

SCI/Verkehr



RAILWAY ELECTRIFICATION GLOBAL MARKET TRENDS

Installed Base, Projects, Forecasts, Suppliers

2023

RAILWAY ELECTRIFICATION – GLOBAL MARKET TRENDS 2023

Installed Base Projects, Forecasts, Suppliers

Available in English from 26.10.2023.

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This study entitled “Railway Electrification – Global Market Trends” provides a comprehensive overview of the structure, procurements, manufacturers and development trends in the market for railway electrification.

With this study, SCI Verkehr delivers market and business information of competitive relevance on the current and future volumes in the worldwide market for new development and upgrade as well as maintenance and renewal. In addition, the study identifies and evaluates key information concerning the companies active in the market.

In concrete terms, this multi-client market study of railway electrification includes:

- Overview and analysis of the worldwide market for railway electrification, divided into seven world market regions and 24 countries presented in detail
- The size and development of the markets for electrification in the period 2022 to 2028, differentiated by four types of transport and the purpose of the investment (new development, upgrade, renewal and maintenance) as well as product groups (Overhead contact lines, traction power supply)
- Information about the leading suppliers of catenary equipment and traction power equipment in deep-dive countries
- Length of the electrified line networks, major new development and upgrade projects

All in all, the study provides a well-founded analysis of the worldwide market for railway electrification. The study therefore provides both companies established in the railway industry as well as active and potential operators with important information for operational and strategic planning.

SCI Verkehr analyses markets from the bottom up: based upon systematic observation of the railway markets, a detailed worldwide database of the installed base and projects forms the basis for in-depth studies on the various segments of the railway industry and the most important regional focus markets. Through the continuous production of its MultiClient Studies series, SCI Verkehr systematically analyses 35 core countries and more than 100 individual markets for railway industries. These studies also go into further detail regarding technological and railway operational aspects, which are not illustrated in this study.

SCI Verkehr GmbH is an independent consultancy company specialising in the markets and economics of transport. We have close connections to the rail industry, with consultants in a wide range of specialist fields. We have an extensive network of experts in Germany and abroad and we specialise in market and strategy issues for the mobility sector. Our activities focus on companies in the transport and rail industry, logistics, public and private transport companies and transport and economics departments in public administrations at national, regional and municipal levels.

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Extract from the Study

3. The Market for Railway Electrification in Asia

Rail Network					
Network data	HSR	CR	Metro	LRT	Total mainline
Network length 2022 [route-km]	xx	xx	xx	xx	xx
Electrified network length [route-km] 2022	xx	xx	xx	xx	xx
Degree of electrification 2022	100%	xx%	100%	100%	xx%
Degree of electrification 2027	100%	xx%	100%	100%	xx%

Market Volume and Market Development	Average Market Volume 2022 [EUR million p.a.]	CAGR 2022–27 [% p.a.]
by Product Group		
Overhead contact lines	xx	x
Traction power supply	xx	x
by Transport Mode		
High-speed rail (HSR)	xx	x
Conventional railway (CR)	xx	x
Light rail transit (LRT)	xx	x
Metro (M)	xx	x
by Investment Target		
New development and upgrade (OEM)	xx	x
Renewal and maintenance (after-sales)	xx	x
Total	xx	x

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Market Environment and Market Drivers

Asia is a large region with a high number of quite heterogenous countries. Although political stability differs across the region, most countries can be regarded as politically stable. Asia is included in the strategic focus of most multinational companies. This is the result of the high growth rates in many Asian countries during the past two decades, their opening economies, continuously high inflows of foreign direct investments and development of massive exchange reserves. Especially the market opening of China has led to a boom of the region since the 1990s. But significant changes occurred because of the Covid-19 pandemic.

[.....]

[.....]

