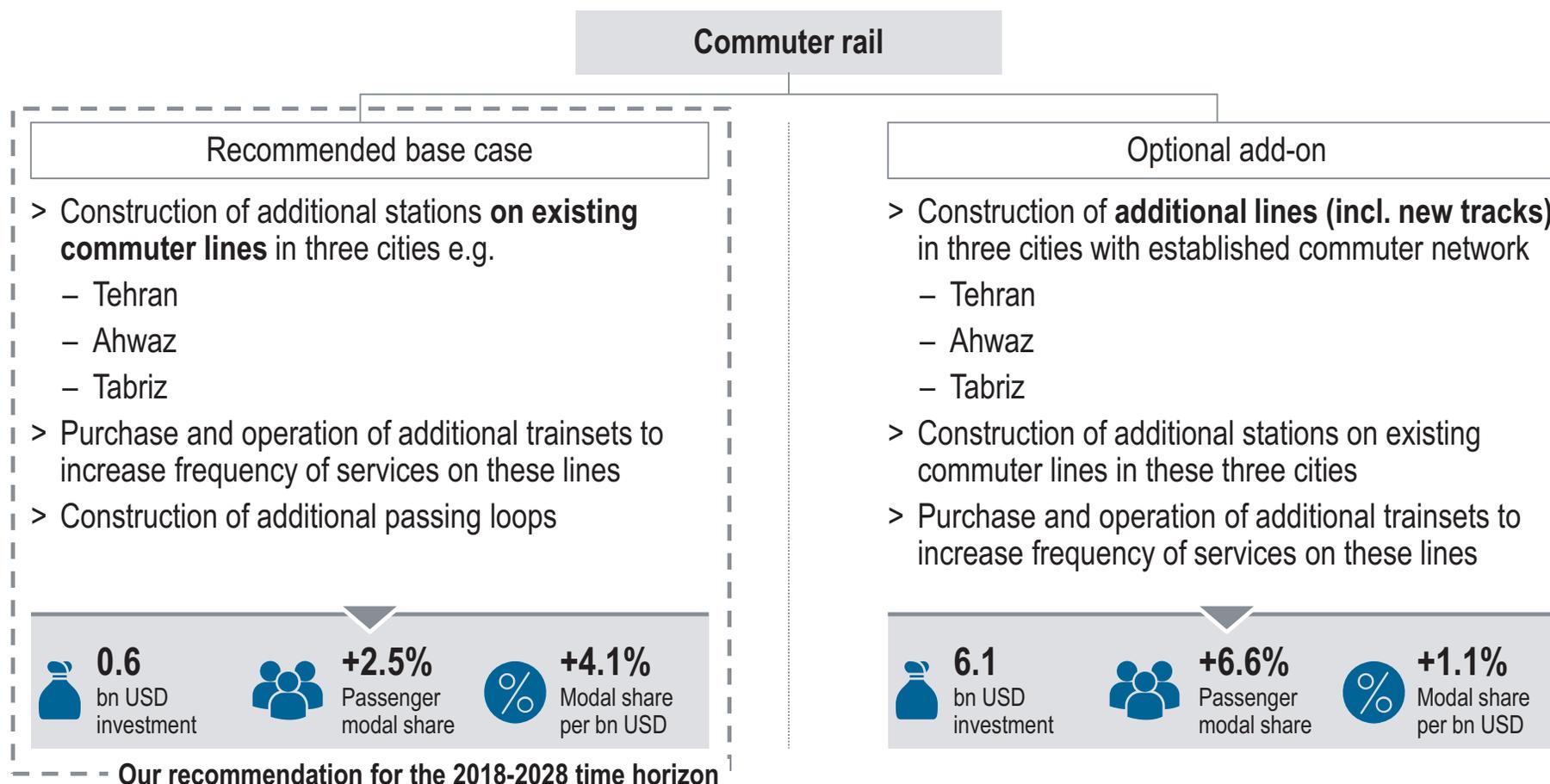
- > Construction of **five high speed lines**, e.g.
 - Tehran-Isfahan
 - Tehran-Zanjan
 - Tehran-Hamedan
 - Qom-Arak
 - Isfahan-Shiraz
- > Purchase and operation of high speed trains on each of these lines

13.7 bn USD investment	+2.8% Passenger modal share	+0.2% Modal share per bn USD
----------------------------------	---------------------------------------	--

Our recommendation for the 2018-2028 time horizon

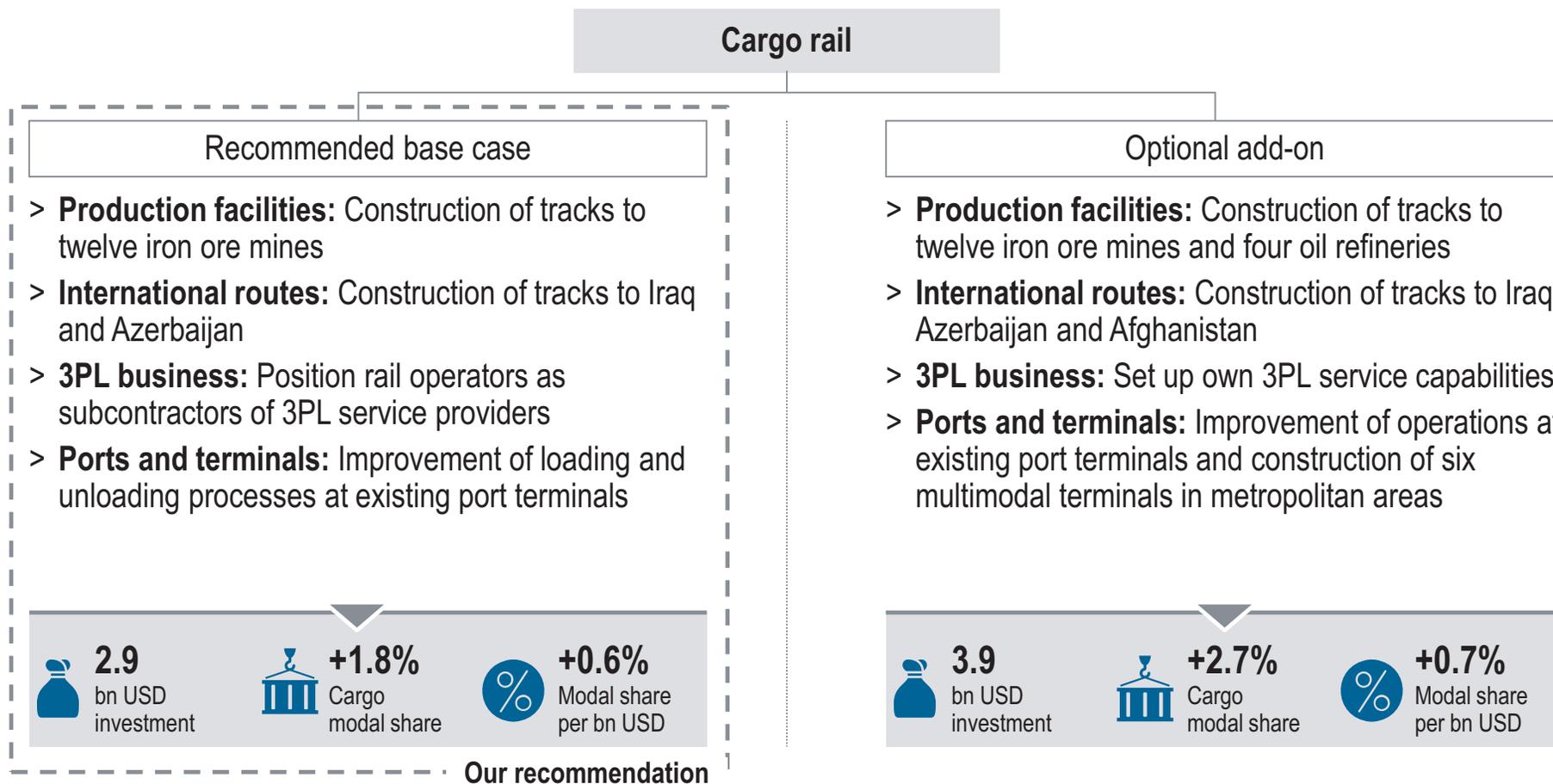
For commuter rail, we also suggest to pick the base case and consider exploiting the add-on option after 2028

Strategic initiatives for commuter rail



The cargo rail option consists of five different strategic initiatives – Once again, we advise to select the base option

Strategic initiatives for cargo rail



A network upgrade will ensure sufficient capacity for future demand growth – Stations will exploit full potential regarding ancillary services

Strategic initiatives for infrastructure (1/2)



Network upgrade

- > A network upgrade is necessary in order to ensure sufficient capacity for future market growth
- > Furthermore, an increase in network capacity could attract additional cargo demand all by itself
- > Suggested measures are
 - Removal of four fundamental bottlenecks as identified by University of Esfahan (e.g. Dorud-Andimeshk, Qom-Andimeshk, Abnil-Bafgh, Chadormalu-Abnil etc.)
 - Double tracking of five major routes that are not part of the bottlenecks
 - Execution of existing initiatives



3,100
m USD
investment



+0.7%
Cargo modal
share



~9 yrs.
Implementation
time



Station transformation

- > So far, railway stations in Iran are rather functional in a sense that they do not offer very many ancillary services
- > Thus, railway stations should be transformed into places where passengers, can shop, dine and connect to different modes of transport
- > Suggested measures for the 10 most busiest stations are
 - Expansion of retail and catering areas at railway stations
 - Exploit the opportunity of advertising at railway stations
 - Increase the number of parking spots at railway stations



65
m USD
investment



-
Passenger
modal share



~4 yrs.
Implementation
time

Rail is known to be safest of all transport modes – To keep up this image, it is essential to minimize the risk of accidents

Strategic initiatives for infrastructure (2/2)



Safety program

- > In order to avoid accidents, it is essential to increase the safety standards within the Iranian rail network
- > Suggested measures are
 - Upgrade of all unprotected level crossings with barriers and traffic lights
 - Installation of signaling facilities at all railway tracks without electric signaling system



200
m USD
investment



-
Cargo modal
share



~4 yrs.
Implementation
time

The introduction of a loyalty program and an intermodal platform will aim at reaching RAI's customer satisfaction objectives

General initiatives (1/5)



4.1 Loyalty program

- > Loyalty programs are a common measure to increase customer retention in the transportation industry, in particular also in the railway sector (e.g. Bahncard)
- > Suggested measures are
 - Roll-out of bonus program for regular customers
 - Integration of loyalty program in intermodal mobility platform offer
 - Attraction of further non-rail partners for its program (e.g. hotels, metro and taxi)

Implementation

 **< 10**
m USD
investment

 **1-2 yrs.**
Implementation
time



4.2 Intermodal mobility

- > Intermodal platforms and applications increase the level of convenience of passengers by allowing them to combine different transport modes on one trip with a single ticket
- > Suggested measures are
 - Development of a mobile application with a comprehensive IT backbone
 - Cooperation with other mobility providers to offer integrated tickets on new platform

Implementation

 **~ 50**
m USD
investment

 **2-3 yr.**
Implementation
time

To increase customer satisfaction, it will also be necessary to invest in customer service – A new recruiting concept will attract high potentials

General initiatives (2/5)



4.3 Customer service improvement

- > Service level is among the key decision criteria for customers in choosing their transportation mode and should become an advantage if Iranian rail transportation
- > Suggested measures are
 - Enhancement of existing customer service processes
 - Employment of more service personnel at stations and in call-centers
 - Development of comprehensive approach to customer communication across all offline/online channels

Implementation

 **< 10**
m USD
investment

 **1-2 yrs.**
Implementation
time



4.4 Recruiting concept

- > As the market for highly skilled employees becomes competitive, RAI should develop a recruiting concept that allow access to the best talents
- > Suggested measures are
 - Increase of marketing activities to position RAI as attractive employer (beyond the traditional state owned company)
 - Conducting university recruiting events to position rail as an attractive industry for graduates

Implementation

 **< 10**
m USD
investment

 **<1 yr.**
Implementation
time

To exploit the full potential of all employees, it is crucial to offer trainings and a working environment that will keep them satisfied

General initiatives (3/5)



4.5 Employee development program

- > To offer employees attractive career path and enhance the quality of its operations, RAI should invest in the education and training of its employees
- > Suggested measures are
 - Regular training sessions and seminars for employees
 - Supporting further external education programs and participation at conferences for own employees
 - Creation of career tracks and talent programs for high performing employees

Implementation

 **< 10**
m USD
investment

 **<2 yr.**
Implementation
time



4.6 Employee satisfaction program

- > In order to increase employee productivity and position RAI as an attractive employer, satisfaction of its workforces plays an important role
- > Suggested measures are
 - Regular measurement of employee satisfaction level
 - Improvement of working conditions (e.g. by offering flexible working hours)
 - Increase employee motivation by raising wages and salaries

Implementation

 **< 10**
m USD
investment

 **2-3 yrs.**
Implementation
time

An environmental program and a rebranding campaign will enable RAI to reach its socioeconomic and brand perception goals

General initiatives (4/5)



4.7 Environmental program

- > The environmental-friendliness of rail should be increased through a specific strategic program and become the center of lobbying and marketing activities
- > Suggested measures are
 - Reduction of CO₂ emissions by increased use of renewable energy sources
 - Creation of internal program for employees to integrate environmental friendliness in employees' mindset
 - External marketing of pro-environmental activities

Implementation

 **< 20**
m USD
investment

 **2-3 yrs.**
Implementation
time



4.8 Rebranding

- > In order to emphasize its reform process, RAI should adjust its brand of its new offer and business activities to both its employees as well as customers and further stakeholders
- > Suggested measures are
 - Development of new branding concept (incl. brand architecture of group brand and brand portfolio)
 - Marketing campaign to boost sales and image of RAI
 - Introduction of new logo

Implementation

 **< 20**
m USD
investment

 **1-2 yr.**
Implementation
time

In order to improve railway services, it is not only necessary to invest in assets but also to optimize underlying operational processes

General initiatives (5/5)



4.9 Operational improvement

- > In order to maximize value of rolling stock and infrastructure, underlying processes have to be optimized, e.g. maintenance of locomotives
- > Suggested measures are
 - Streamlining of all operational processes to detect potential for performance improvement
 - Focus on improvement of operations in ports by analyzing current operational drawbacks and defining corresponding measures

Implementation

 **< 20**
m USD
investment

 **2-3 yrs.**
Implementation
time

While costs for the structural reform are difficult to quantify, they are expected to be well below costs for most strategic reforms

Main cost drivers of structural reform

External rail industry structure



Establish separate regulator and other entities to govern and promote Iran's railway system

- > Transfer of employees within existing organization or to new entities
- > Establishment of new controlling and reporting lines
- > External communication of rail reform
- > Costs for project management office team that accompanies and drives the transformation process
- > Further costs for external consultants, e.g. on legal and business matters

Internal reorganization



Reorganize RAI's internal structure to ensure ideal fit with the changed external structure

- > Internal lobbying to establish new organizational structure among employees
- > Costs for new full time positions within new organizational structure, e.g. positions at regulator
- > Additional costs, e.g. from construction of new office facilities

 **<20**
m USD
investment

 **+0.5%**
Passenger
modal share

 **+0.5%**
Cargo
modal share

 **~1-5 yrs.**
Implementation
time

Policy measures should aim at converting traffic from road to rail by strengthening the relative competitiveness of rail

Potential policy measures

Decrease competitiveness of road

- > In order to convert traffic from road to rail, the **competitiveness of road could be decreased** through political interventions
- > **Increasing the prices of road transport** should have a strong effect on modal share of rail, in particular in the cargo segment with its price-sensitive cargo owners
- > **Suggested measures** to lobby for are
 - Increase of current road tolls
 - Increase of fuel tax for trucks
 - Increase of value added tax on road services

Increase competitiveness of rail

- > In order to convert traffic from road to rail, the **competitiveness of rail could be increased** through political interventions
- > **Decreasing the prices of rail transport** should have a strong effect on modal share of rail, in particular in the cargo segment with its price-sensitive cargo owners
- > **Suggested measures** to lobby for are
 - Decrease of access fees
 - Decrease of traction charges
 - Decrease of value added tax on rail services

Potential political measures to convert traffic



Overall, investment cost for the implementation of our recommended base option amount to USD 18.9 bn

Summary of base case initiatives – *Our recommendation*

Area	Investment [m USD]	Passenger Modal share [% pts.]	Cargo Modal share [% pts.]	Implementation time [yrs.]
High speed rail (Base option)	6,500	~2.2%	-	~5
Commuter rail (Base option)	600	~2.5%	-	~3
Cargo rail (Base option)	2,900	-	~1.8%	~6
Infrastructure initiatives	3,100	-	~0.7%	~8
General initiatives	100	~0.2%	~0.2%	~3
Structural reform	<20	~0.5%	~0.5%	~2
Policy measures	0	~0.5%	~1%	~2
Base growth	5,400	~0.8%	~2.2%	-

 18.9 bn USD investm.	 +6.7% Passenger modal share	 +6.4% Cargo modal share	 ~8 yrs. Implementation time
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If optional add-on options are chosen for high speed, commuter and cargo rail, the investment cost amount to USD 32.7 bn

Summary of optional add-on initiatives

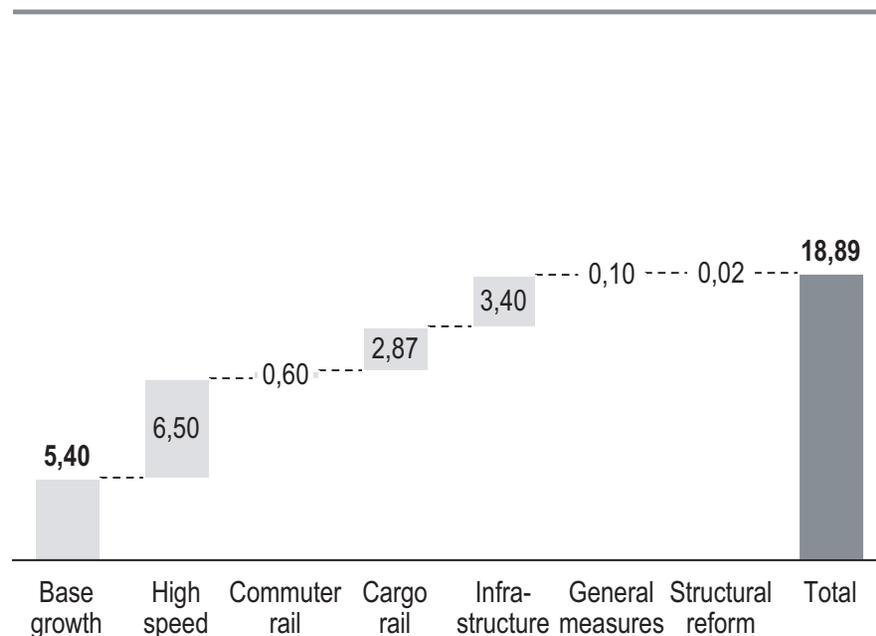
Area	Investment [m USD]	Passenger Modal share [% pts.]	Cargo Modal share [% pts.]	Implementation time [yrs.]
High speed rail (Focus option)	13,700	~2.8%	-	~9
Commuter rail (Focus option)	6,100	~6.6%	-	~7
Cargo rail (Focus option)	3,900	-	~2.7%	~7
Infrastructure initiatives	3,100	-	~0.7%	~8
General initiatives	100	~0.2%	~0.2%	~3
Structural reform	<20	~0.5%	~0.5%	~2
Policy measures	0	~0.5%	~1%	~2
Base growth	5,400	~0.8%	~2.2%	-

	32.7 bn USD investm.		+11.4% Passenger modal share		+7.3% Cargo modal share		~9 yrs. Implemen- tation time
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Investment cost for focus initiatives are significantly higher than for base initiatives offering only slightly higher modal share increases

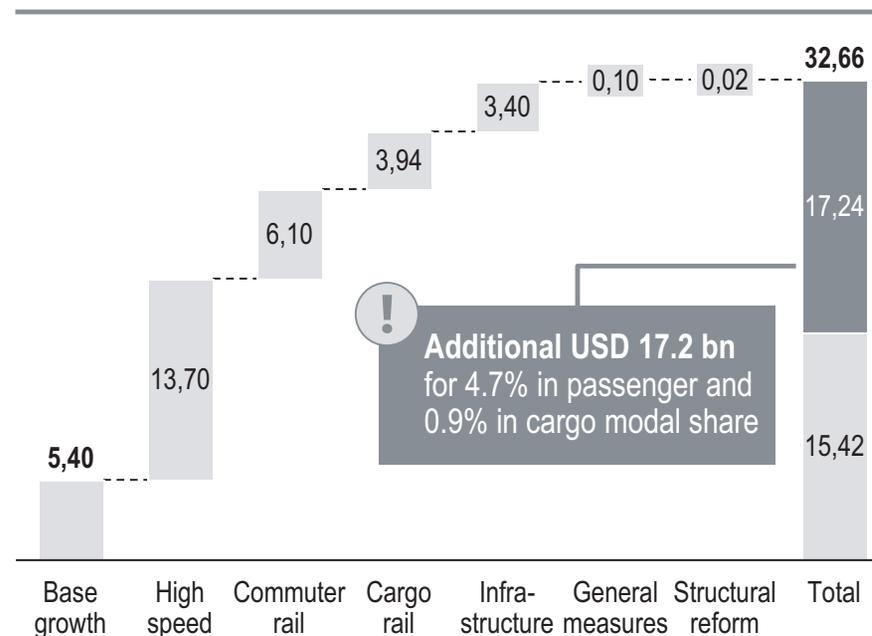
Comparison of investment [USD bn]

Base case – Our recommendation



- +6.7%** Passenger modal share
- +5.9%** Cargo modal share
- ~8 yrs.** Implementation time

Optional add-on



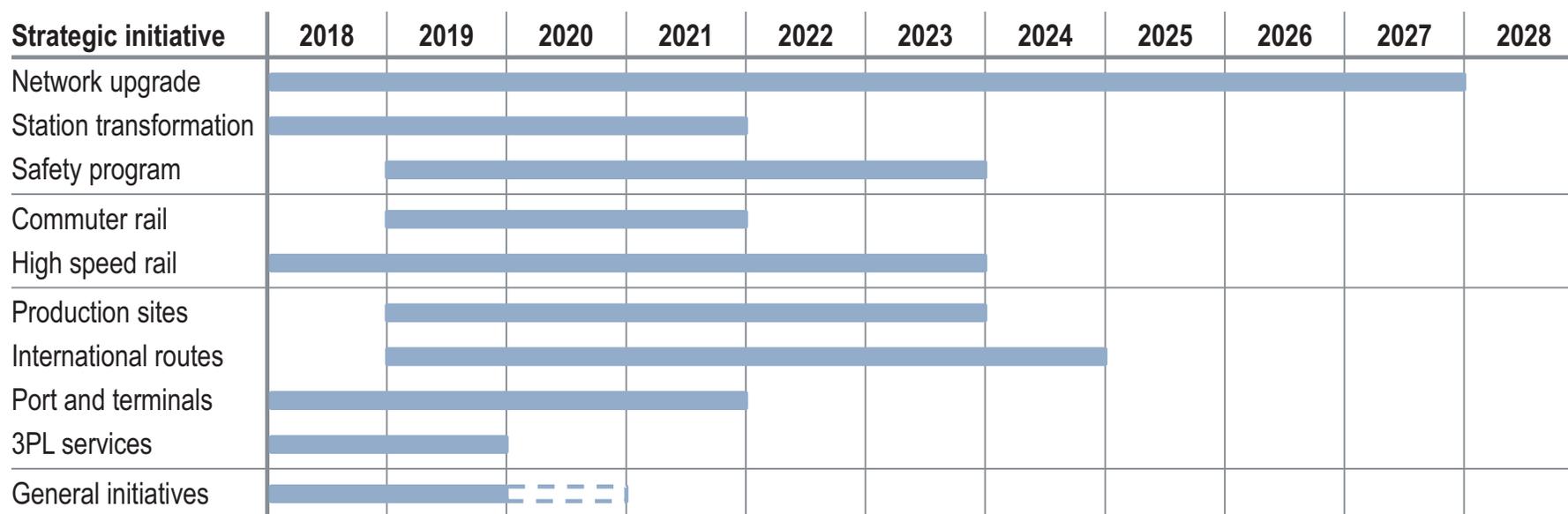
- +12.4%** Passenger modal share
- +6.8%** Cargo modal share
- ~9 yrs.** Implementation time

1) Modal share numbers include base growth and are to be understood +/-0.5%

The majority of initiatives in the base case can be implemented within nine years – Investment level decreasing over time

Implementation roadmap for base case initiatives

Preliminary



In order to decide among the strategic options, the attractiveness and the feasibility of each initiative have to be evaluated

Attractiveness



Modal share

> To what extent is rail modal share increased?



Operational excellence

> To what degree does the option enhance safety, average speed and fleet age?



Customer loyalty

> Does the option have a positive effect on customer perception and RAI's brand?



Social impact

> Does the option contribute to the socioeconomic and regional development of Iran?



Financial sustainability

> Does the strategic option increase profitability?
Is there a sufficient investment level?



Impact on legal framework

> To what extent does the option require to adjust the legal framework?



Time-horizon

> What is a realistic time horizon for executing all of the initiatives within the strategic option?



Investment need

> What amount of capital expenditure is needed in order to execute the strategic option?



Labor intensity

> Are the existing human resources sufficient or is an extension of the workforce necessary?



External dependency

> To what extent does the strategic option depend on political or economical developments?

Feasibility

Accordingly, a comprehensive scoring system has been defined to evaluate the strategic initiatives

Overview on criteria – Attractiveness

Attractiveness criteria	Scoring system for criteria evaluation			
	1	2	3	4
 Modal share	The higher the modal share growth for cargo and passenger, the better for RAI. The initiative with the highest modal share growth on average for cargo and passengers receives highest number. All other initiatives are ranked accordingly			
 Operational excellence	The higher the degree of operational excellence, the better for RAI and the higher the respective score. Safety, speed and fleet age improvements have been evaluated separately for each initiative and consolidated based on a simple average			
 Customer loyalty	The better the effect on customer loyalty, the better for RAI and the score. Positive effects on RAI's customer perception and brand's image have been evaluated separately per initiative and consolidated afterwards based on a simple average			
 Social impact	The higher RAI's social impact in Iran, the better for RAI and the better the score. Both socioeconomic and regional impact in Iran have been evaluated separately per strategic option and consolidated afterwards based on a simple average			
 Financial sustainability	The higher the financial sustainability, the better for RAI on the long-run and the better the score. Both increase in profitability and in the investment level have been evaluated separately per strategic option and consolidated based on simple average			

Accordingly, a comprehensive scoring system has been defined to evaluate the strategic initiatives

Overview on criteria – Feasibility

Feasibility criteria	Scoring system for criteria evaluation			
	1	2	3	4
 Impact on legal framework	The lower the impact on the legal framework and therefore the fewer required adjustments, the better for RAI. The lowest score in this case represents the fewest adjustments necessary per each strategic initiative			
 Time-horizon	The higher the time-to-market, i.e. the longer the time of implementation, the higher the score			
	~ < 2 years	~ < 3 years	~ < 5 years	~ > 6 years
 Investment need	The higher the amount of capital expenditures needed, the higher the score in the evaluation system			
	~ < USD 10 m	~ < USD 100 m	~ < USD 1,700 m	~ > USD 1,800 m
 Labor intensity	The higher the amount of additional staffing needed measured in the form of additional headcount, the higher the score			
	~ < 100 FTE	~ < 300 FTE	~ < 2,200 FTE	~ > 2,300 FTE
 External dependency	The lower external dependencies in context of politics or economics, the better for RAI. Both political and economical dependencies have been evaluated separately per initiative and consolidated afterwards. Hence, lower score means low dependencies			

Each strategic initiative has been evaluated along the previously defined criteria

Evaluation of strategic initiatives (1/4)

Criteria	Network upgrade	Station transformation	Safety program	Commuter rail (base)	Commuter rail (optional)
Modal share effect					
Operational excellence					
Customer loyalty					
Social impact					
Financial sustainability					
Impact on legal framew.					
Time horizon					
Investment need					
Labor intensity					
External dependency					

Level of attractiveness

Each strategic initiative has been evaluated along the previously defined criteria

Evaluation of strategic initiatives (2/4)

Criteria	High-speed rail (base)	High-speed rail (optional)	Access to production sites (base)	Access to production sites (optional)	Expansion of international routes (base)	Expansion of intern. routes (optional)
Modal share effect	●	●	◐	◐	◐	●
Operational excellence	◐	◐	◐	◐	◐	◐
Customer loyalty	●	●	◐	◐	◐	◐
Social impact	◐	◐	◐	◐	◐	◐
Financial sustainability	◐	◐	●	●	●	●
Impact on legal framew.	◐	◐	◐	◐	●	●
Time horizon	◐	●	◐	◐	◐	◐
Investment need	●	●	◐	◐	◐	●
Labor intensity	●	●	◐	◐	◐	◐
External dependency	◐	◐	◐	◐	●	●

◐ Level of attractiveness

Each strategic initiative has been evaluated along the previously defined criteria

Evaluation of strategic initiatives (3/4)

Criteria	Ports and terminals (base)	Ports and terminals (optional)	3PL services (optional)	Loyalty program	Intermodal mobility	Customer service improvement
Modal share effect						
Operational excellence						
Customer loyalty						
Social impact						
Financial sustainability						
Impact on legal framew.						
Time horizon						
Investment need						
Labor intensity						
External dependency						

Level of attractiveness

Each strategic initiative has been evaluated along the previously defined criteria

Evaluation of strategic initiatives (4/4)

Criteria	Recruiting concept	Employee development	Employee satisfaction program	Environmental program	Rebranding	Operational improvement
 Modal share effect						
 Operational excellence						
 Customer loyalty						
 Social impact						
 Financial sustainability						
 Impact on legal framew.						
 Time horizon						
 Investment need						
 Labor intensity						
 External dependency						

 Level of attractiveness

B.5 Detailing of strategic initiatives



We have created fact sheets that show financial projections and high level implementation plans for all initiatives

Approach

Data collection



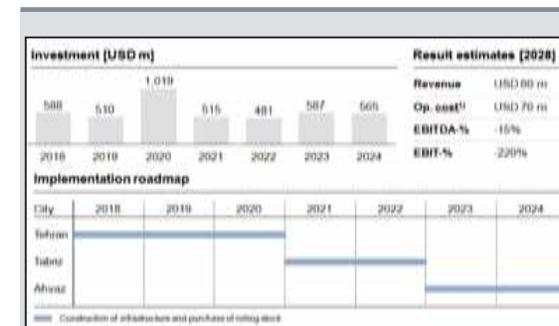
- > For each initiative, we gathered **specific data and information** that served as a basis for our projections
- > Data sources
 - Former RB projects
 - Data provided by RAI
 - Expert interviews
 - Internet research

Analysis and forecast



- > Based on the data collection, we calculated **how much investment** is needed and **how long it would take** to implement each initiative
- > Furthermore, we forecasted the **financial results** and the **modal share effects** for each year up to 2028

Fact sheets



- > The fact sheets give an overview of **investment cost, implementation time and estimated financial results in 2028** for each segment
 - 1 Infrastructure initiatives
 - 2 Passenger initiatives
 - 3 Cargo initiatives
 - 4 General initiatives

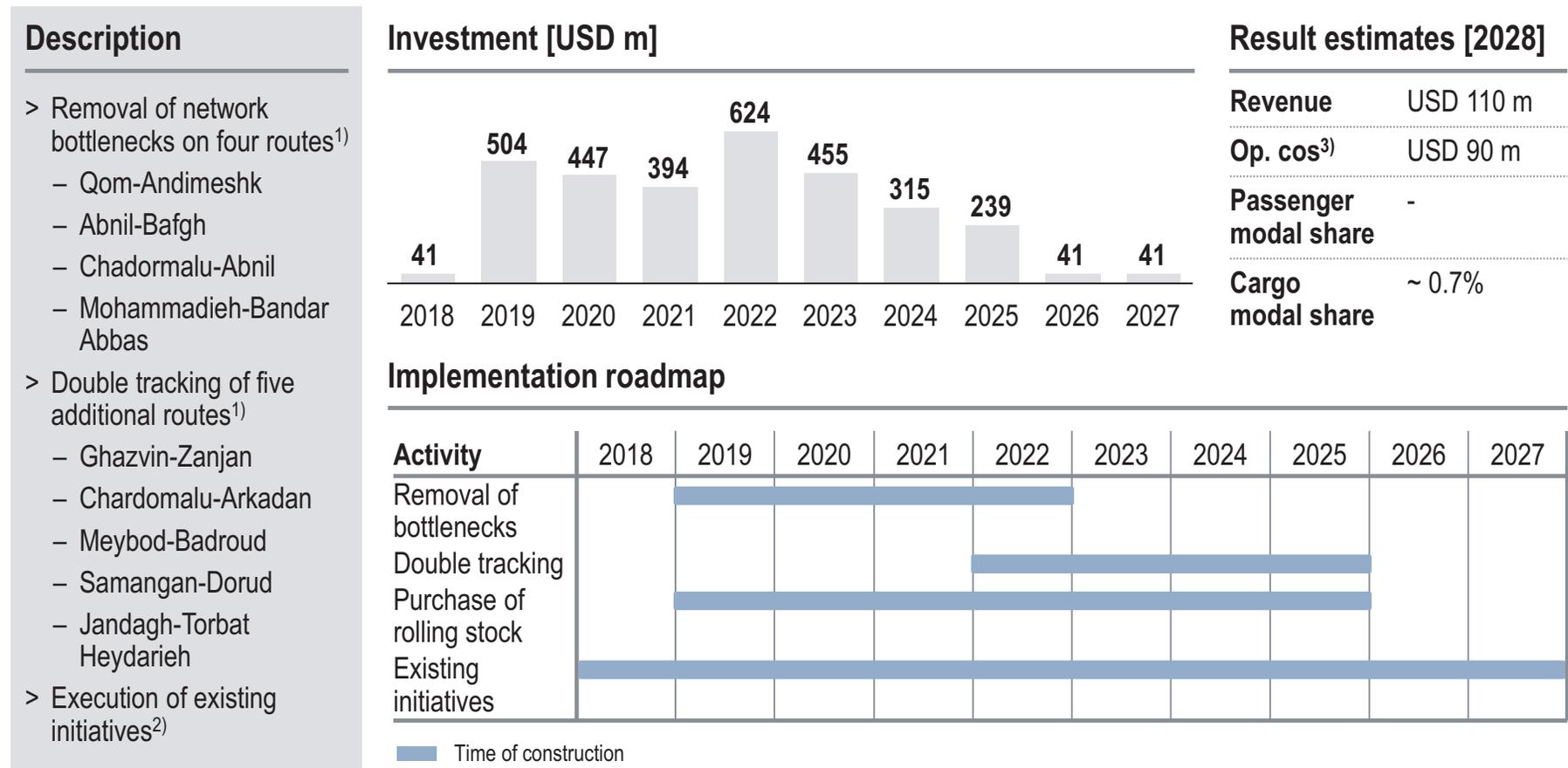
The fact sheets of the strategic initiatives have been put in order based on segments – First, we will look at infrastructure initiatives

Overview on strategic initiatives

Segment	Strategic initiative	Description
1 Infrastructure	1.1 Network upgrade	Removal of fundamental bottlenecks and upgrade of rail infrastructure
	1.2 Station transformation	Rebuilding and extension of ten railway stations
	1.3 Safety program	Upgrade of all unprotected level crossings with barriers
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5 Base growth	5.1 Base growth	Purchase of locomotives, wagons and coaches for base growth

Upgrading the network will have an enormous impact on revenues generated by rail freight traffic – High investments are necessary

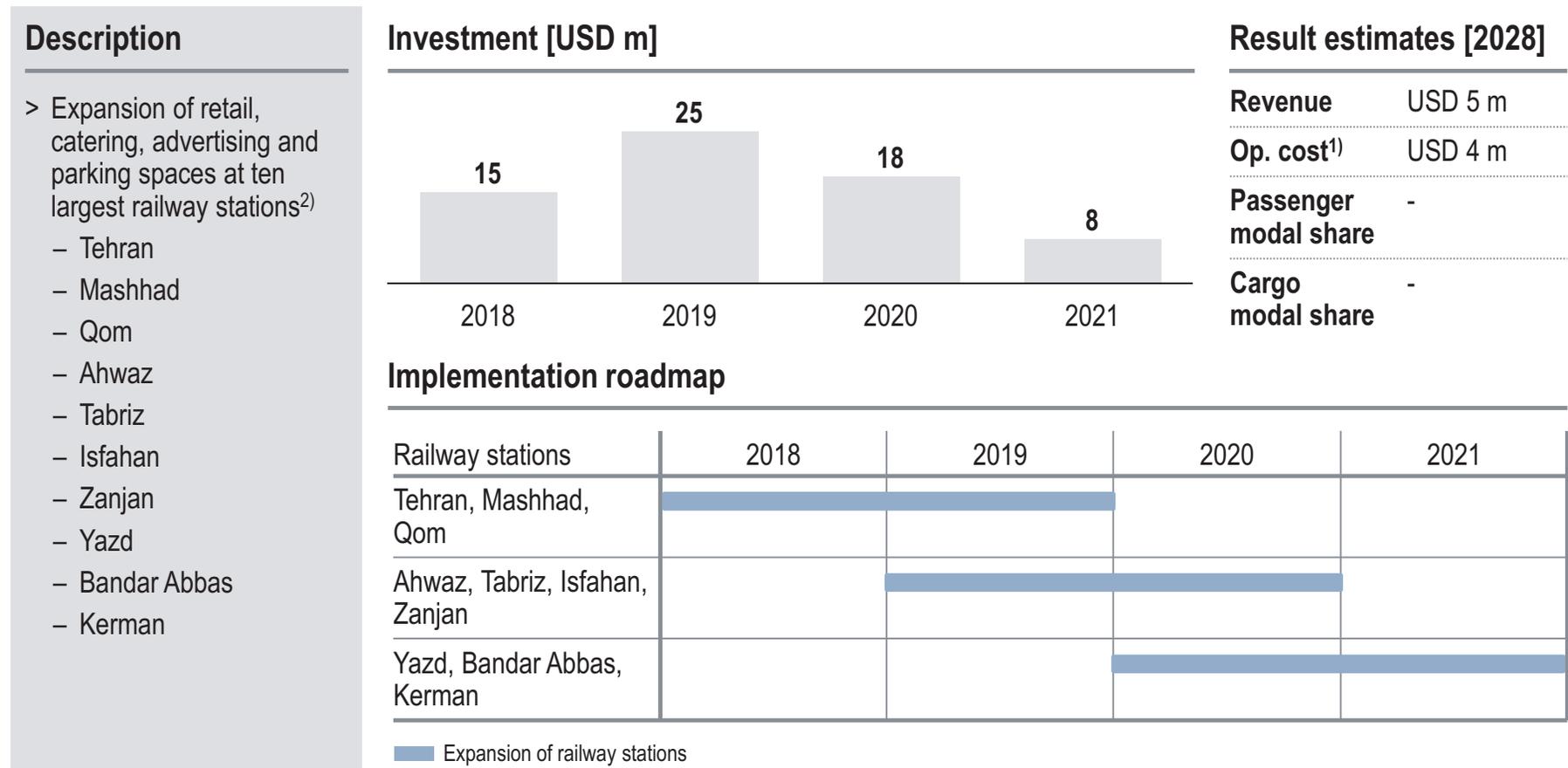
1.1 Network upgrade



1) Selection based on Esfahan univ. report and interviews with infrastructure managers 2) As outlined by RAI in Summary of managerial reports of plan status 2016-17 3) Excl. depreciation
 Source: Roland Berger 180910_RAI_Final_report_v8.pptx | 302

Expanding retail, catering and parking spaces at ten largest railway stations will generate USD 5 m of non-fare box revenues in 2028

1.2 Station transformation



1) Excl. depreciation 2) Redesign of stations in Tehran, Mashhad and Qom already started. Selection of other stations based on traffic numbers
 Source: Roland Berger

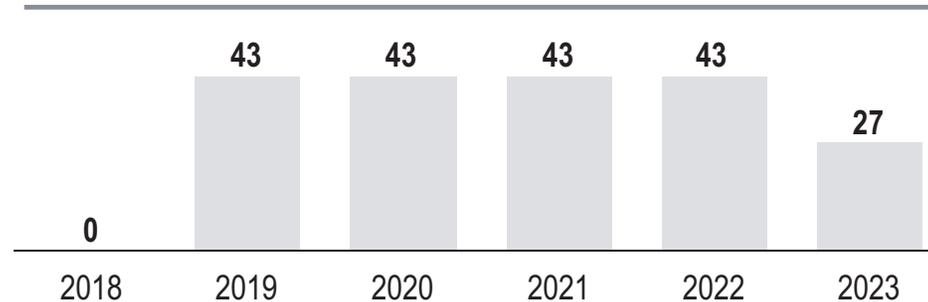
Equipping all unprotected level crossings with barriers and adding signaling facilities will contribute towards RAI's objective for safety

1.3 Safety program

Description

- > Installation of barriers at all 200 unprotected level crossings in Iran
- > Installation of signaling facilities at all railway tracks without electric signaling system

Investment [USD m]



Result estimates [2028]

Revenue	-
Op. cost ¹⁾	USD 10 m
Passenger modal share	-
Cargo modal share	-

Implementation roadmap

Activity	2018	2019	2020	2021	2022	2023
Upgrade of unprotected level crossings		[Activity spans from 2019 to 2023]				
Installation of signaling facilities		[Activity spans from 2019 to 2023]				

1) Excl. depreciation
Source: Roland Berger

The following fact sheets show how much time and investment is needed for the passenger initiatives

Overview on strategic initiatives

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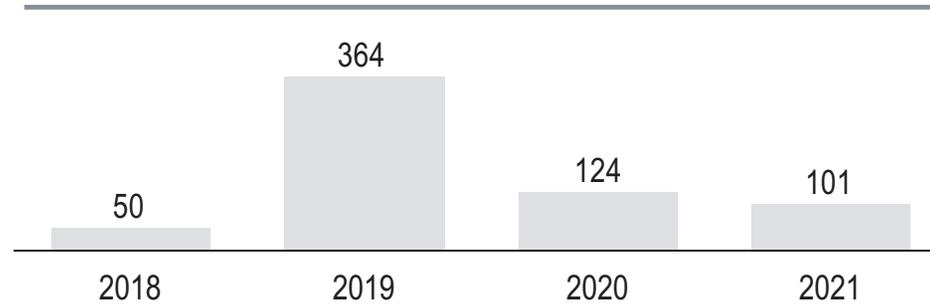
Adding more stations and trains to the existing commuter networks in Tehran, Tabriz and Ahwaz will have a decent modal share effect

2.1 Commuter rail – Base case

Description

- > Increase of passengers through new stations¹⁾
 - 10 in Tehran region
 - 5 in Tabriz region
 - 11 in Ahwaz region
- > Increase of services through new trainsets
 - 70 in Tehran region
 - 10 in Tabriz region
 - 4 in Ahwaz region
- > Construction of additional passing loops