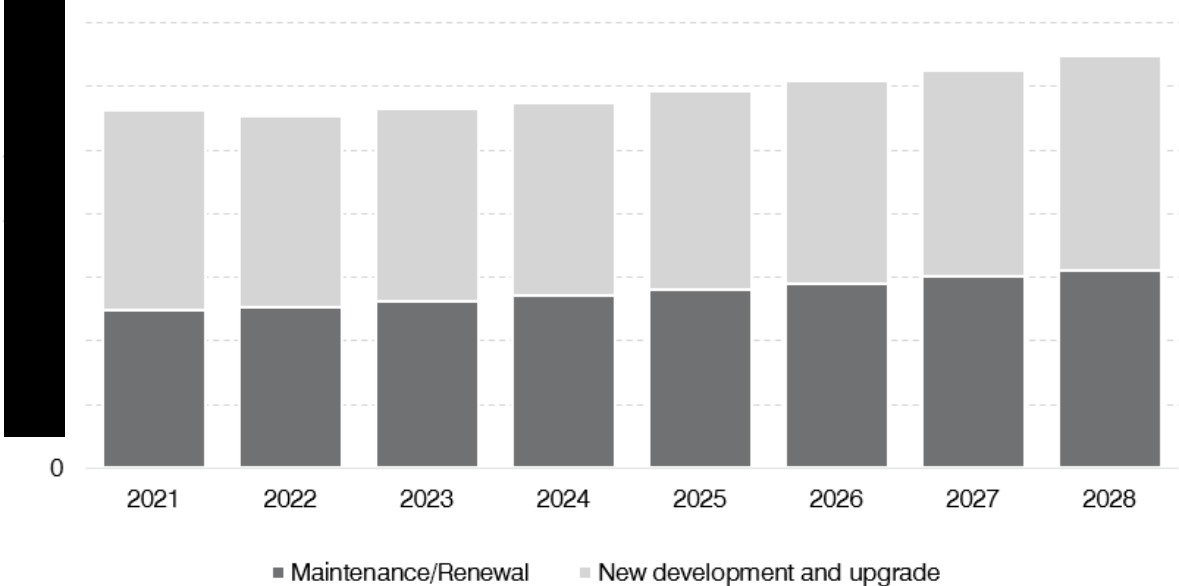
Driver		Brief description	Relevance	Trend
Decarbonisation targets and electrification of diesel network		<p>One of the most effective ways to decarbonise railways is to electrify the rail network. Electric trains are more energy-efficient and produce zero tailpipe emissions.</p> <p>Political willingness to decarbonise railways are especially high in China, India, Japan and South Korea. In other countries, electrification of diesel lines is progressing slowly due to high costs and budget constraints. Countries in South East Asia besides Singapore are focusing on network enlargement to connect more metropolises to the railway network rather than electrification of existing network</p>	●	↗
Investment budget	Availability of investment funds	<p>Availability of investment funds varies strongly between countries. While China and Japan are expected to invest stably in the railway networks, strong growth in India and South Korea is expected driven by political support. International funding help for new route projects in other Asian countries is expected to slightly decrease, as China's One Belt One Road programme is slowing down after Covid-19 and own economic problems in China. A stimulus package benefiting railway construction is not expected.</p>	●	→
	Political support for railway network	<p>SCI Verkehr observes an overall increase of environmental awareness and political support for railway as climate friendly transport mode. Investments in urban railway besides China is increasing.</p>	●	↗
Product prices/product quality		<p>Electrification components follow raw material prices and wage development. No technological revolution is expected in the mid-term.</p>	◐	↗

Relevance for procurements: ● = very high, ◐ = high, ◑ = medium, ◒ = low, ○ = none

5-year trend: ↑ = strongly increasing, ↗ = increasing, → = constant, ↘ = decreasing, ↓ = strongly decreasing

Market Volume/Market Development

Market volume for electrification (EUR million)
Asia



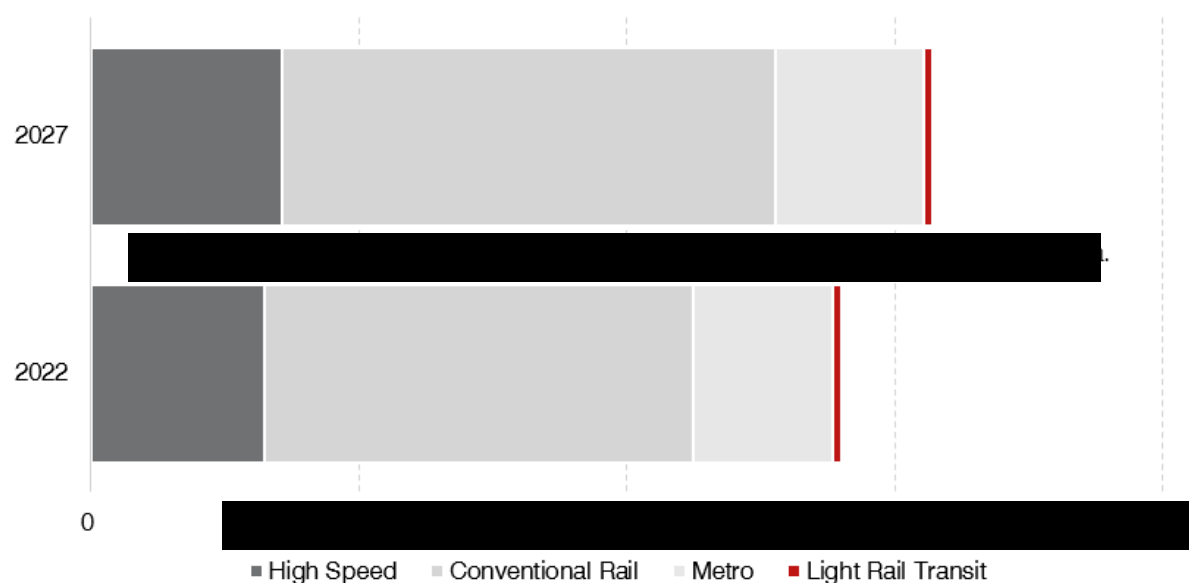
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[.....]

The Asian market for electrification is expected to moderately grow over the next five years. Slight growth of the largest markets China and Japan offset the dynamic growth in India and other Asian countries. The new development and upgrade market is only expected to slightly grow with around x% per year due to slowing down developments of high-speed railway and metro rail in China. The after-sales market is expected to significantly grow with around x% per year driven by network enlargement and price increases. The price increase is expected to be at around 2% on average.

[.....]

Asia – Average Market Volume by Transport Mode 2022 and 2027 (EUR million)



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6.1 China

Rail Network					
Network data	HSR	CR	Metro	LRT	Total mainline
Network length 2022 [route-km]	xx	xx	xx	xx	xx
Electrified network length [route-km] 2022	xx	xx	xx	xx	xx
Degree of electrification 2022	100%	xx%	100%	100%	xx%
Degree of electrification 2027	100%	xx%	100%	100%	xx%

Market Volume and Market Development	Average Market Volume 2022 [EUR million p.a.]	CAGR 2022–27 [% p.a.]
by Product Group		
Overhead contact lines	xx	x
Traction power supply	xx	x
by Transport Mode		
High-speed rail (HSR)	xx	x
Conventional railway (CR)	xx	x
Light rail transit (LRT)	xx	x
Metro (M)	xx	x
by Investment Target		
New development and upgrade (OEM)	xx	x
Renewal and maintenance (after-sales)	xx	x
Total	xx	x

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Market Environment/Investment Trend

[...]

China's railway authority announced to prioritise restructuring its operations to enhance efficiency and revenue, rather than continuing to expand railway infrastructure and moves away from debt-fuelled growth. Instead, the state railway company CR announced to reform its transport schedule to maximise the benefits of its massive existing rail network and restructure its businesses to boost productivity.