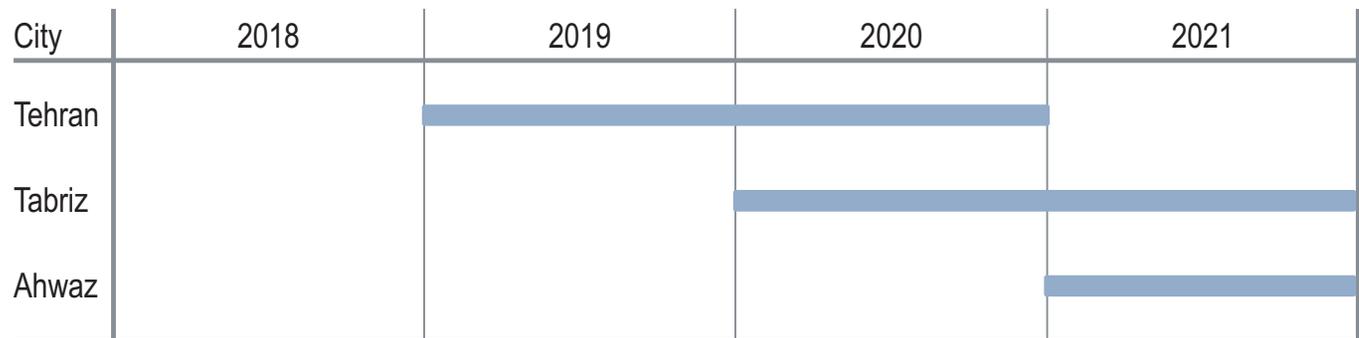
Investment [USD m]



Result estimates [2028]

Revenue	USD 70 m
Op. cost ²⁾	USD 150 m
Passenger modal share	~ 2.5%
Cargo modal share	-

Implementation roadmap



■ Construction of stations and purchase of rolling stock

1) Selection of cities based on interviews with commuter department and discussion in workshops (cities with existing infrastructure) 2) Excl. depreciation

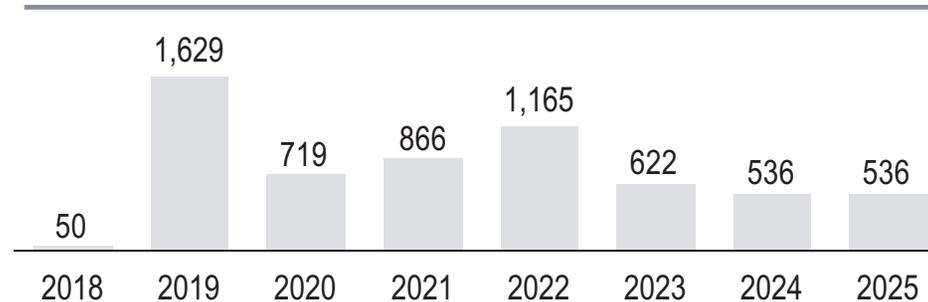
Increasing the number of commuter lines in Tehran, Tabriz and Ahwaz will have an even bigger effect on passenger modal share

2.1 Commuter rail – Optional add-on

Description

- > Increase of passengers through new lines¹⁾
 - 4 in Tehran region
 - 2 in Tabriz region
 - 2 in Ahwaz region
- > Increase of passengers through new stations
 - 42 in Tehran region
 - 20 in Tabriz region
 - 16 in Ahwaz region
- > Increase of services through new trainsets
 - 420 in Tehran region
 - 70 in Tabriz region
 - 52 in Ahwaz region
- > Construction of additional passing loops

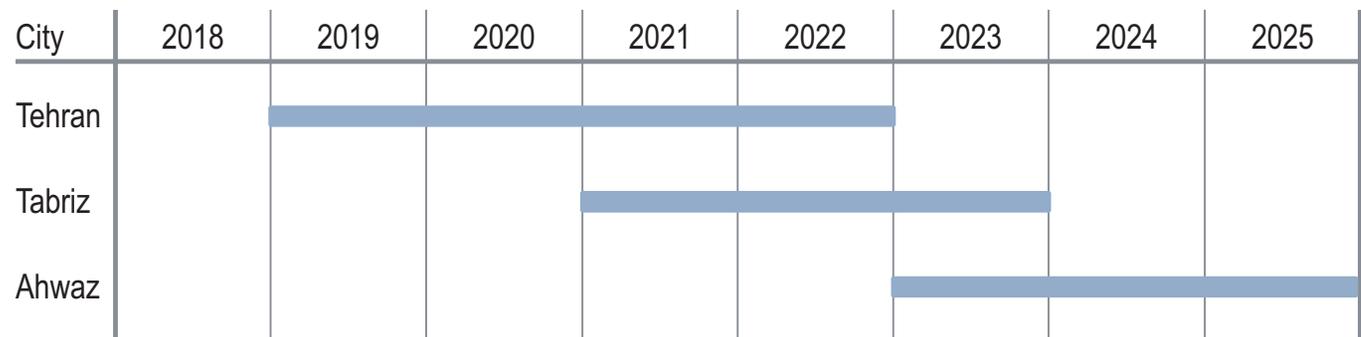
Investment [USD m]



Result estimates [2028]

Revenue	USD 175 m
Op. cost ²⁾	USD 700 m
Passenger modal share	~ 6.6%
Cargo modal share	-

Implementation roadmap



■ Construction of stations and purchase of rolling stock

1) Selection of cities based on interviews with commuter department and discussion in workshops (cities with existing infrastructure) 2) Excl. depreciation

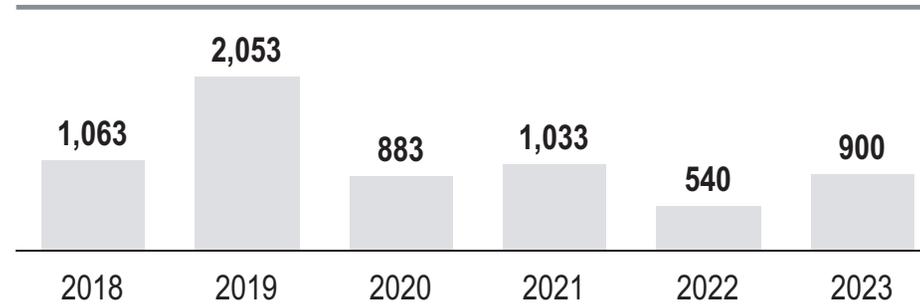
The construction of three high speed lines will lead to a modal share increase of 2.2% requiring a total investment of USD 6.5 bn

2.2 High speed rail – Base case

Description

- > Construction of three high speed lines¹⁾
 - Tehran-Qom-Esfahan (409 km)
 - Tehran-Zanjan (306 km)
 - Qom-Arak (284 km)
- > Procurement of high speed trains for each line

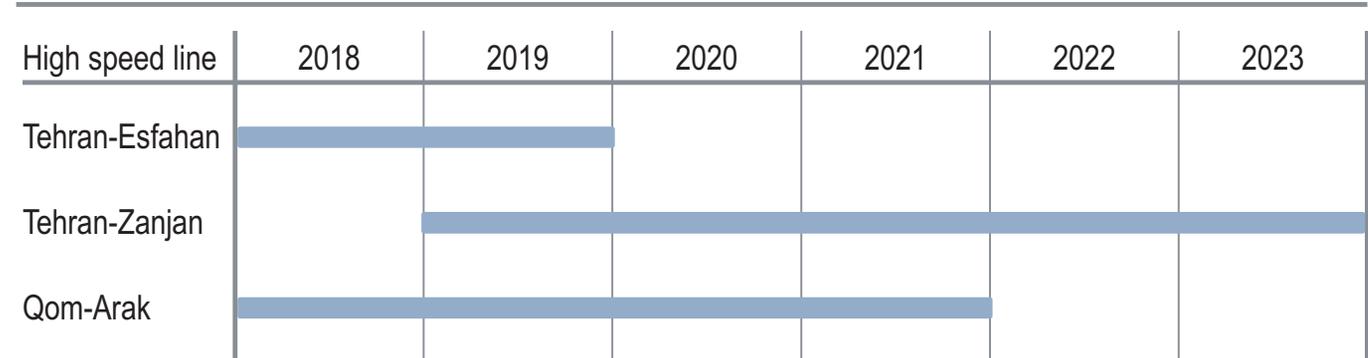
Investment [USD m]



Result estimates [2028]

Revenue	USD 360 m
Op. cost ²⁾	USD 280 m
Passenger modal share	~ 2.2%
Cargo modal share	-

Implementation roadmap

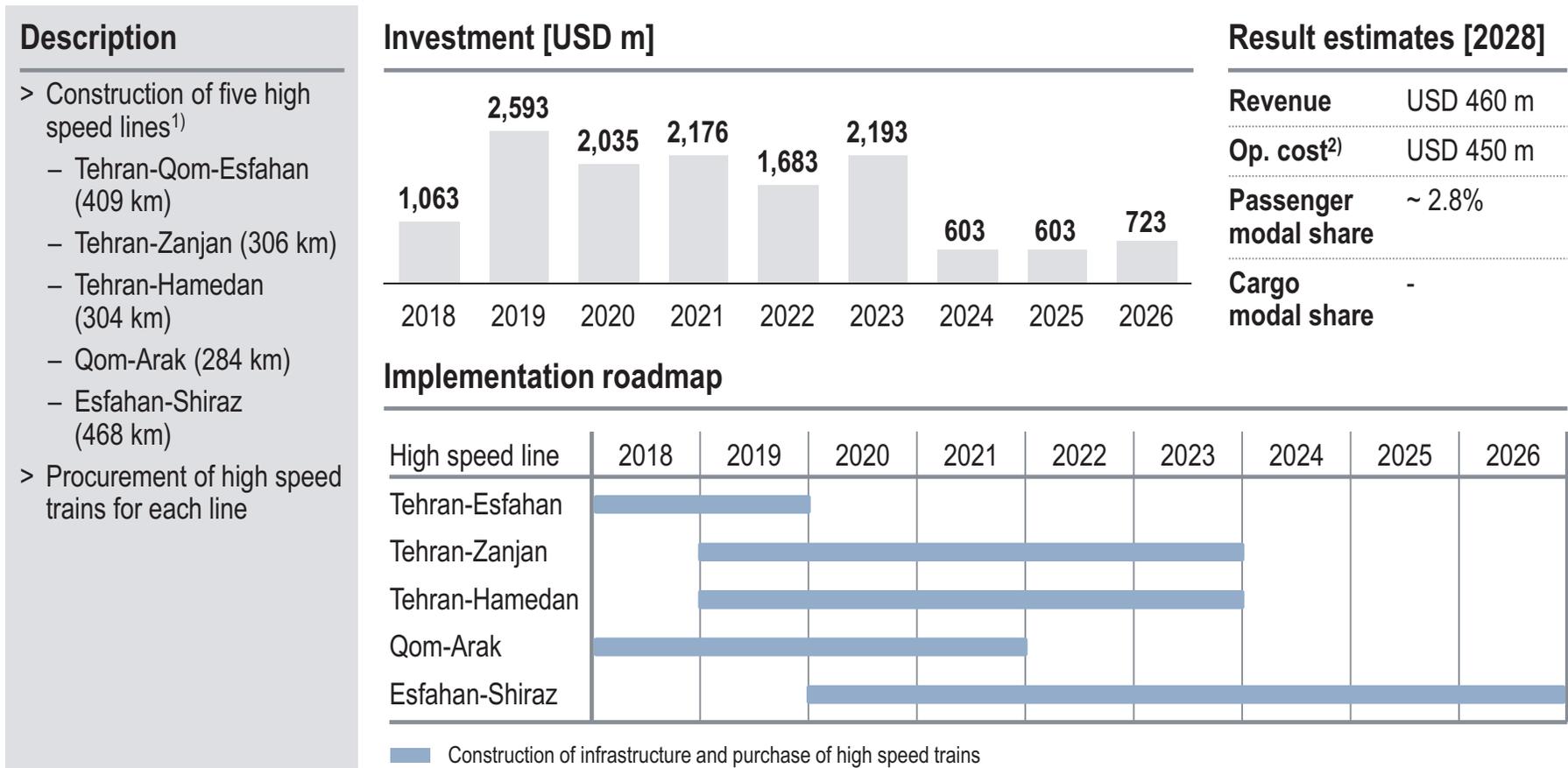


■ Construction of infrastructure and purchase of high speed trains

1) Selection of lines based on high-speed master plan and interview with high speed department. The line Tehran-Esfahan is already under construction; construction of Qom-Arak-line agreement already signed with Ferrovie dello Stato 2) Excl. depreciation
Source: Roland Berger

The construction of five high speed lines will lead to a modal share increase of 2.8% requiring a total investment of USD 13.7 bn

2.2 High speed rail – Optional add-on



1) Selection of lines based on high-speed master plan and interview with high speed department. The line Tehran-Esfahan is already under construction; construction of Qom-Arak-line agreement already signed with Ferrovie dello Stato 2) Excl. depreciation
 Source: Roland Berger

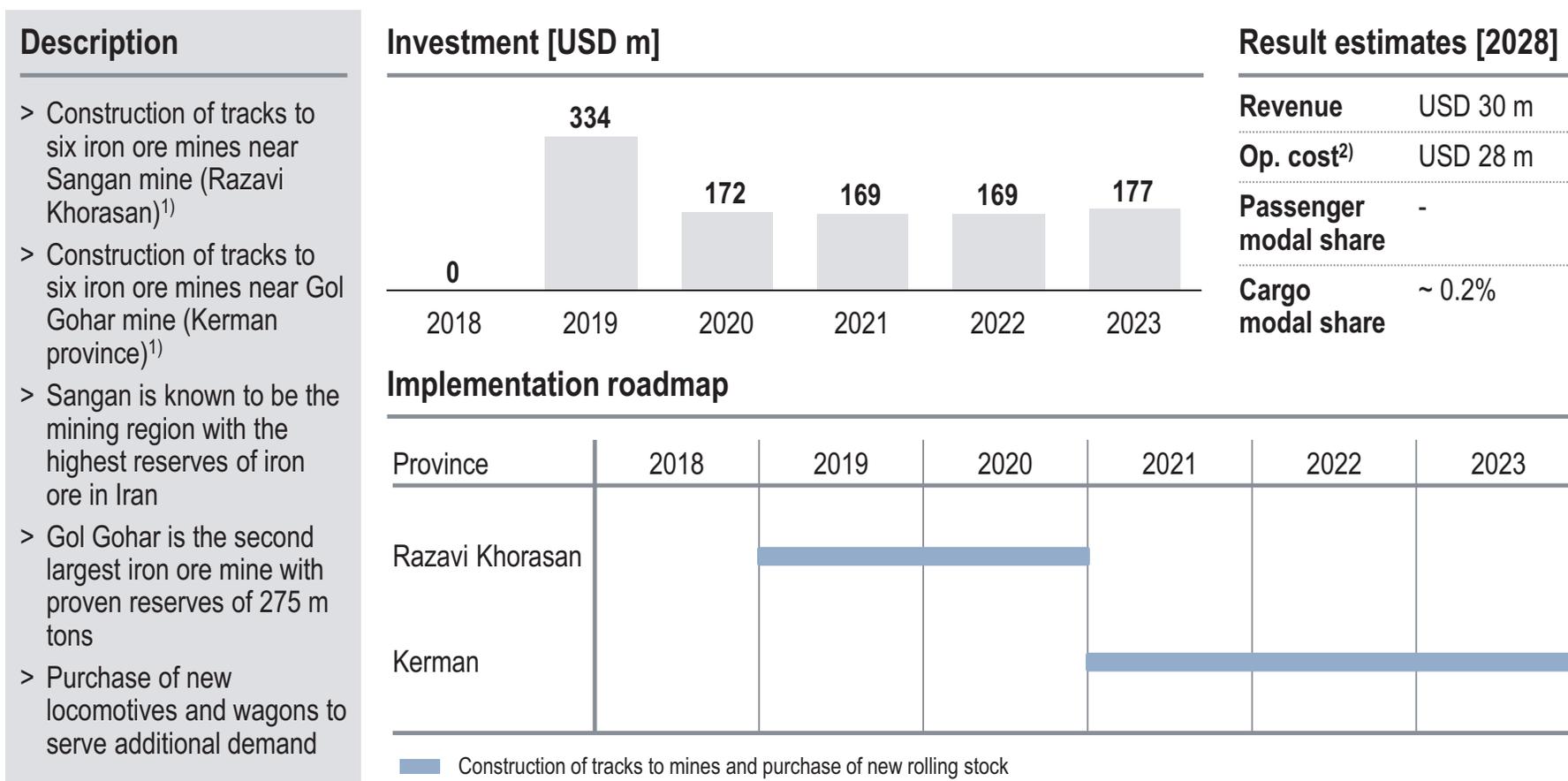
The following fact sheets show how much time and investment is needed for the cargo initiatives

Overview on strategic initiatives

Segment	Strategic initiative	Description
1 Infrastructure	1.1 Network upgrade	Removal of fundamental bottlenecks and upgrade of rail infrastructure
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By connecting twelve additional iron ore mines to the network, RAI will generate annual revenues of USD 40 m through higher exports

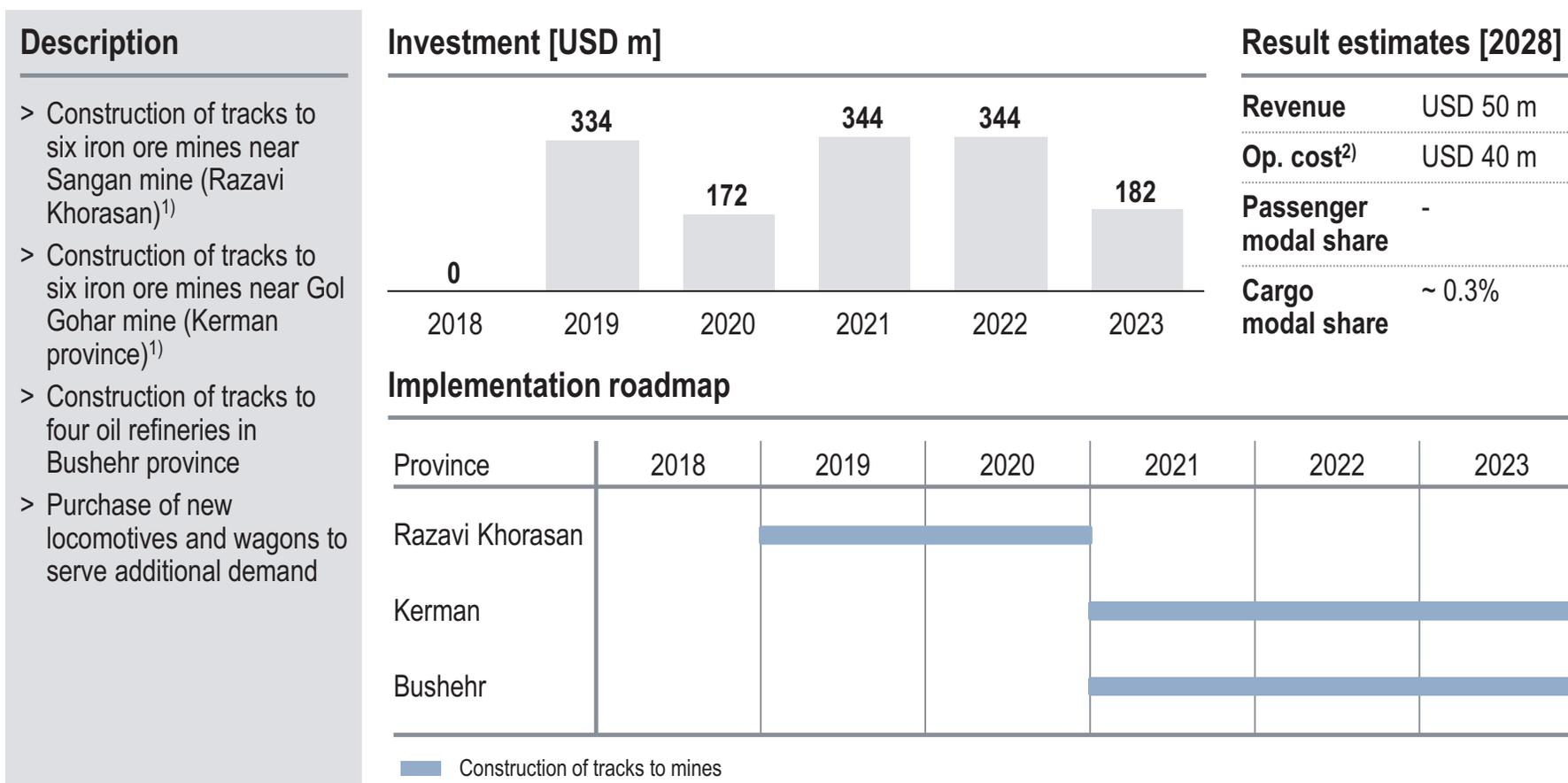
3.1 Access to production sites – Base case



1) Selection of mines based on interview with RAI executives 2) Excl. depreciation
 Source: Roland Berger

Adding four more oil refineries to the rail network would increase revenues by another USD 25 m compared to the base scenario

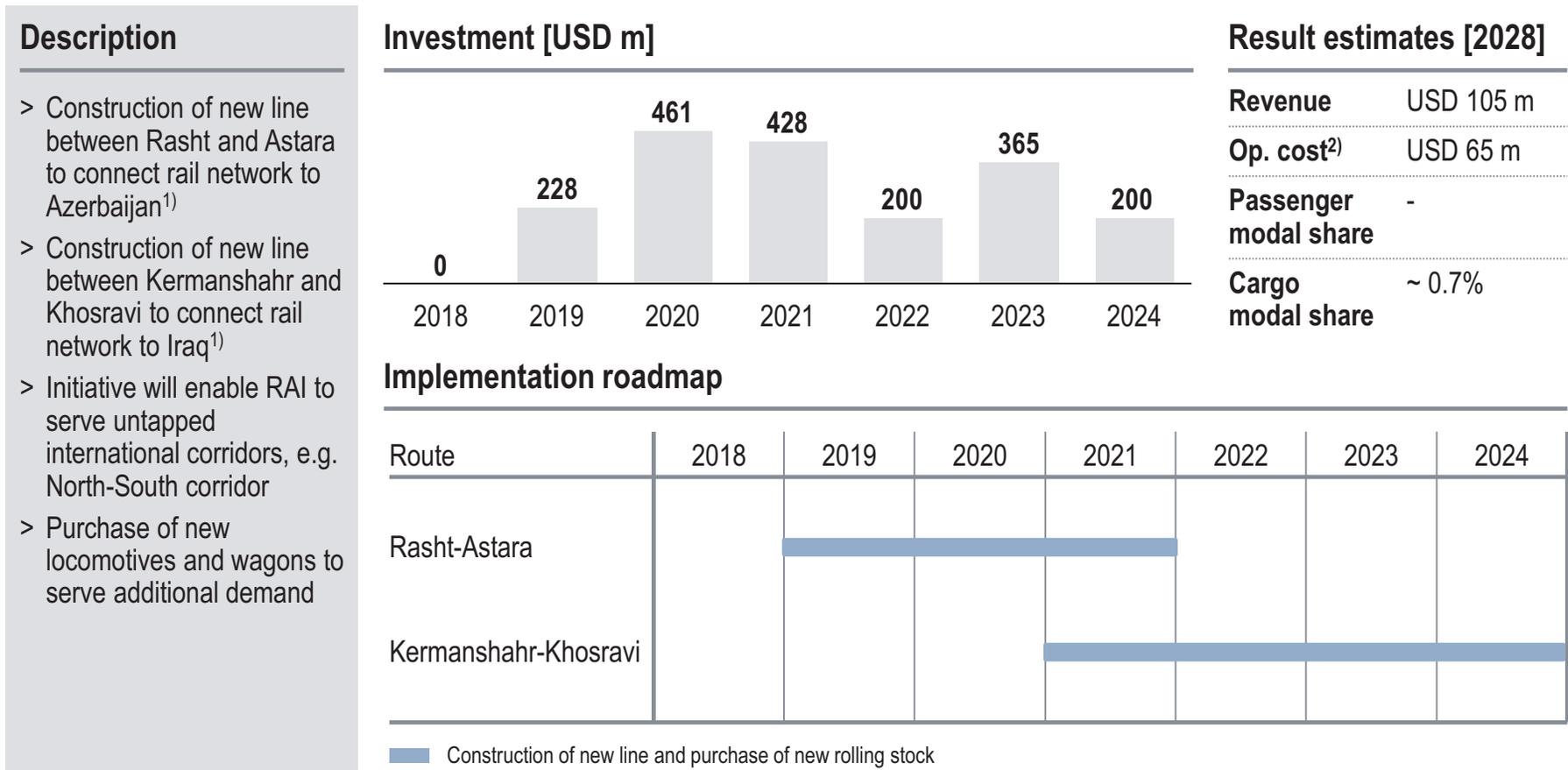
3.1 Access to production sites – Optional add-on



1) Selection of mines based on interview with RAI executives 2) Excl. depreciation
Source: Roland Berger

The construction of new lines to Azerbaijan and Iraq is expected to result in high profits due to a vast increase in transit flows

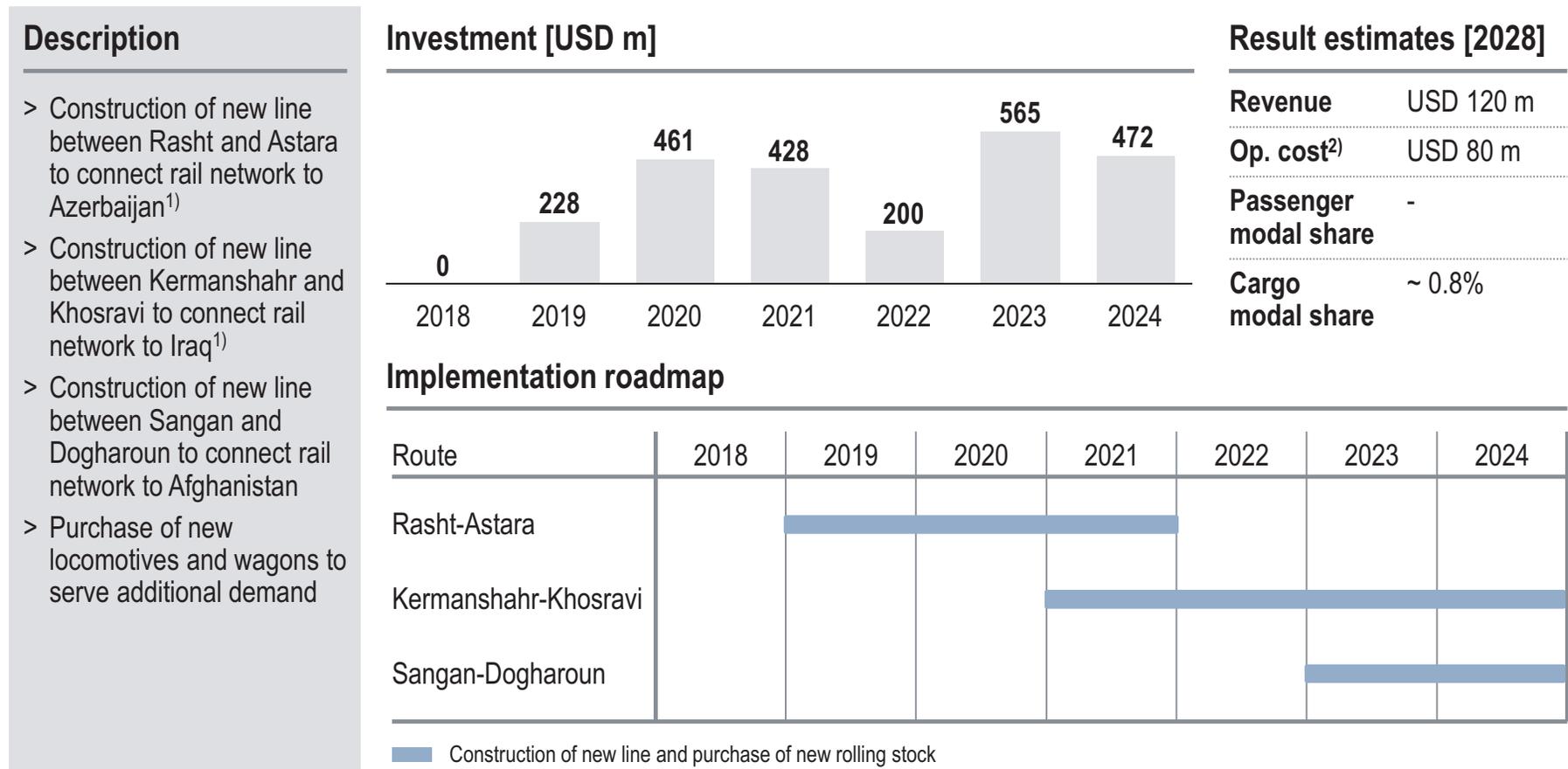
3.2 Expansion of international routes – Base case



1) Selection of new lines based on interview with RAI executives 2) Excl. depreciation
 Source: Roland Berger

Connecting Afghanistan to the rail network on top of Azerbaijan and Iraq would only have a moderate effect on revenues and modal share

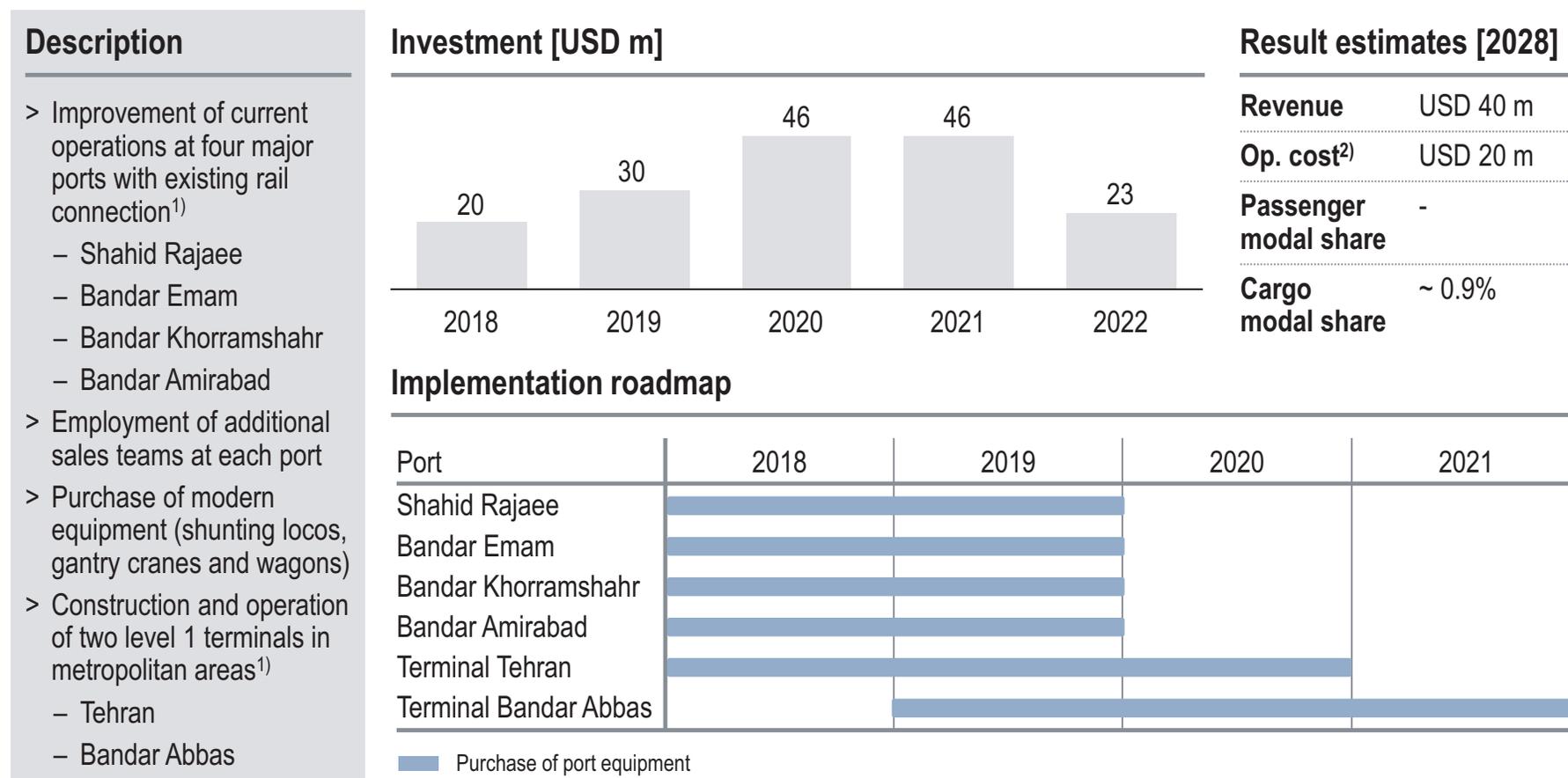
3.2 Expansion of international routes – Optional add-on



1) Selection of new lines based on interview with RAI executives 2) Excl. depreciation
 Source: Roland Berger

Through investment in equipment and two additional cargo terminals, rail share at Iranian ports will be increased

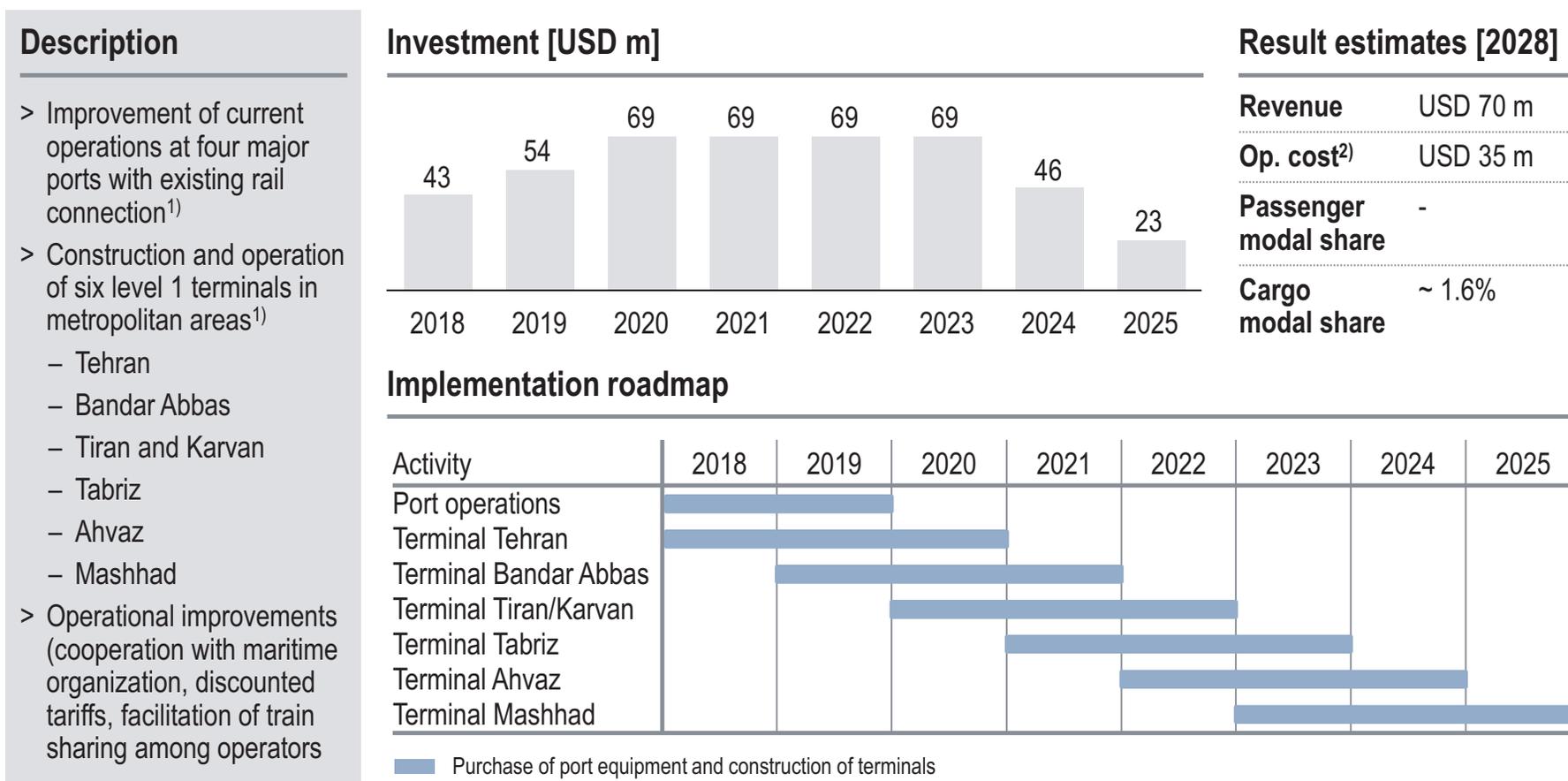
3.3 Ports and terminals – Base case



1) Ports selected based on traffic figures provided by RAI 2) Excl. depreciation
Source: Roland Berger

The construction of six multimodal terminals will increase rail cargo revenues even further by enabling multimodality across the country

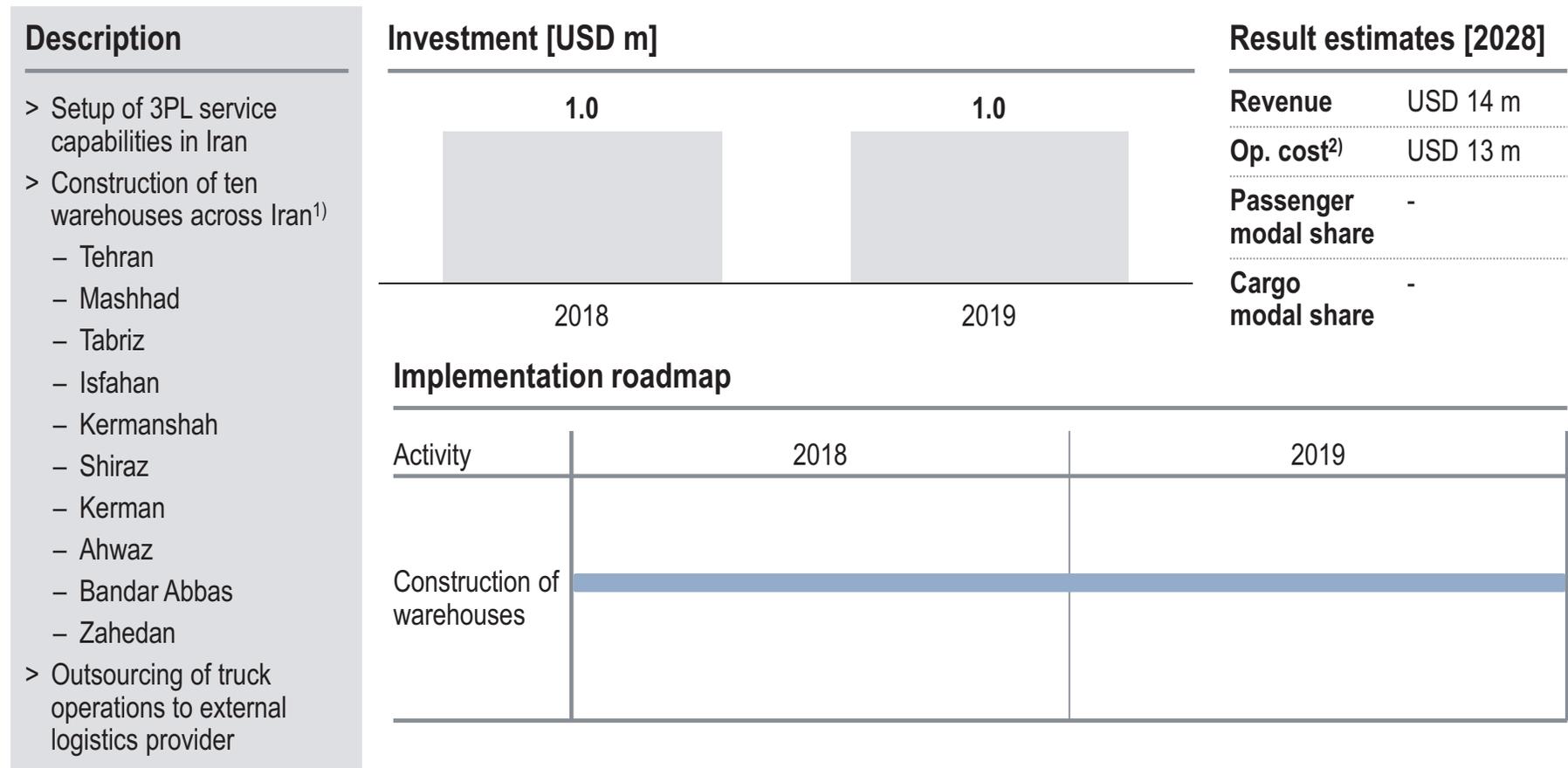
3.3 Ports and terminals – Optional add-on



1) Ports and terminals selected based on information provided by RAI 2) For name of ports see base case 2) Excl. depreciation
 Source: Roland Berger

By setting up an asset-light 3PL business, RAI will enter a new market with little risk due to low investments

3.4 3PL services



1) Warehouse locations selected to gain broadest nationwide coverage 2) Excl. depreciation
 Source: Roland Berger

Moreover, we look at the expected operational cost and implementation times of nine general initiatives

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5 Base growth	5.1 Base growth	Purchase of locomotives, wagons and coaches for base growth

The introduction of a loyalty program and an intermodal platform will aim at reaching RAI's customer satisfaction objectives

General initiatives (1/5)



4.1 Loyalty program

- > Loyalty programs are a common measure to increase customer retention in the transportation industry, in particular also in the railway sector (e.g. Bahncard)
- > Suggested measures are
 - Roll-out of bonus program for regular customers
 - Integration of loyalty program in intermodal mobility platform offer
 - Attraction of further non-rail partners for its program (e.g. hotels, metro and taxi)

Implementation

< 10
m USD investment

1-2 yrs.
Implementation time



4.2 Intermodal mobility

- > Intermodal platforms and applications increase the level of convenience of passengers by allowing them to combine different transport modes on one trip with a single ticket
- > Suggested measures are
 - Development of a mobile application with a comprehensive IT backbone
 - Cooperation with other mobility providers to offer integrated tickets on new platform

Implementation

~ 50
m USD investment

2-3 yr.
Implementation time

To increase customer satisfaction, it will also be necessary to invest in customer service – A new recruiting concept will attract high potentials

General initiatives (2/5)



4.3 Customer service improvement

- > Service level is among the key decision criteria for customers in choosing their transportation mode and should become an advantage if Iranian rail transportation
- > Suggested measures are
 - Enhancement of existing customer service processes
 - Employment of more service personnel at stations and in call-centers
 - Development of comprehensive approach to customer communication across all offline/online channels

Implementation

< 10
m USD investment

1-2 yrs.
Implementation time



4.4 Recruiting concept

- > As the market for highly skilled employees becomes competitive, RAI should develop a recruiting concept that allow access to the best talents
- > Suggested measures are
 - Increase of marketing activities to position RAI as attractive employer (beyond the traditional state owned company)
 - Conducting university recruiting events to position rail as an attractive industry for graduates

Implementation

< 10
m USD investment

<1 yr.
Implementation time

To exploit the full potential of all employees, it is crucial to offer trainings and a working environment that will keep them satisfied

General initiatives (3/5)



4.5 Employee development program

- > To offer employees attractive career path and enhance the quality of its operations, RAI should invest in the education and training of its employees
- > Suggested measures are
 - Regular training sessions and seminars for employees
 - Supporting further external education programs and participation at conferences for own employees
 - Creation of career tracks and talent programs for high performing employees

Implementation

 **< 10**
m USD investment

 **<2 yr.**
Implementation time



4.6 Employee satisfaction program

- > In order to increase employee productivity and position RAI as an attractive employer, satisfaction of its workforces plays an important role
- > Suggested measures are
 - Regular measurement of employee satisfaction level
 - Improvement of working conditions (e.g. by offering flexible working hours)
 - Increase employee motivation by raising wages and salaries

Implementation

 **< 10**
m USD investment

 **2-3 yrs.**
Implementation time

An environmental program and a rebranding campaign will enable RAI to reach its socioeconomic and brand perception goals

General initiatives (4/5)



4.7 Environmental program

- > The environmental-friendliness of rail should be increased through a specific strategic program and become the center of lobbying and marketing activities
- > Suggested measures are
 - Reduction of CO₂ emissions by increased use of renewable energy sources
 - Creation of internal program for employees to integrate environmental friendliness in employees' mindset
 - External marketing of pro-environmental activities

Implementation

 **< 20**
m USD investment

 **2-3 yrs.**
Implementation time



4.8 Rebranding

- > In order to emphasize its reform process, RAI should adjust its brand of its new offer and business activities to both its employees as well as customers and further stakeholders
- > Suggested measures are
 - Development of new branding concept (incl. brand architecture of group brand and brand portfolio)
 - Marketing campaign to boost sales and image of RAI
 - Introduction of new logo

Implementation

 **< 20**
m USD investment

 **1-2 yr.**
Implementation time

In order to improve railway services, it is not only necessary to invest in assets but also to optimize underlying operational processes

General initiatives (5/5)



4.9 Operational improvement

- > In order to maximize value of rolling stock and infrastructure, underlying processes have to be optimized, e.g. maintenance of locomotives
- > Suggested measures are
 - Streamlining of all operational processes to detect potential for performance improvement
 - Focus on improvement of operations in ports by analyzing current drawbacks operational defining corresponding measures

Implementation

 **< 20**
m USD
investment

 **2-3 yrs.**
Implementation
time

Lastly, we look at the necessary purchase of locomotives, wagons and coaches in reaction to the projected base growth

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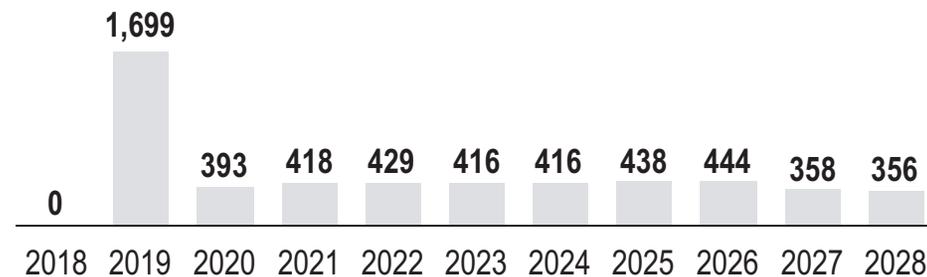
900 locomotives and 27,800 new wagons and coaches will cover the demand growth reflected in the market model

5.1 Base growth

Description

- > Purchase of 600 cargo locomotives and 24,800 wagons to serve the additional demand predicted in the market model
- > Purchase of 300 passenger locomotives and 3,000 new coaches to serve the additional demand predicted in the market model

Investment [USD m]



Result estimates [2028]

Revenue	USD 1,300 m
Op. cost ¹⁾	USD 1,000 m
Passenger modal share	-
Cargo modal share	-

Implementation roadmap

Activity	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Purchase of locomotives		[Active]									
Purchase of wagons		[Active]									

1) Excl. depreciation
Source: Roland Berger

C. Funding and implementation

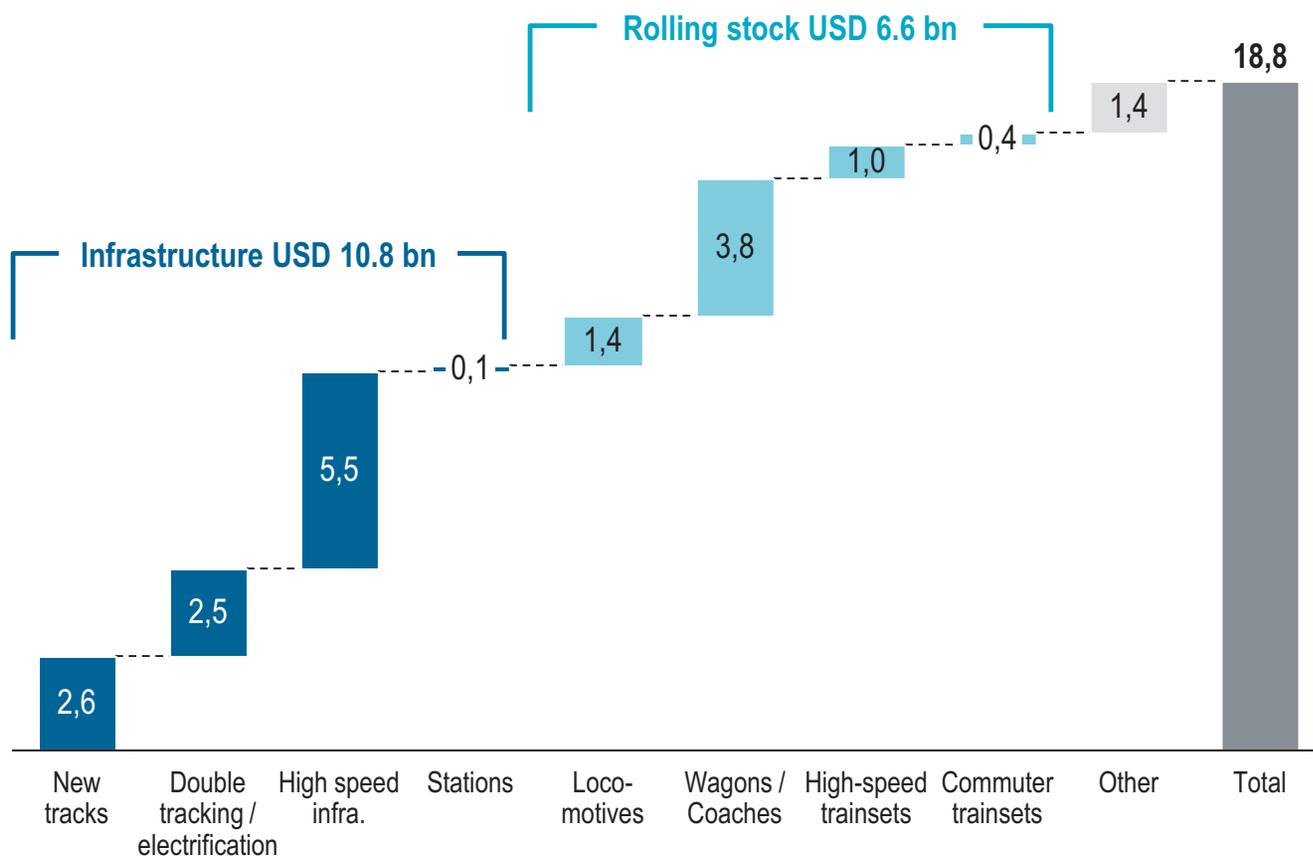


C.1 Funding



Implementing the strategic initiative requires capital expenditure for new assets of USD 18.8 bn over the next decade

Capital expenditure per asset type [USD bn, 2018 to 2028 accumulated]



- > Executing the strategic initiatives requires substantial investments in new assets
- > The largest part of investments is required for new infrastructure or upgrading of the existing Iranian rail network
- > To supply the increased traffic for both passenger and cargo rail, a large extension of RAI's current fleet of locomotives, wagons and coaches is necessary

Given the amount of planned investments, RAI needs to identify external sources of funding to realize its strategic initiatives

Financing gap

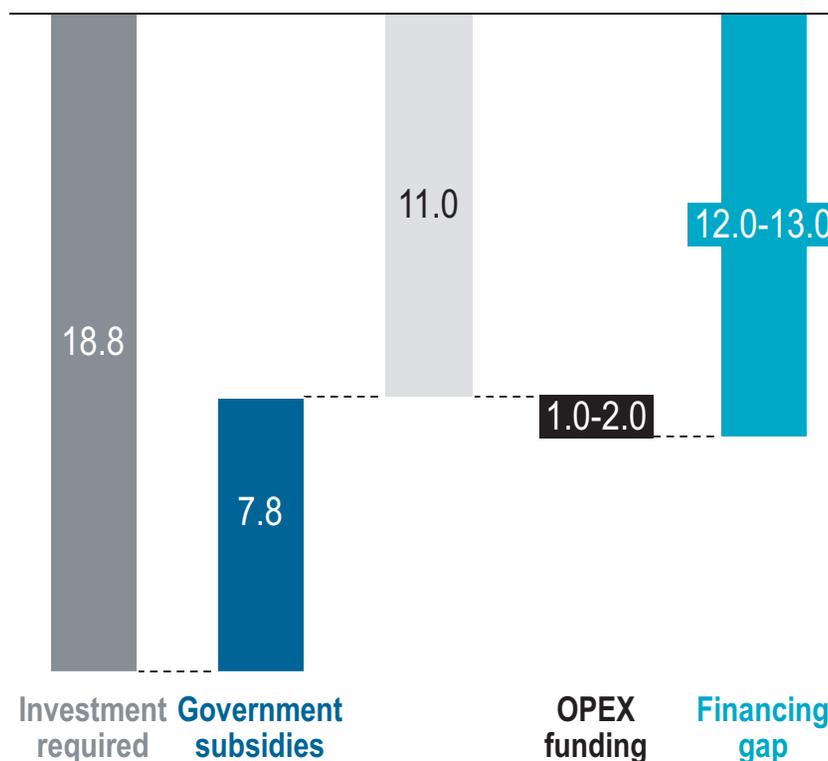
1 Investment required

- > High investments for strategic initiatives
- > In total, USD 18.8 bn are required for the base case

2 Government subsidies

- > Subsidies will remain an important source of funding (e.g., fuel subsidy, infrastructure subsidies)
- > Figure assumes constant subsidies based on 2016 figures

Estimated financing gap [USD bn, 2018-2028]



3 OPEX funding

- > High speed and commuter require further financing for operational expenses
- > In total, USD 1.0-2.0 bn are required

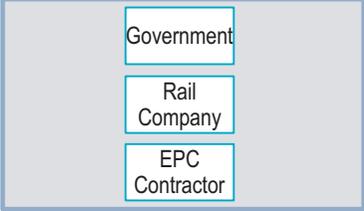
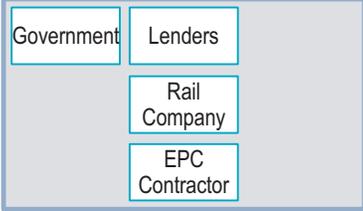
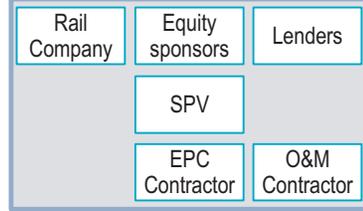
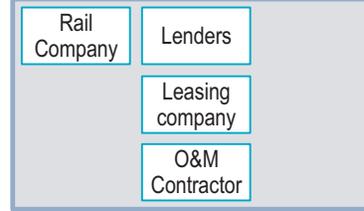
4 Financing gap

- > Government subsidies do not cover all capital and operational expenditures
- > USD 12.0-13.0 bn to be financed via external sources or additional subsidies

1) Subsidy level depending on continuation of current policy

There are 4 basic financing alternatives for rail infrastructure – a combination of these options will be necessary for Iran

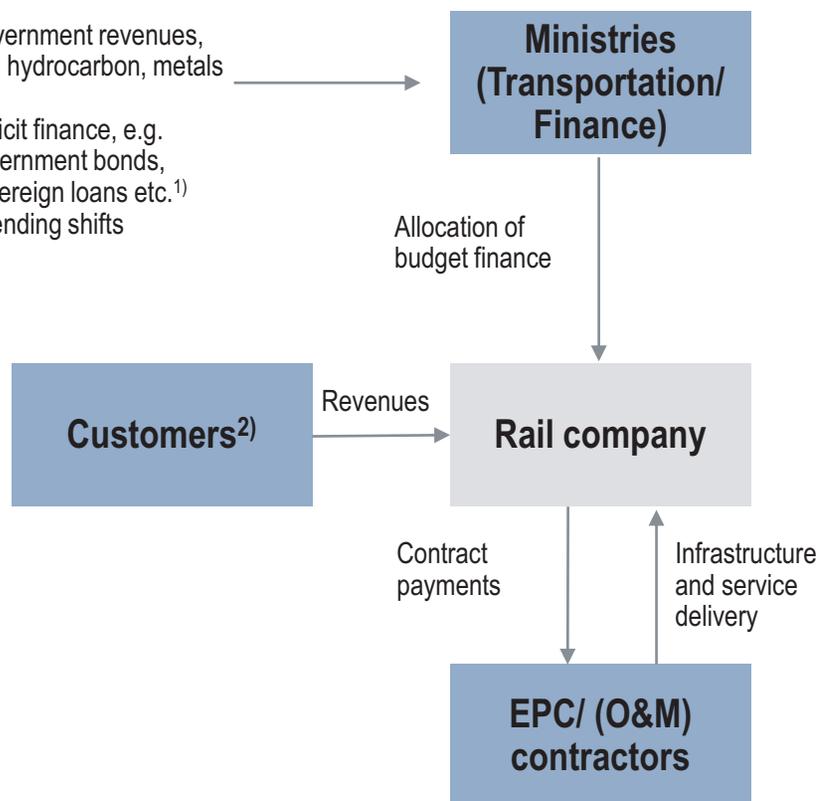
Financing alternatives of infrastructure

	I Budget finance	II Corporate finance	III PPP finance	IV Asset finance
				
Description	> Procuring infrastructure out of the government's budget	> Financing infrastructure with corporate debt finance of Rail company	> Financing infrastructure through PPP via a Special Purpose Vehicle (SPV)	> Sale-Lease-Back model with involvement of a leasing company (asset exists)
Risk allocation	> All risk of cost overruns, completion etc. with the government	> Main credit risks with lenders, but can be shifted to the gov. with sovereign guarantees	> Risk sharing of lenders, equity sponsors and rail company, possibly backed by guarantees	> Risk allocation mostly with leasing company, while rail company carry limited risk
Decreasing risk allocated to government 				
Financing	> Deficit funding (government bonds, sovereign loans etc.), spending shifts	> Debt financing (e.g. loans, project bonds) via commercial banks etc. backed by sovereign guarantees	> Mix of rail company's equity, third-party equity and commercial debt finance the SPV's investments	> Direct government or debt financing for leasing service (limited), leasing company finances via commercial banks
Advantage	> Likely cheaper financing conditions than private capital or debt raised in financial markets	> Tapping external debt financing diversifies sources of funds	> Multiple sources of equity and debt financing to an SPV > Direct involvement of private technical, operational and commercial know-how	> Suitable for complex infrastructure

Budget finance – Iran could finance further rail infrastructure with additional budget sources

I Budget finance

- > Government revenues, e.g. hydrocarbon, metals etc.
- > Deficit finance, e.g. government bonds, sovereign loans etc.¹⁾
- > Spending shifts
- > ...



Advantages

- > Good credit rating of the Sultanate (A/A-1) with stable outlook likely to enable attractive corporate debt financing
- > Likely cheaper financing conditions than private equity or debt raised in financial markets
- > Full state control of the strategic infrastructure assets

Disadvantages

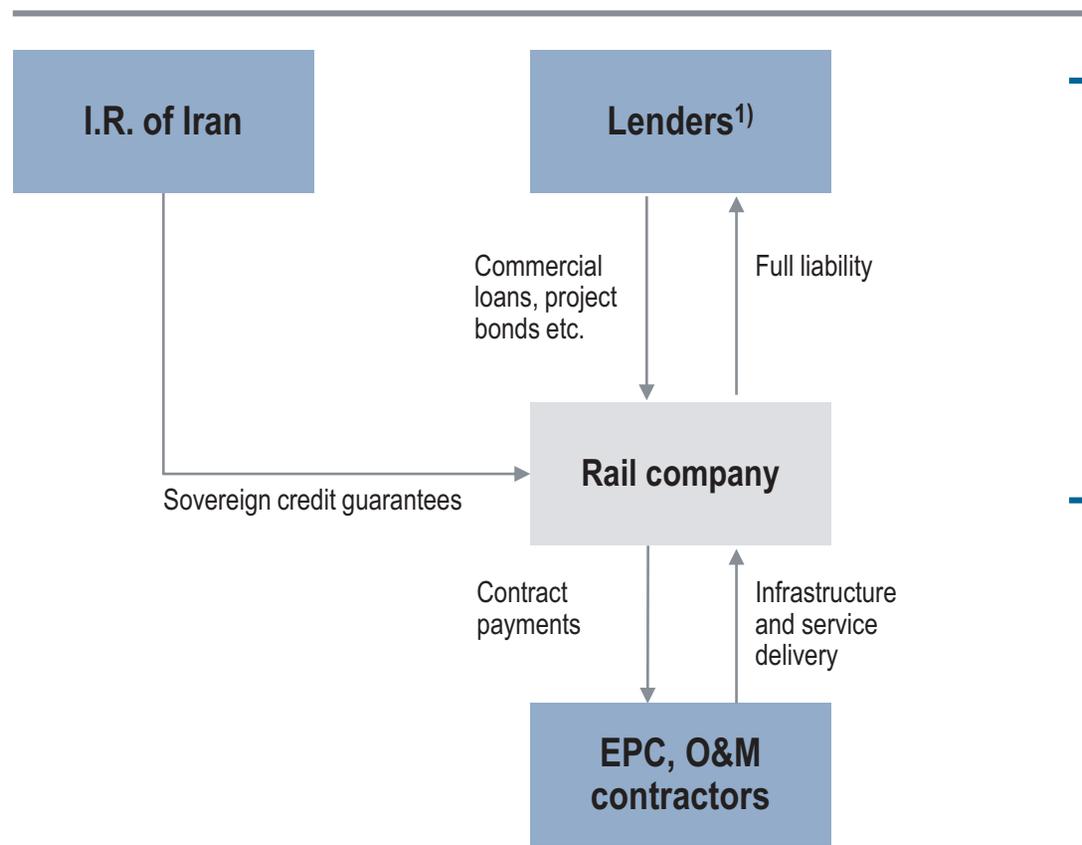
- > Vulnerability of financing to sudden budget shortfalls, e.g. due to factors such as:
 - Persistently falling oil prices below break-even level for public finances
 - Sudden shifts in spending priorities
- > Non-recourse debt financing not possible, Rail company liable with full asset collateral

1) May be domestic or foreign commercial banks, International Financial Institutions (IFIs), institutional investors etc.

2) In case operation and maintenance is not tendered to contractor

Corporate finance – Corporate debt finance would open further sources of funds for rail company, potentially with Gov't guarantees

II Corporate finance



Advantages

- > Tapping external debt financing diversifies sources of funds – avoiding Gov't spending
- > Good credit terms likely provided strong collateral assets of rail company and/or state ownership
- > Low budgetary burden leaving considerable room to give sovereign guarantees

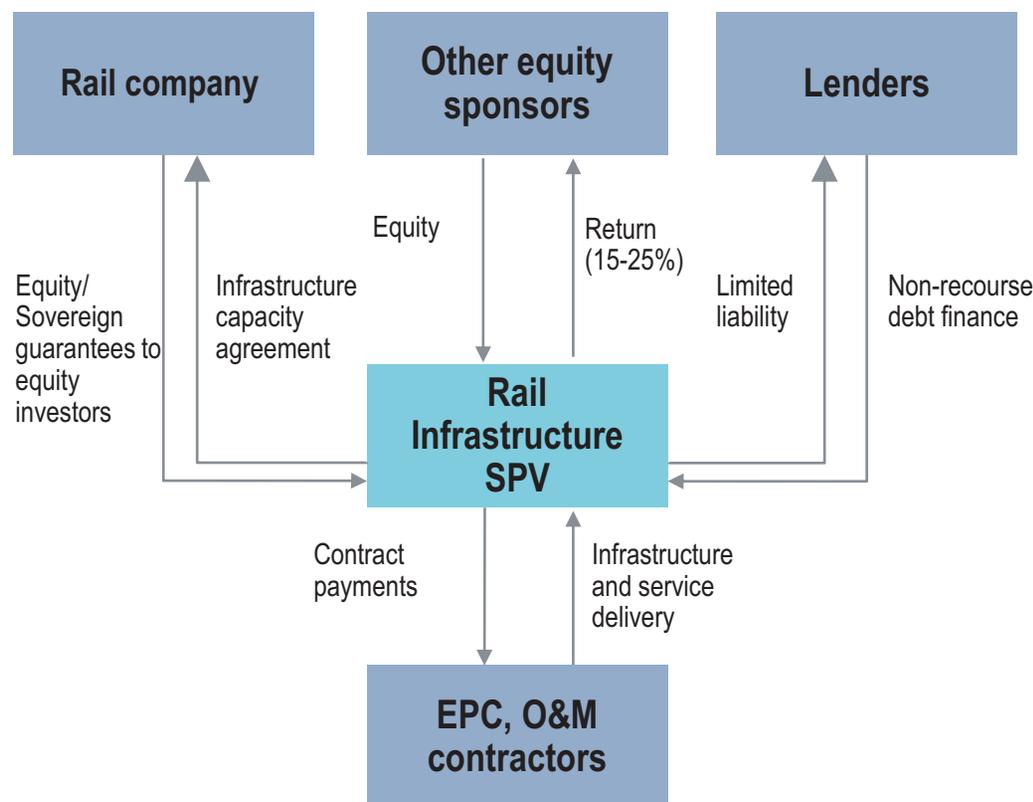
Disadvantages

- > Full liability of rail company for commercial loans and thus ultimately liability of Iran in case of corresponding guarantees
- > Non-recourse debt financing restricted
- > Attractiveness of credit terms directly dependent of public budget position and outlook

1) May be domestic or foreign commercial banks, International Financial Institutions (IFIs), institutional investors etc.

PPP finance – By creating a Special Purpose Vehicle, further equity and debt funds can be accessed with private engagement

III Private participation/ project finance



Advantages

- > Multiple sources of equity and debt financing to a Special Purpose Vehicle (SPV) – thus limited liability for rail company
- > Least fiscal impact for the I.R of Iran, depending on revenue model (user-pay vs. availability-based)
- > Beyond financing, strategic benefit by direct involvement of private technical, operational and commercial know-how

Disadvantages

- > Potential loss of full strategic control of rail infrastructure as key transportation assets – structuring shareholder structure critical
- > External monitoring of O&M quality
- > May require sovereign guarantees, especially if revenue model based on projected usage, rather than guaranteed freight

Public Private Partnerships (PPPs) are joint delivery models to develop, construct, finance and operate infrastructure projects

Public Private Partnerships (PPPs) in infrastructure

Public sector (Government)

- > **Mobilize private sector to finance infrastructure** by providing assurances on government risk-allocation – create "fiscal space"
- > **Maintain influence over strategic infrastructure** – avoid full-scale privatization
- > **Bring in know-how of private sector experts** in planning, de-risking, financing, constructing and operating of infrastructure

PPP projects

Private sector (investors, financiers)

- > **Investment by financial and strategic investors** into projects with long-term, reliable and above-average returns
- > **Move into historically state-dominated areas** with limited competition
- > **Optimize public services/infrastructure provision** and reap a share of the economic upside potential

PPP projects have evolved in different sectors – common profile is asset-heavy, low-competition business requiring political alignment

Areas of PPP utilization

- > Toll Roads, bridges
- > Rail
- > Airports
- > Ports, shiplocks other
- > Telecommunications and networks
- > Real estate
- > Power generation, renewables, utilities
- > Electricity transmission and distribution systems
- > Gas transmission and distribution systems
- > Water and wastewater utilities
- > Waste disposal
- > Defense
- > Prisons
- > Education, health, other social infrastructure

Common features

- > Long-lived, high-CAPEX assets
- > Monopolistic/semi-monopolistic markets, often tightly regulated
- > Strong political alignment necessary
- > Hedged against inflation
- > Stable, reliable cash flow
- > Project finance possible

The PPP can be structured in various models – BOT and DBFO could be explored further for rail infrastructure in Iran

Potential PPP models

	Model	Feature	Strength	Weakness	Application
Public involvement ↑	DBFT	<ul style="list-style-type: none"> > Asset is developed by private sector but operation and ownership is retained by public sector 	<ul style="list-style-type: none"> > Potential to accelerate construction program 	<ul style="list-style-type: none"> > Limited incentive for whole life costing > Does not attract private finance 	<ul style="list-style-type: none"> > Suitable for project with limited operating req. > Suitable for project where gov. wishes to operate
	BOT	<ul style="list-style-type: none"> > Facility is financed by public sector and remains in public ownership throughout the contract 	<ul style="list-style-type: none"> > Encourage whole life costing approach by promoting innovation and improving value for money 	<ul style="list-style-type: none"> > Complex contract and long tendering process > Does not attract private finance 	<ul style="list-style-type: none"> > Suitable for project with significant operating content
Private involvement ↓	DBFO	<ul style="list-style-type: none"> > The facility is designed, built, financed and operated by private sector for the contract period 	<ul style="list-style-type: none"> > Encourage whole life costing approach > Access to private finance 	<ul style="list-style-type: none"> > Complex contract and long tendering process 	<ul style="list-style-type: none"> > Suitable for project with significant CAPEX and operating content
	BOO	<ul style="list-style-type: none"> > Ownership of the facility belongs to private sector 	<ul style="list-style-type: none"> > Encourage whole life costing approach > Increase level of demand risk transfer 	<ul style="list-style-type: none"> > Complete private sector ownership may cause political backlash 	<ul style="list-style-type: none"> > Suitable for projects that provide an opportunity for introduction of user charging like toll road

Public sector participation
 Private sector participation
 Private sector participation with transfer of right/responsibility to public sector

Through PPPs, equity and debt financing from a variety of investors and financial institutions can be tapped

	Partner	Description	Advantage	Disadvantage	Expected return	Examples
Equity	Infrastructure funds	> Open/closed funds with focus on economic infrastructure projects	> Focus and expertise on infrastructure	> Partially very high expected returns	> 7-15%	
	Pension funds	> Open/closed funds with focus on long-term wealth maintenance and growth	> Long-term, stable investment preferences	> Require complex, long-term revenue guarantees	> 5-10%	
	Sovereign Wealth Funds	> Sovereign-backed fund e.g. based on resource revenues	> Strong interest in diversifying portfolios, e.g. into infrastructure	> Potential politicization of projects	> 4-8%	
	Major EPC companies	> EPC industry players focused on infrastructure delivery	> Synergies with EPC contracting and technical expertise	> Lack of risk diversification	> 7-9%	
Debt	Commercial banks	> National, regional and international financial institutions with a focus on infrastructure	> Specific fit with infrastructure projects	> Higher credit terms than budget finance or IFIs	> 7-10%	
	Pension funds	> Open/closed funds with focus on long-term wealth management (e.g. via bonds)	> Long-term, stable investment preferences	> May require long-run revenue guarantees	> 5-10%	
	International Financial Institutions	> Bilateral or multilateral donor institutions working on infrastructure	> Good financing conditions and technical expertise	> Potentially lengthy and bureaucratic project management	> 2-6%	

Metro Line 4 in Beijing has been constructed using a hybrid model – Minimum revenue guarantee has been an enabler for success

Successful PPP projects (1/3)



1 Beijing Metro Line 4



China

- > Arterial line to connect the education and high-tech area with a total length of 28.2 km and CAPEX of THB 80 bn
- > Project finished successfully in time and saved costs due to PPP financing

Structure

Private partner

Beijing MTR (JV of Hong Kong MRT, Beijing Capital Group¹⁾ and BIIC²⁾ with BOT contract

BOT risk ↓
↑ 30 year, full concession

State guarantee: Minimum revenue guarantee (MRG) ↑
Staggered revenue share (50-60%) above shadow patronage

Subsidy: Payment of shadow fare ↓

Public party

Beijing Infrastructure Investment Company (BIIC) owned by Beijing Municipality

Lessons learned

- > By aligning interests and incentives the bankability for the project has been achieved. A hybrid model with a **minimum revenue guarantee** and a shadow fare payment as a subsidy reduces risks for both parties
- > Due to clear allocation of responsibilities ~THB 24 bn have been saved. A **transparent structure** with clear definition of roles ensures success
- > An **allocation of risks and incentives** with partners ensures operational excellence and financial durability
- > A **flexible approach** to operational and contractual agreements allows to react to new circumstances

1) Owned by Beijing municipality 2) Beijing Infrastructure Investment Company – leases

Appropriate coordination of roles and functions has proven to be a successful measure during the construction of a German highway

Successful PPP projects (2/3)



2 Highway in Germany



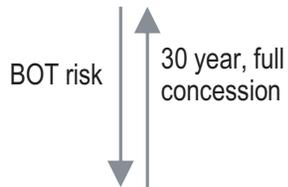
Germany

- > Arterial highway line A8 from Augsburg to Munich with a total length of 52 km and an investment of EUR 1 bn
- > High coordination and communications efforts paved the way for a successful project and prospective PPP projects

Structure

Private partner

Autobahnplus A8 GmbH



Public party

Motorway directorate South Bavaria representing the Free State of Bavaria representing the Federal Republic of Germany

Lessons learned

- > By **relying on each other's expertise** PPP-financed infrastructure projects increase the overall feasibility and reduce general risks
- > Due to the long-term collaboration of this PPP project interests and incentives have been aligned. **Trust and good cooperation** ensure operational excellence
- > A clear **allocation of responsibilities** ensures high quality standards and efficient communication and coordination between deciders

Short decision chains are recommended in order to facilitate an on-time delivery of the project

Successful PPP projects (3/3)



3 Highway bridge Millau Viaduct



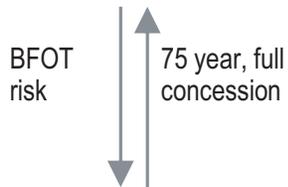
France

- > Civil engineering structure connecting French cities on the Motorway 75 with a total length of 3 km and an investment of EUR 350 m
- > Project delivered within budget and three months early

Structure

Private partner

Eiffage S.A., which is a shareholder of CEVM



Public party

European Bank of Investment and state represented by RCA and AIOA

Lessons learned

- > By **creating a transparent cooperation** mutual trust is ensured
- > Due to a **clear alignment of interests** from the first day on the project was delivered within budget and in time
- > A **short and clearly communicated decision chain** reduces coordination efforts and risks for both parties
- > A **lean contractual relationship** ensures good cooperation and flexibility throughout the project for both parties

Conservative demand forecasting estimates should have been applied to calculate a viable business case and to ensure success

Unsuccessful PPP projects (1/3)



1 Railway Diabolo Project



Belgium

- > Direct connection of Brussels airport with European cities with a length of 2 km and an investment of EUR 680 mn
- > Project cut around 30 minutes of travel time whilst increasing operational costs unexpectedly

Structure

Private partner

Northern Diabolo SA

Public party

Belgium rail network SNCB

Lessons learned

- > By aligning interests and incentives both parties should have benefited from one another. A **transparent structure** ensures mutual cooperation
- > By applying conservative forecasting estimates project cost estimates should have been predicted accurately. A **business case with conservative assumptions** increases feasibility of the overall project
- > A **flexible contractual agreement** should have allowed to react to new circumstances and to adjust interests accordingly for both parties

Scenario analyses are recommended to evaluate the attractiveness of the project and to identify counter initiatives to ensure success

Unsuccessful PPP projects (2/3)



2 Eurotunnel



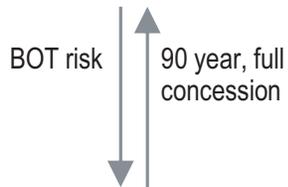
France/England

- > Direct connection between France and England with a total length of 109 km and an investment of EUR 15 bn
- > Despite very quick travelling times, inadequate demand and high operational costs resulted from this project

Structure

Private partner

Eurostart



Public party

Intergovernmental Commission

Lessons learned

- > By applying **scenarios to the calculation of the business case** overall attractiveness of the project should have been challenged
- > A clear **allocation of responsibilities and lean decision structures** should have avoided inefficiencies and bottlenecks during construction and operation
- > By **integrating minor or negligible risks** into decisions and business case project costs could have been saved. A sound allocation of risks with partners ensures success during new circumstances for both parties

Less contracts to reduce overall complexity and shorter decision chains should have been employed to avoid default of the project

Unsuccessful PPP projects (3/3)



3 London Underground



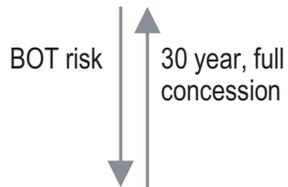
France/England

- > UK government proposed to modernize the London Underground with a total investment of EUR 1.3 bn
- > High refurbishment costs and private partners, which were behind schedule and defaulted, made the project fail

Structure

Private partner

Metronet and Tube Lines



Public party

London Underground Ltd.

Lessons learned

- > By providing contractual flexibility the overall project complexity could have been reduced. A **good cooperation** instead of hundreds of contracts paves the way for mutual trust
- > A **joint allocation of risks and incentives** should have ensured operational excellence and avoid potential room for project default
- > A **sound business case calculation** with conservative estimates and assumptions should have evaluated the project adequately. A flexible approach to react to different scenarios ensures operational excellence

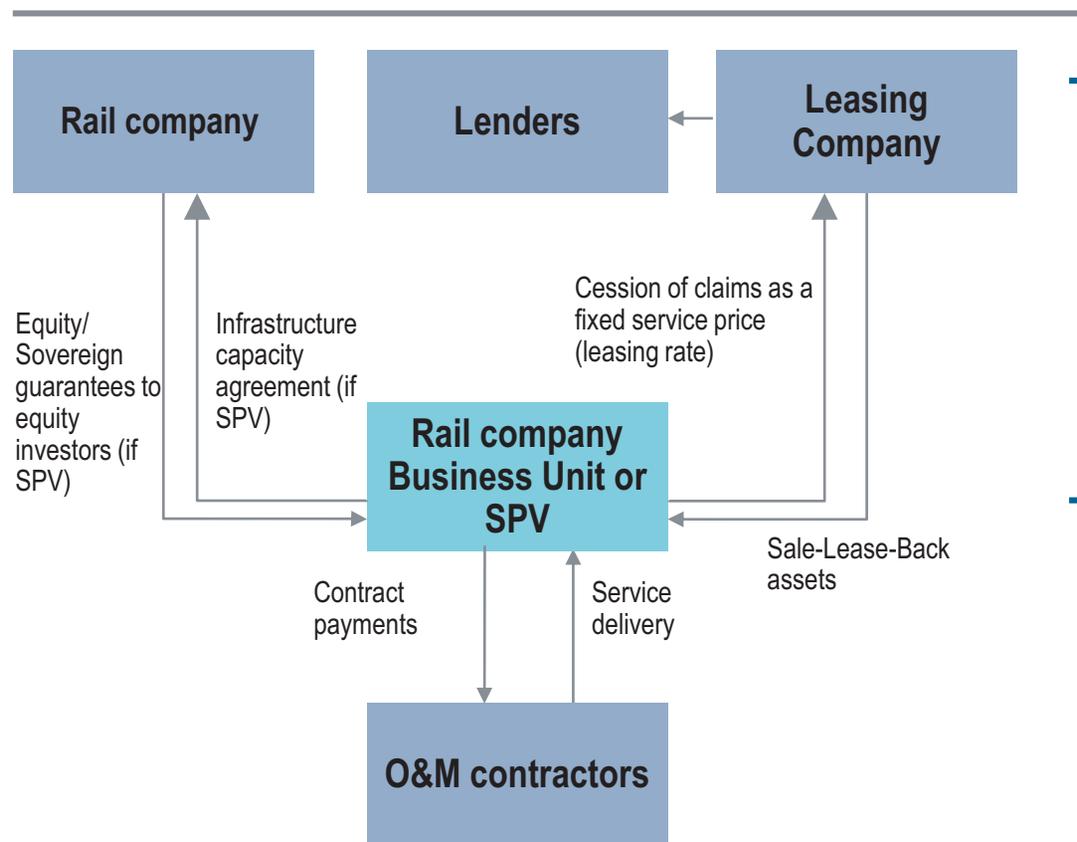
Top do's and don'ts for PPPs – There are clear learnings from our global PPP advisory services and the previous examples

Our top 5 lessons learned

- 1 Understand long-term nature of most PPP contracts** – Design business case to be viable for 20+ years; explicitly make operational phase part of the core business case (not only extension of construction business)
- 2 Align interests and incentives for private and public partner** – Create transparency about commercial interests and benefits for both parties and reduce unclarity in contracts; use scenario-based analytics to acid-test your business case
- 3 Clearly allocate risks and reflect the in the business case calculation** – Even "minor" risks can damage a business case if the materialize over 20 years; clearly assign responsibility for mitigation and assign compensation for taking risks
- 4 Respect complexity of advanced infrastructure systems and new technology** – Include realistic schedules and buffers into your project planning – do not assume that technological risks go away simply because the risk is transferred to the private sector
- 5 Allow for flexibility in contracts and keep management rules simple** – Long contract times imply that changes will be necessary in time – create trust and a good cooperation rather than 8.000 pages of contracts to make the project worthwhile for both sides

Asset finance – Asset financing is typically implemented as leasing model and reduces risks for rail company

IV Asset finance/ leasing



Advantages

- > Rail company limits risks as full liability (e.g. of maintenance and operation of assets) is deferred to leasing company
- > Financing of assets (construction etc.) may be easier, if sale to a leasing company is agreed before hand

Disadvantages

- > Model requires infrastructure to be in place already – Financing and risks for construction have to be borne before hand
- > Leasing of assets still uncommon as assets mostly in hand of the public side

Budget finance, PPPs, and asset finance suitable for financing initiatives – Corporate finance with limited applicability

Applicability of funding methods

Which funding methods are suitable for which initiative?

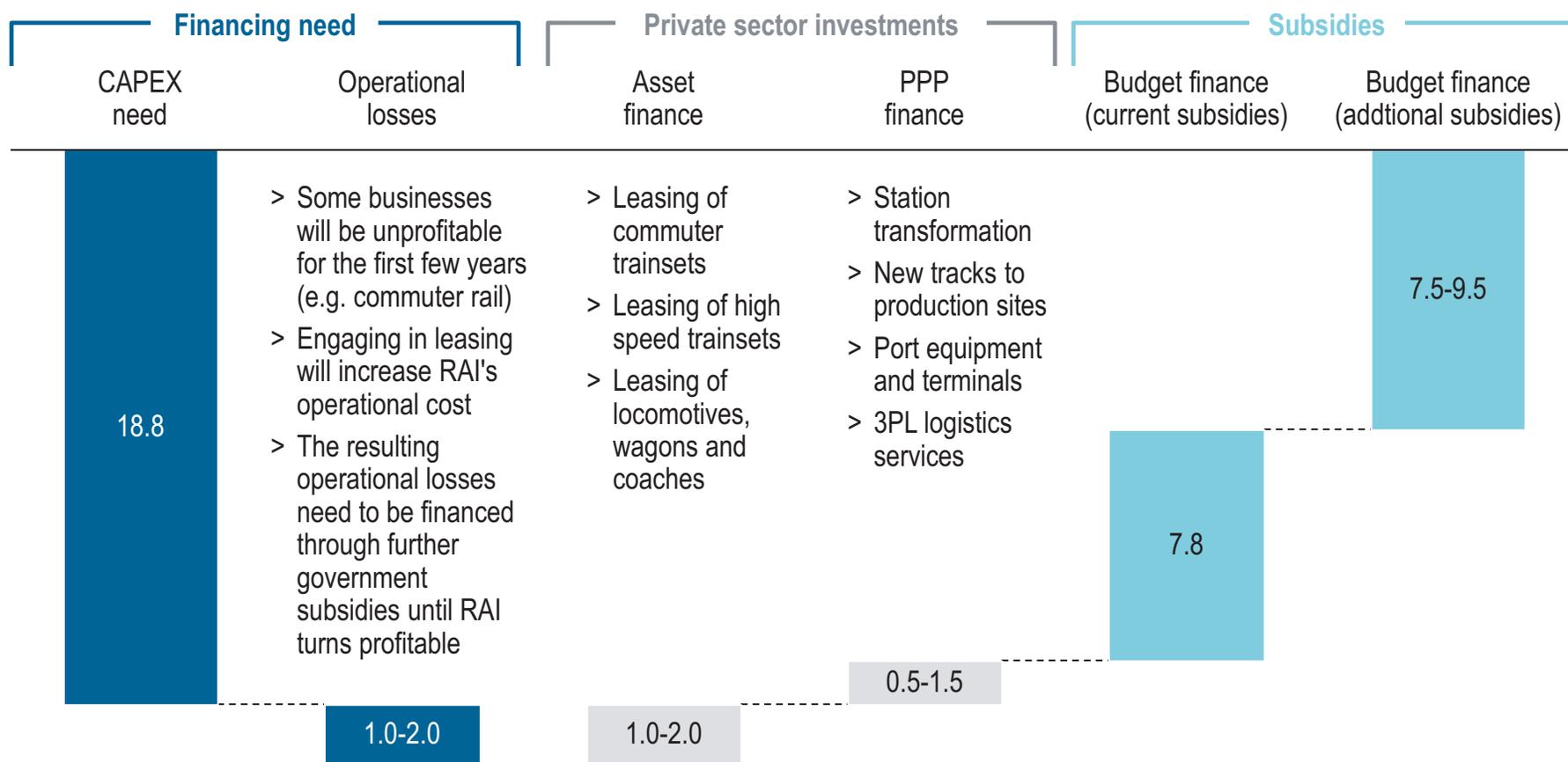
Strategic initiative	Budget finance	Corporate finance	PPP finance	Asset finance	Invest ¹⁾ [USD m]
Network upgrade	●	○	○	○	3,100
Station transformation	◐	○	●	○	65
Safety program	●	○	○	○	200
Commuter stations	◐	○	●	○	80
Commuter tracks	●	○	○	○	200
Commuter trains	○	○	○	●	360
High speed infrastructure	●	○	○	○	5,510
High speed trains	○	○	○	●	960
Base growth	○	○	○	●	5,360
Access to production sites	○	○	●	○	1,020
Expansion of international routes	●	○	○	○	1,700
Ports and terminals	○	○	●	○	165
3PL services	○	○	●	○	<10

● High applicability ◐ Medium applicability ○ No applicability 1) Base option

Σ ~18,800

As a result, investments by the private sector are expected to cover USD 1.5 bn to USD 3.5 bn

Distribution of possible funding methods [USD bn, 2018 to 2028 accumulated]



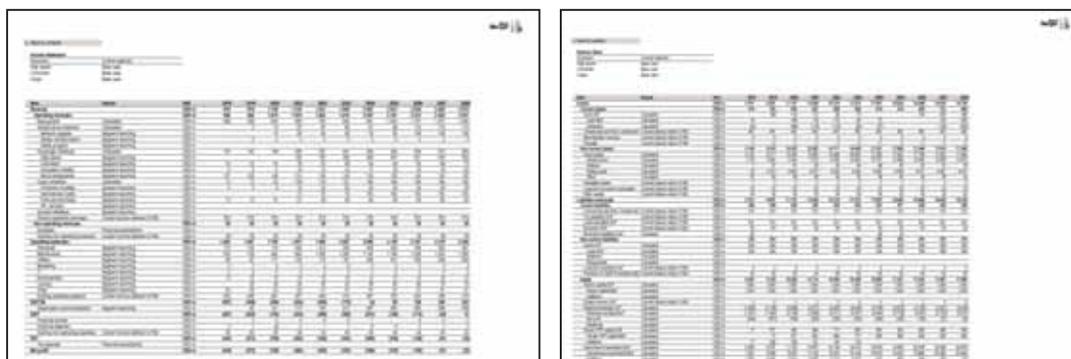
C.2 Financial modelling



Based on the chosen funding, we compiled a full fledged forecast of RAI's financial statements over the course of the next decade

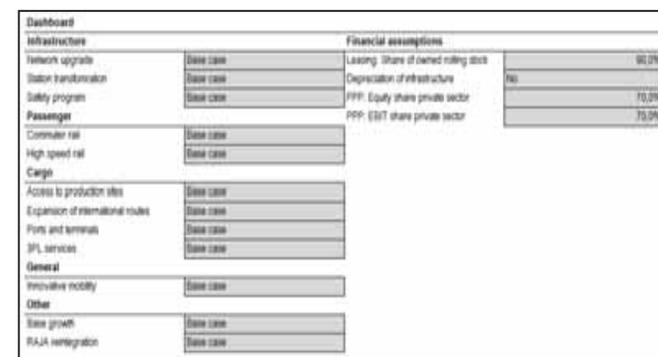
Financial modelling approach

Financial statements



- > 10-year forecast of profit and loss statement, balance sheet and cash flow statements of RAI incl. all major items
- > Full integration of RAI's current statements to the extent they have been made available to us
- > Calculation of major performance indicators (e.g. ROCE, modal shares, government funding etc.)
- > Application of funding methods as discussed in workshops with RAI's executive management

Scenario analysis



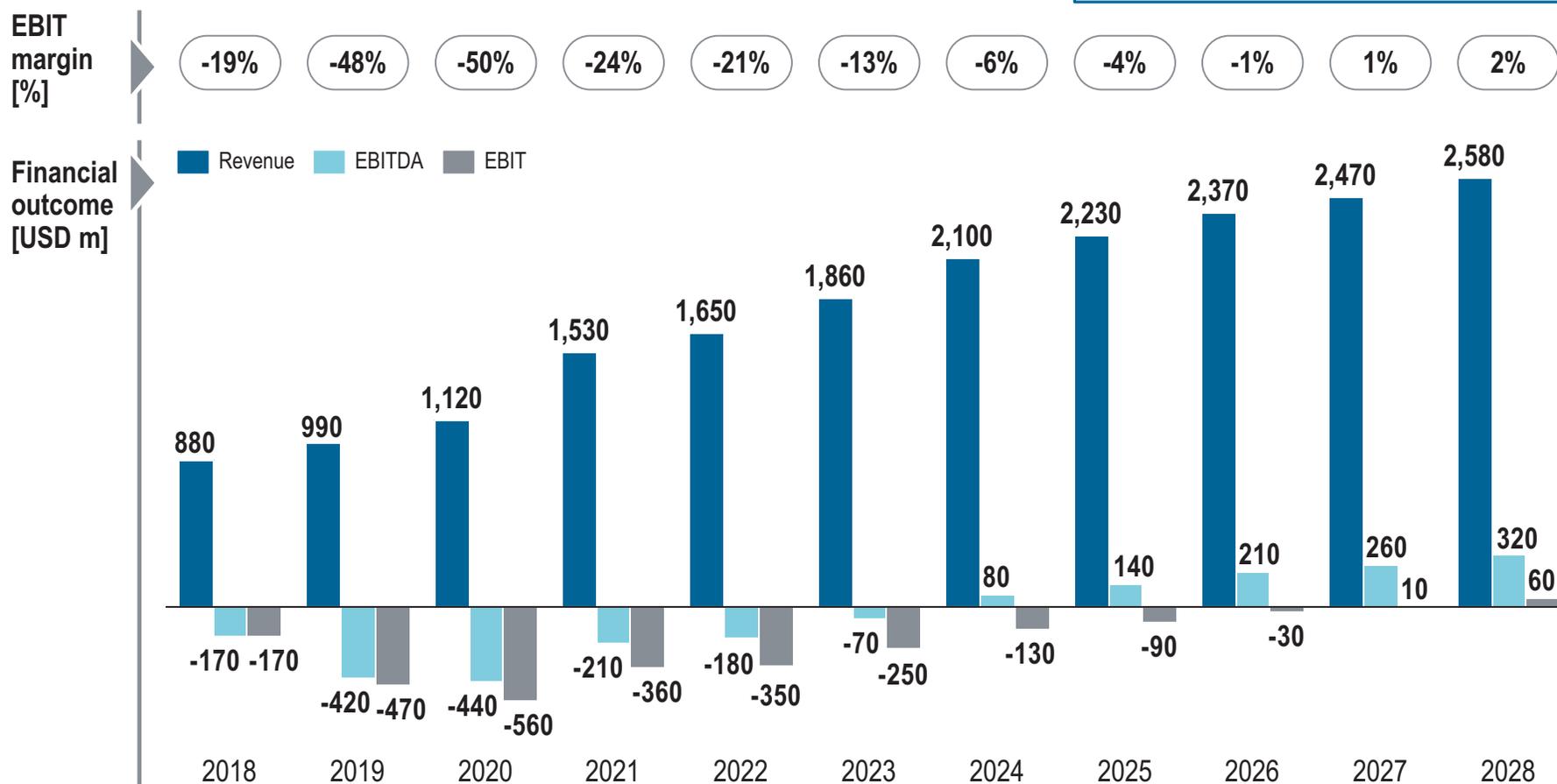
Dashboard		Financial assumptions	
Infrastructure		Leasing share of owned rolling stock	90.0%
Network upgrade	Base case	Depreciation of infrastructure	No
Station transformation	Base case	PPP: Equity share private sector	70.0%
Safety program	Base case	PPP: (SIT) share private sector	75.0%
Passenger			
Commuter rail	Base case		
High speed rail	Base case		
Cargo			
Access to production sites	Base case		
Expansion of international routes	Base case		
Ports and terminals	Base case		
BFL services	Base case		
General			
Innovative mobility	Base case		
Other			
Base growth	Base case		
RAA integration	Base case		

- > One dashboard combining all available scenarios and showing key indicators
- > Scenarios for each new initiative can be chosen and numbers adjust automatically
- > Scenarios for financial assumptions can be chosen (e.g. on PPP financing and asset financing)

The new strategy of RAI is forecasted to break-even in 2027 on an EBIT-basis – Positive EBITDA from 2024 onwards already

Financial performance forecast (1/2)

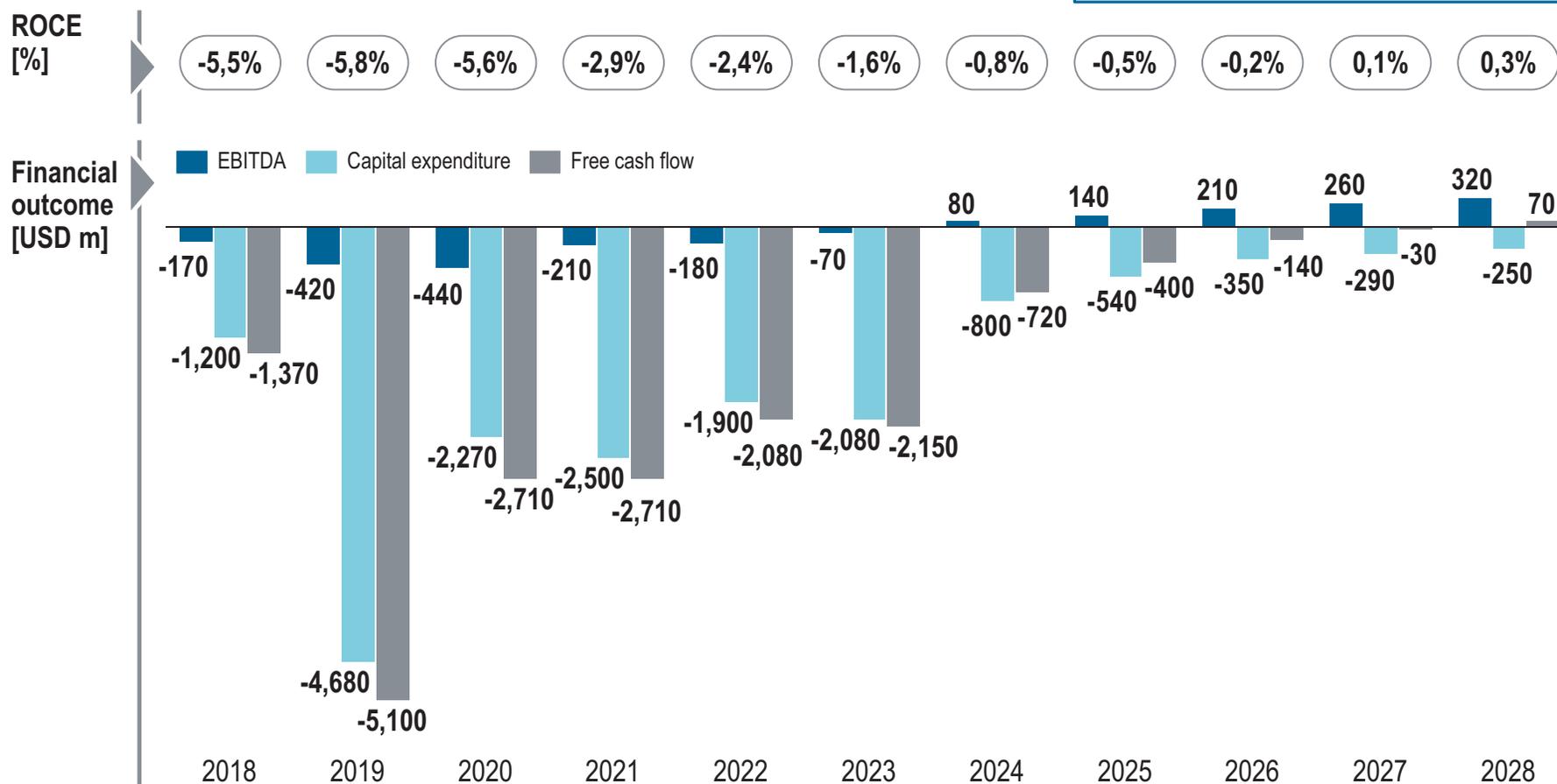
Potential development if all proposed actions are implemented as scheduled



First positive return on capital employed is expected to be realized in 2027 while free cash flow starts to be positive one year later

Financial performance forecast (2/2)

Potential development if all proposed actions are implemented as scheduled



As a result of the investments of the new strategy, RAI's balance sheet will increase in value significantly

Balance sheet forecast [FYE, USD m]

Assets	2018	2028	Δ	Liabilities/equity	2018	2028	Δ
Cash	-	274	-	Current liabilities	487	459	-6%
Other current assets	516	516	-	Non-current liabilities	376	376	-
Current assets	516	790	+53%	Liabilities	863	835	-3%
Fixed assets	3,121	16,910	+442%	Retained earnings	(1,231)	(3,920)	-219%
Infrastructure	NA ¹⁾	10,873	-	Government investment	2,423	18,281	+654%
Stations	NA ¹⁾	73	-				
Rolling stock	NA ¹⁾	4,022	-				
Other	NA ¹⁾	1,942	-				
Other	62	62	-	Other	1,644	2,566	+56%
Non-current assets	3,183	16,972	+433%	Equity	2,836	16,927	+497%
Total	3,700	17,762	+380%	Total	3,700	17,762	+380%

- > As RAI will invest in an own asset base in many of its strategic initiatives, the value of its assets will increase significantly over the next decade
- > Consequently, the financing side of the balance sheet will increase accordingly, mainly driven by an increase in government subsidies

1) Split of fixed assets not available for 2018 figures

In the future, operating revenues will triple from its current value while expenses will be dominated by maintenance and depreciation

Income statement forecast [FYE, USD m]

Revenue composition	2018	2028	Δ	Share ¹⁾
Operating revenues	838	2,543	+1,705	98%
Base growth	-	1,295	-	50%
Network upgrade	-	108	-	4%
Station transformation	-	5	-	<1%
Safety program	-	-	-	-
High speed rail	-	359	-	14%
Commuter rail	-	73	-	3%
Innovative mobility	-	20	-	<1%
Reintegration of RAJA	-	132	-	5%
Production facilities	-	29	-	1%
International routes	-	105	-	4%
Ports and terminals	-	26	-	1%
3-PL services	-	12	-	<1%
Other operating revenues	-	379	-	15%
Non-operating revenues	39	39	-	2%

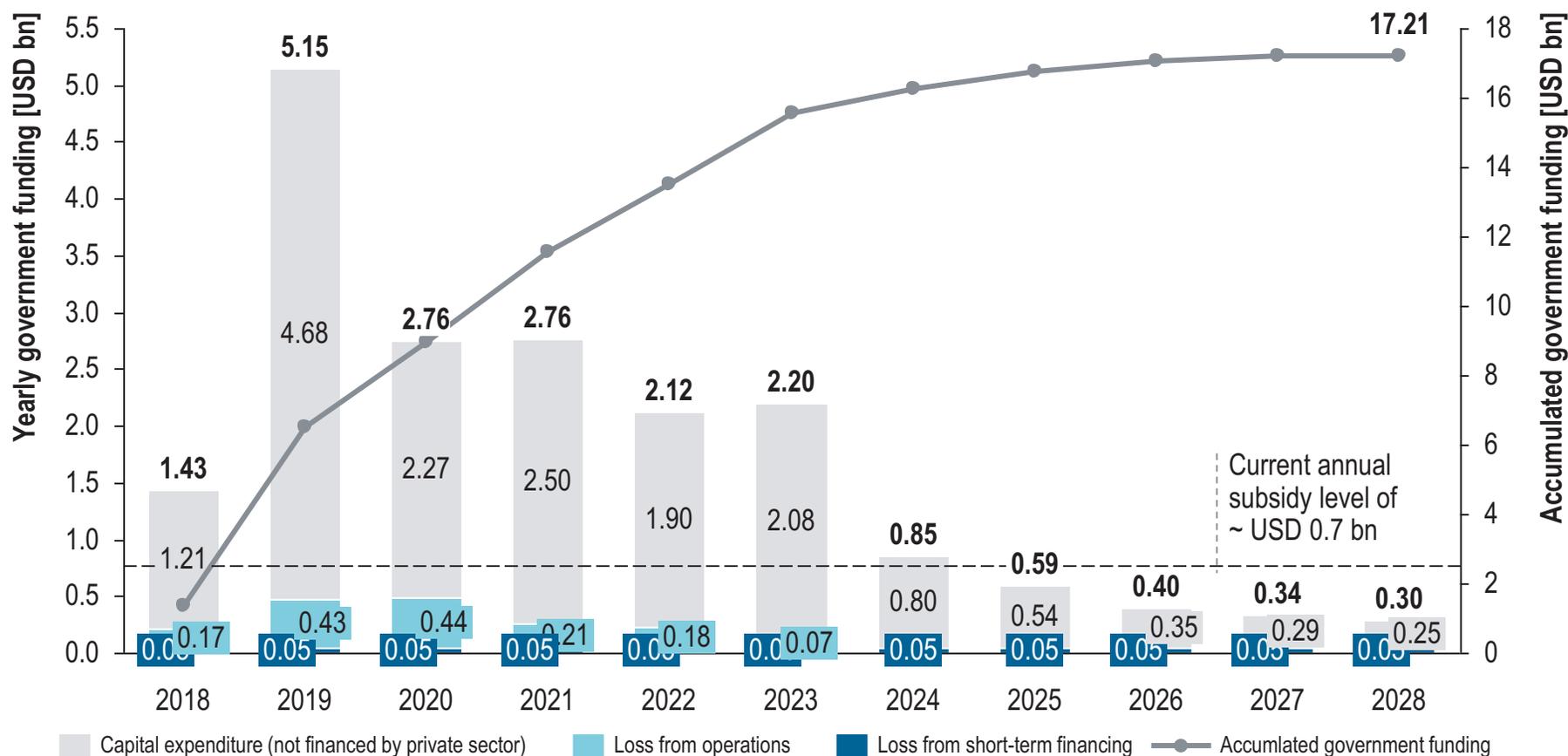
P&L statement	2018	2028	Δ	Share ²⁾
Revenue	878	2,582	+1,704	
Operating expenses	1,054	2,261	+1,207	
Personnel	380	570	+190	25%
Maintenance	300	987	+687	44%
Utilities	36	256	+220	11%
Leasing	NA ³⁾	234	+234	10%
Other	339	214	-125	9%
EBITDA	(176)	321	+497	
Depreciation	NA ³⁾	262	+262	
EBIT	(176)	59	+236	
Financial expenses	48	47	-9	
Net profit	(224)	12	+235	

1) Share of 2028 total revenues 2) Share of 2028 total operating expense 3) Leasing and depreciation not available for 2018 figures

In total, USD 17.2 bn of subsidies are necessary from 2018 to 2028 for investments not covered by private sector and operational losses

Required government funding p.a., 2018-2028

Funding plan to be adapted according to progress of RAI



C.3 KPI system



A new KPI system for RAI is vital to measure the success of the strategy and the structural transformation

Objectives and requirements

Objective of the KPI system

- > **Measure the success of the new strategy and the structural transformation** by taking the vision statement into account
- > **Measure current financials and ensure their sustainability** in terms of net profit, cash flow and debt on the long-run
- > **Increase awareness of employed capital** by applying a value-based management approach
- > **Manage and prioritize investments** by an efficient and forward-thinking management system
- > **Allow for industry and sector comparisons** by applying transparent performance indicators and by implementing challenging goals for all business and functional units

Requirements for the KPI system

- > Allows for adequate governance of RAI and provides incentives to achieve profit maximization and debt reduction
- > Uses a consistent and comprehensible approach with low complexity
- > Decreases the complexity for CEO and CFO with easy-to-handle and limited performance indicators
- > Monitors key indicators on a aggregated, corporate level
- > Allows for comparability with other rail operators and sectors
- > Takes into account target value for debt coverage
- > Allows strategic development and adjustments in addition to operational excellence
- > Takes into account the competitive industry

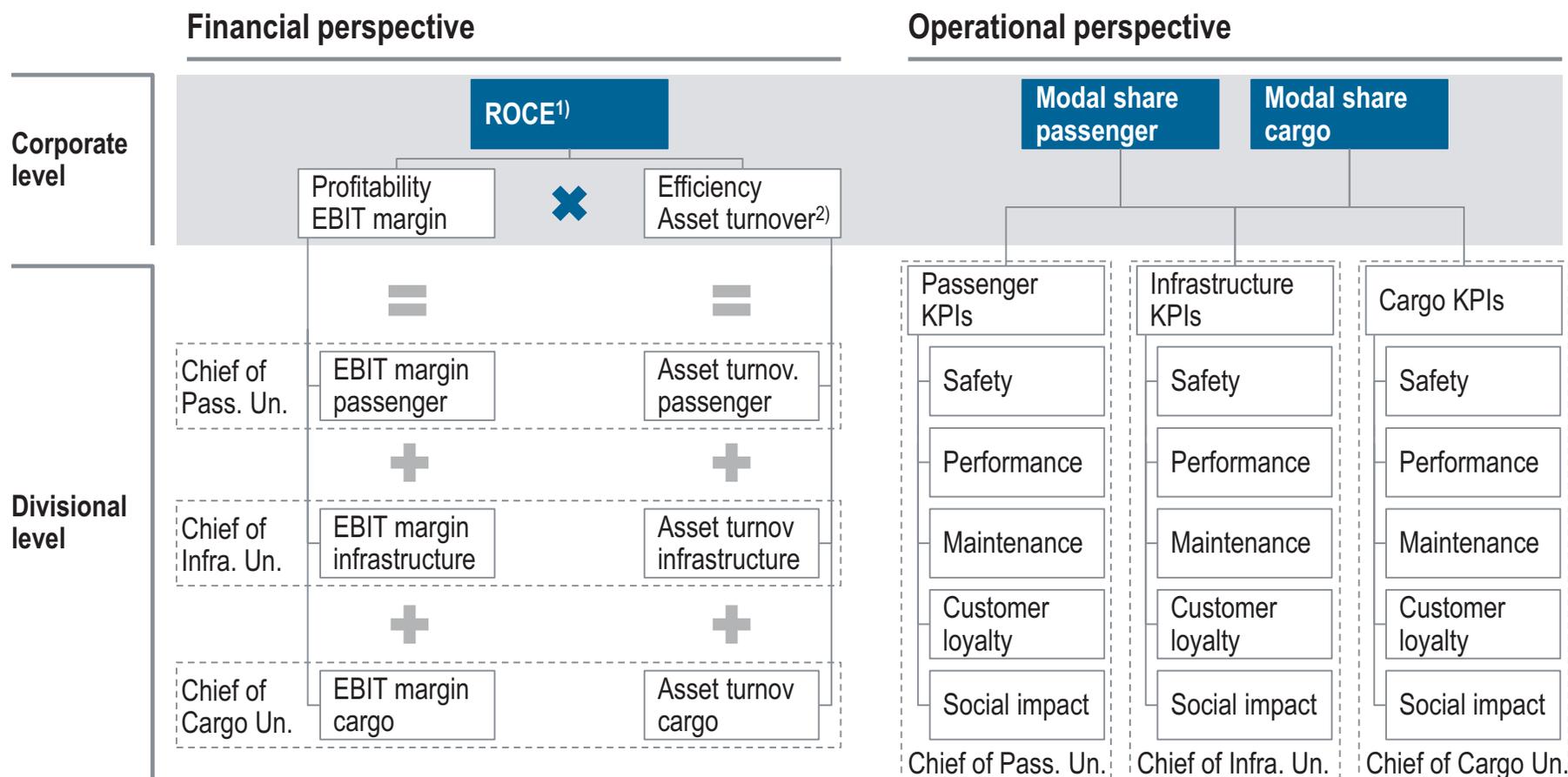
Other rail operators evaluate their performance from a financial and an operational perspective to enable success on the long-run

Benchmarking

Deutsche Bahn 	SBB 	Ferrovie dello Stato 	Japan Railways 
<ul style="list-style-type: none"> > Overall, Deutsche Bahn measures social, economic and ecological indicators > The major financial indicator is return on capital employed > In-depth criteria enable top-management to ask critical questions easily instead of receiving answers on a silver platter 	<ul style="list-style-type: none"> > SBB evaluates its performance based on social, operational and financial criteria > The major financial indicator is return on capital employed > Customer satisfaction index ensures operational excellence > In-depth evaluation of criteria ensures transparency 	<ul style="list-style-type: none"> > Ferrovie measures financial indicators to assess its performance > Environmental and social aspects are initiatives and no management KPIs > The major financial indicator is return on equity as major financial indicator > Divisional units, such as cargo and passenger, are separately measured 	<ul style="list-style-type: none"> > Japan Railway's success primarily relies on a financial perspective > Environmental, safety and operational aspects are evaluated, but are less relevant > The major financial indicator is return on equity as major financial indicator > Performance measures broad business units, but no in-depth measurement
<p>KPI system based on a financial and an all-embracing operational perspective</p>		<p>KPI system primarily based on a financial perspective</p>	

Therefore, we suggest to govern RAI's organization by two major KPIs: Return on capital employed (ROCE) and modal share

KPI system for RAI



1) Return on capital employed
 2) Asset turnover based on capital employed
 Source: Roland Berger

■ Scope of CEO / CFO □ Scope of head of division units

ROCE and modal share are adequate KPIs as they will drive RAI's transformation towards a market and customer-oriented company

Overview of corporate level KPIs

1 Return on capital employed

- > ROCE to be calculated on an aggregated business level

Rationale

- > A key **economic instrument** to assess RAI's long-term development and dependency on subsidies
- > An **overarching indicator** to track the transformation towards a market and customer-oriented company
- > An **all-embracing evaluation** of financial sustainability to account for profitability and efficiency without taking debt coverage into account
- > A high-level evaluation on how effectively RAI is using its assets to **ensure long-term profitability**
- > A major pillar to cover RAI's vision statement in terms of **financial sustainability**

2 Modal share

- > Modal shares of passenger and cargo rail unit to be considered separately

Rationale

- > A **key indicator** for the Iranian government to enhance the rail sector
- > A crucial indicator to assess RAI's success during the **modal shift in Iran**
- > A high-level evaluation to **compare RAI's status quo with the overarching goal** of achieving 10% and 20% modal share in the passenger and cargo rail business, respectively
- > Three pillars of the vision statements including **operational excellence, customer loyalty and social impact** to be tackled and to thereby measure the success of the strategic implementation

Every KPI should be assigned to one owner in the organization that takes over responsibility to drive this KPI forward

Exemplary responsibility for KPIs

KPI	CEO / CFO	Chief of Pass. Unit	Chief of Infra. Unit ¹⁾	Chief of Cargo Unit
Return on capital employed		1)	1)	1)
EBIT margin				
Asset turnover				
Modal share passenger				
Modal share cargo				
Number of severe accidents				
Average asset failures per asset type				
Average speed				
Average punctuality				
Av. maintenance costs per asset type and year				
Customer satisfaction index				

1) Additional KPIs for stations: Share or revenues from retail; Share of revenues from station / infrastructure fees , Number of train stops and passenger through output



KPI ownership



KPI contribution/shared responsibility

1) As soon as separate accounting circles with separate capital employed and EBIT are established

During the future implementation of the new KPI system, we recommend to consider important success factors

Success factors

- 1 **Incorporate KPIs on all levels of the organization** – Clearly assign responsibilities for business unit specific KPIs inside the corporation and provide incentives for respective success. Initiate immediate counter initiatives for any issue identified by the KPI

- 2 **Develop corporate culture of continuous improvement** – Set ambitious operational and financial targets to exceed quality standards and expectations. Ensure adequate monitoring and regularly redefine current organizational culture

- 3 **Reduce complexity of KPI systems and trust employees** – Ensure to implement a lean and all-embracing KPI system, which helps to increase operational excellence. Trust your employees, however, to allow for internal development

- 4 **Increase openness and allow for flexibility** – Compare status quo of operations and financials reflected by the KPI system regularly with other rail operators and industry sectors to broaden horizons and to develop new strategic opportunities for further development

- 5 **Use KPIs as a means of the on-going transformation** – Implement the KPI system in order to measure the success of the new strategy and the existing structural transformation by taking the vision statement into account

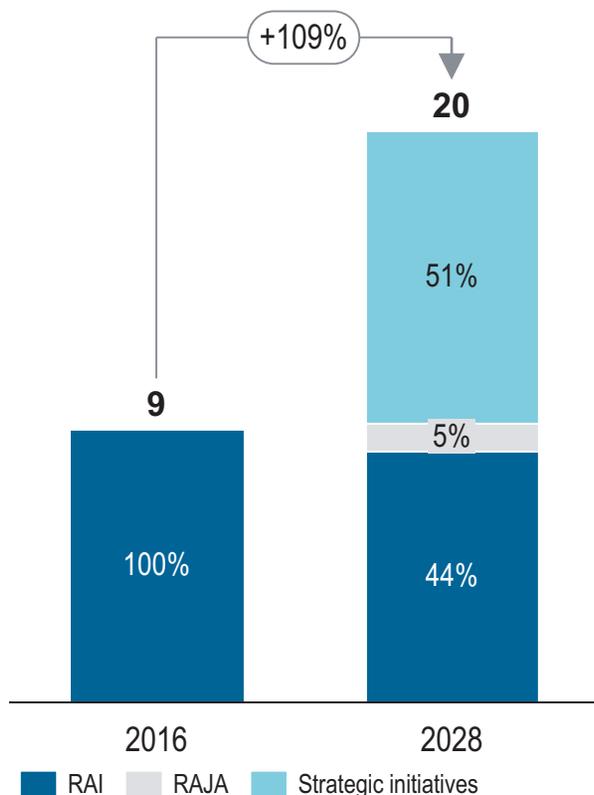
C.4 Human resource need



To implement the structural and strategic transformation around 11,000 additional FTEs are necessary until 2028

Required employees for strategic implementation

Employee forecast, Current vs. 2028 [%; 1,000 of FTEs]

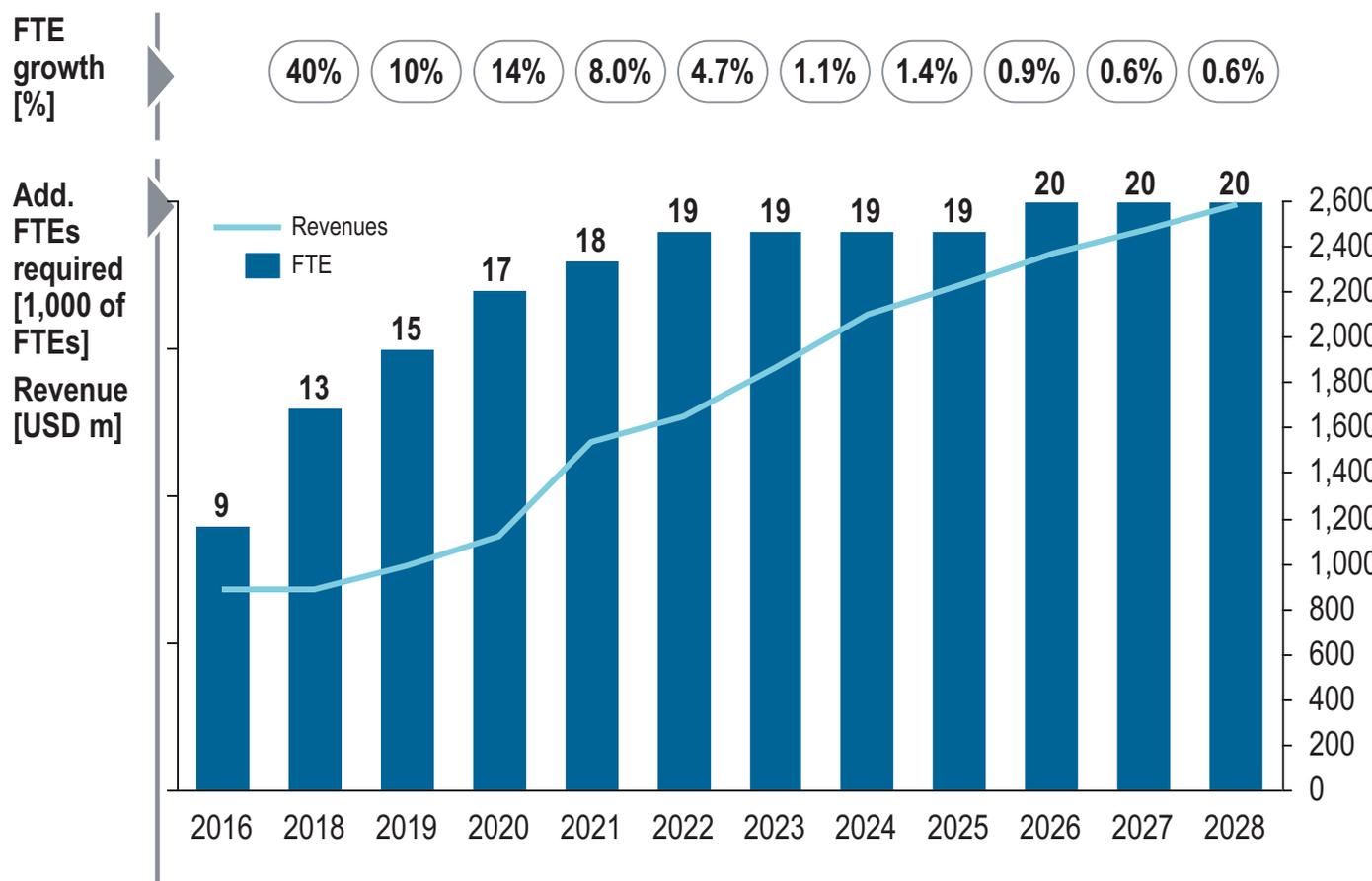


Implications for RAI

- > **Increase of total headcount by around 11,000 FTEs**, which represents a ~110% growth until 2028 from today's perspective
- > **Re-integrate RAJA** in 2018, which represents around 1,000 additional FTEs effectively in 2018
- > **Outsource regulatory departments** from RAI to IRRA, which affects around 200 employees
- > **Increase employee headcount by 10,000 FTEs** to enable adequate implementation of the strategic initiatives and the structural transformation
- > **Focus on the employment of infrastructure- and cargo-related FTEs** to increase implementation efficiency of the developed strategic initiatives
- > **Shift current allocation of roles** to a primarily operational focus whilst ensuring adequate administrative and managerial impact

The additional FTE correspond to the growing revenues from the new strategic initiatives over the next decade

FTE forecast, 2018-2028 [%; 1,000 of FTEs]

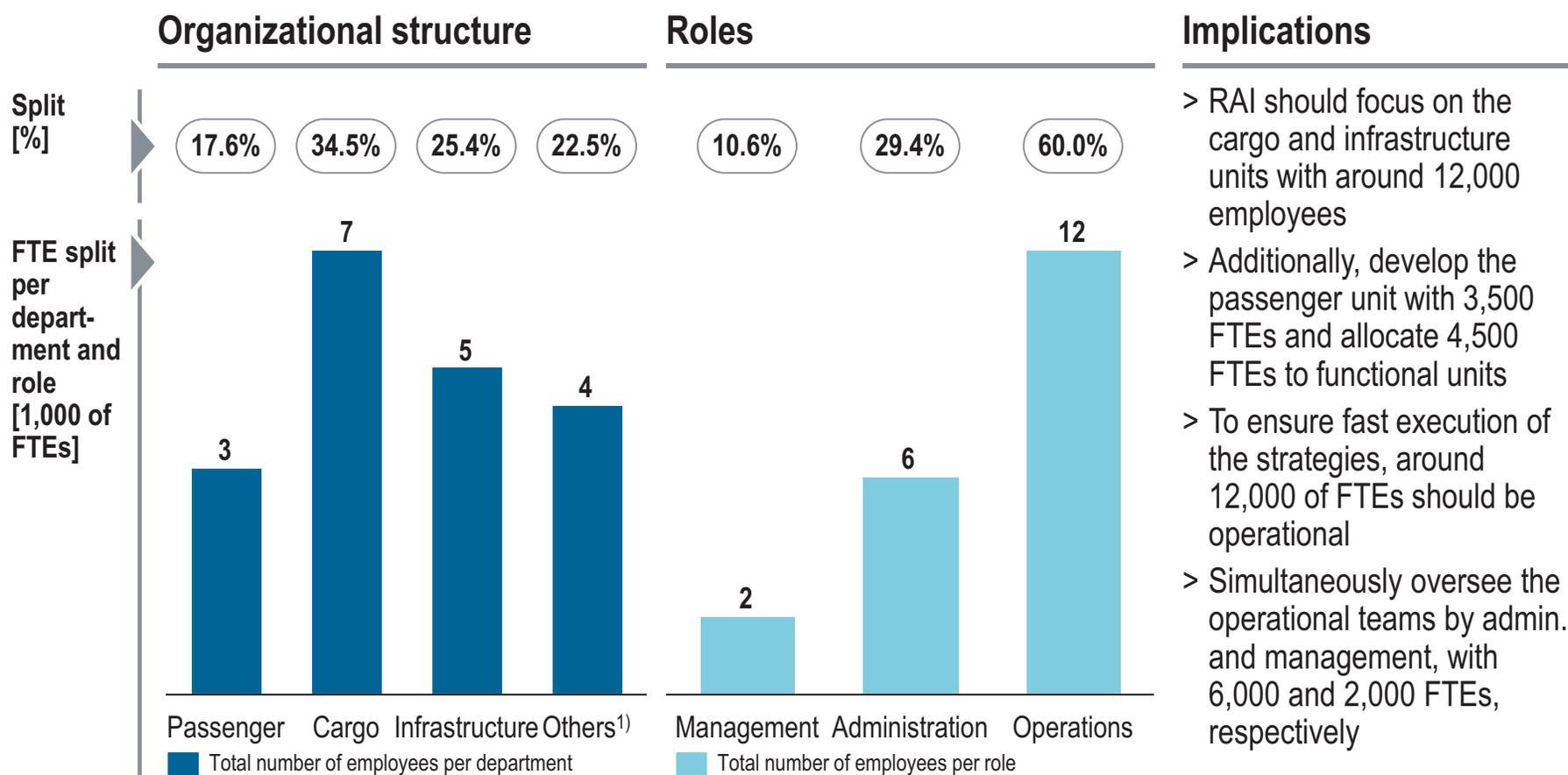


Implications

- > Directly integrate RAJA and outsource regulatory departments in 2018, which will amount to ~1,000 additional FTEs
- > Initiate the implementation of the strategic initiatives in 2018, which will lead to 10,000 add. FTEs until 2028
- > Employ around 3,000 add. FTEs in 2018 to implement the less labor-intensive initiatives first
- > Then, employ around 7,000 FTEs starting in 2019 until 2028 to primarily cover the cargo- and infrastructure-related initiatives

Additionally, RAI should focus on the infrastructure and cargo units and on operational roles to facilitate the strategic implementation

FTE split per department and function, 2028 [%; # of FTEs]



Implications

- > RAI should focus on the cargo and infrastructure units with around 12,000 employees
- > Additionally, develop the passenger unit with 3,500 FTEs and allocate 4,500 FTEs to functional units
- > To ensure fast execution of the strategies, around 12,000 of FTEs should be operational
- > Simultaneously oversee the operational teams by admin. and management, with 6,000 and 2,000 FTEs, respectively

1) Others include CEO, CFO and functional units (e.g. IT)

Substantial staffing measures will be necessary to attract the high number of new employees

Staffing measures per role

Prerequisites

Prior to staffing of as-is employee base (people) to roles (positions) following preparations are necessary:

- > All roles must be specified, whether they are unchanged, new, redundant
- > For each specification, respective strategies and measures need to be in place, e.g. job add for new roles
- > Availability of extra employees should be taken to consideration for target model and size (e.g. temporary project teams)
- > For roles at risk, priorities must be determined according to specific circumstances

Role specifications

Unchanged roles

- > 0 – 20% change to the role
- > Low level of change required.

Merged roles

- > 20 – 50% change to the role
- > Low to medium levels of change required

New roles

- > 50% or greater change to role
- > Medium to high levels of change required

Project Pool (if available)

- > Add to relevant pool

At risk

- > Determine priority

Transfer matrix

		To-be roles				
People						X
			X			
	X					
				X		
					X	

Measures per role

Confirm

Confirm and/or select

Post for application

Assess

Determine process

D. Next steps



The concept for the industry transformation and the new corporate strategy are in place

Status quo

Concept for industry transformation



Industry structure

- > Clear separation of policy setting, regulation and operations are clearly
- > More competitive fields and further opportunities for the private sector
- > New regulatory body governing the railway sector
- > Reintegration of RAJA in RAI



RAI organizational structure

- > New governance structure incl. the general assembly, the advisory board and the managing board
- > Market and customer oriented organizational structure that fits to RAI's new role in the industry

Implementation of industry structure and reorganization of RAI

Portfolio strategy of RAI



Infrastructure

- > Network upgrade
- > Stations transformation
- > Safety program



Passenger

- > Commuter rail
- > High speed rail
- > Innovative mobility



Cargo

- > Access to production sites,
- > International expansion,
- > Ports and terminals
- > 3-PL logistic services



General

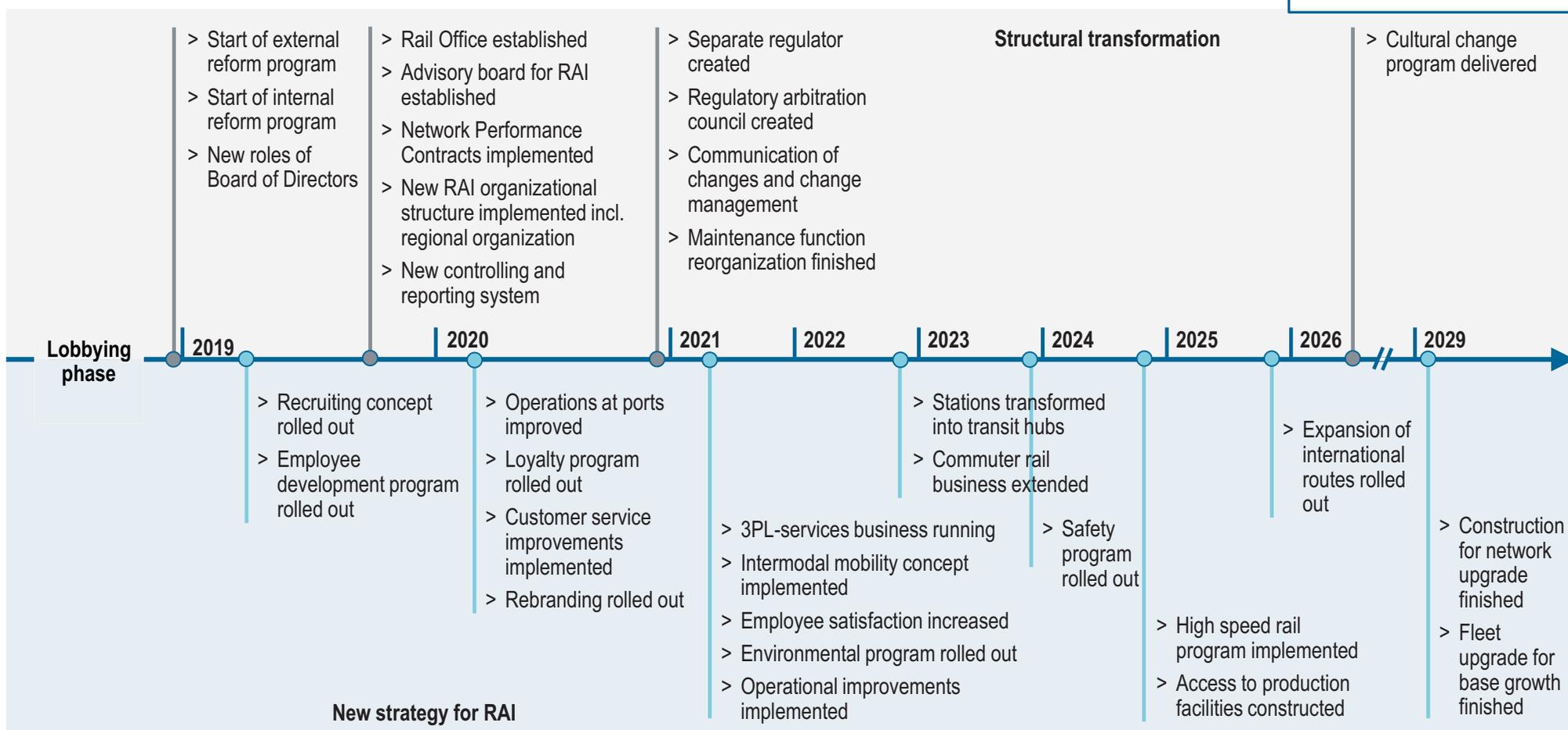
- > Rebranding
- > Operational improvements
- > Customer service
- > Employee development

Detailing and implementation of strategic initiatives

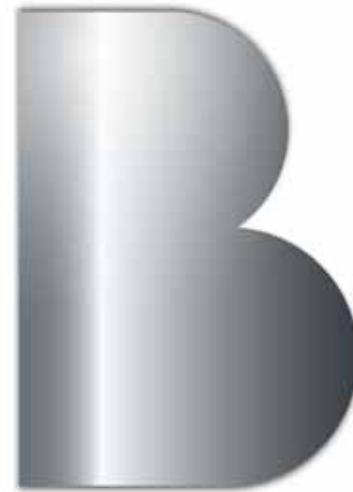
Now, lobbying efforts are necessary in the short-term followed by a comprehensive implementation program over the next decade

Implementation roadmap

Time plan to be adapted in discussion with RAI



Roland
Berger



Think:Act