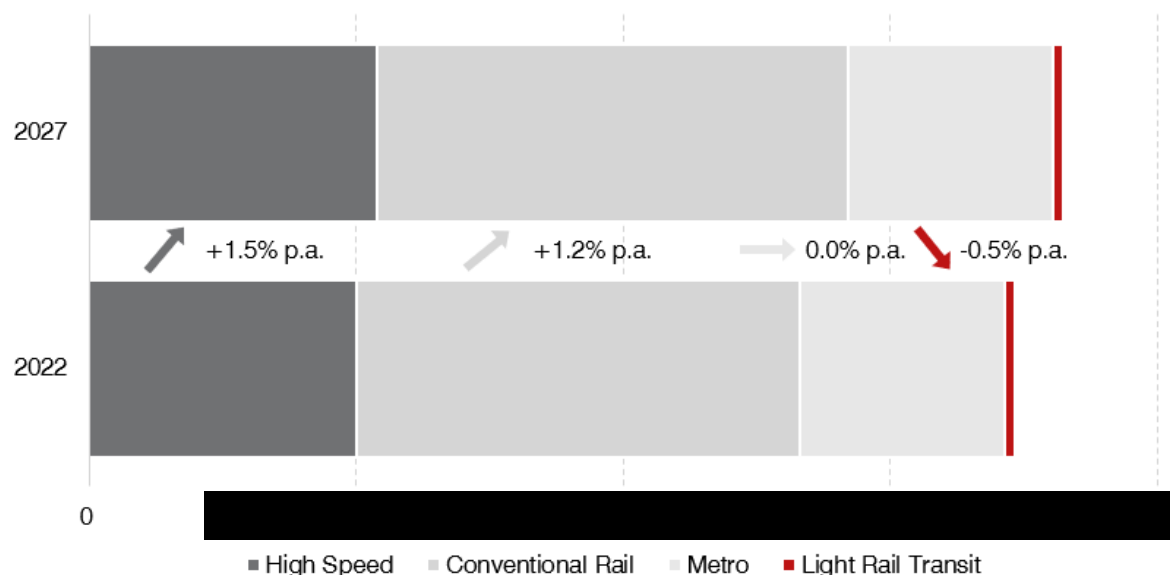
Railway fixed investment in China has been decreasing in the past 3 years. Railway fixed investment according to Chinese publications is mainly comprised of investments in railway infrastructure including civil works and rolling stock. Urban rail is not included. Fixed railway investments in 2020 was CNY 781 billion and decreased by -4% to CNY 748.9 billion in 2021. A further year-on-year decrease of 5% for 2022 was reported for 2022 (CNY 710.9 billion in 2022).

[...]

Market Volume/Market Development

The average annual market volume for electrification in China amounts to approx. EUR x billion in 2022 and will increase to approx. EUR x billion by 2027 (CAGR: +1.0%). SCI Verkehr expects stable development on a very high-level in China. Average market size within 2021-23 is already lower than the peak years until 2020. Starting from a for China comparably low-level, the market is expected to slightly increase. The breakdown by transport modes is as follows:

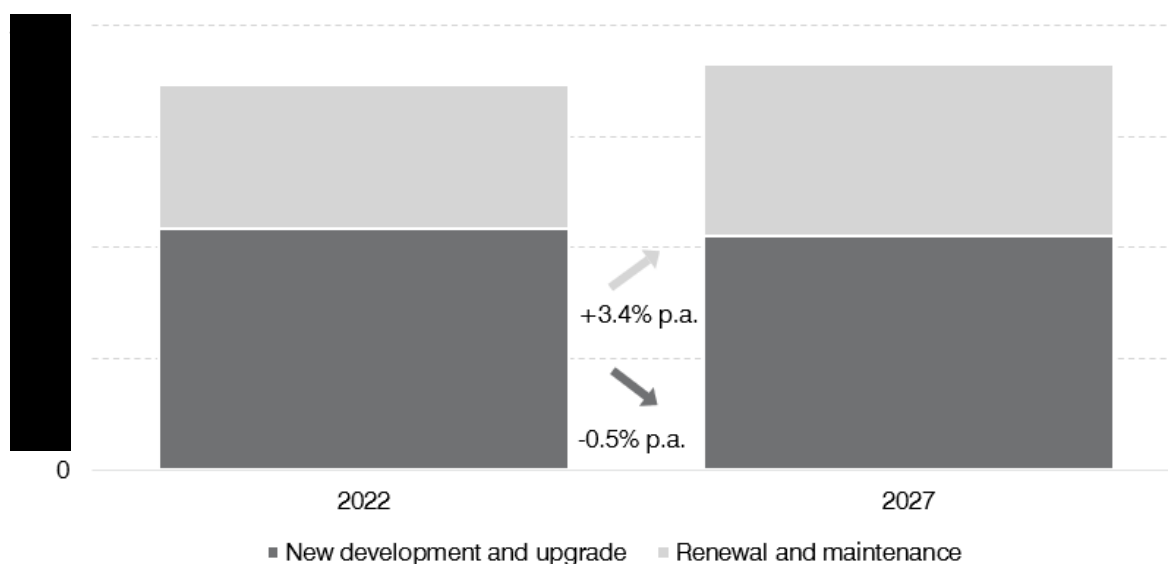
China – Average Market Volume by Transport Mode 2022 and 2027 (EUR million)



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High-speed rail and conventional railway hold more than 80% of the market volume. Metro will remain substantially more significant than light rail transit. New development and upgrade has obviously the largest market share. While the OEM market is expected to slightly decrease due to completion of large high-speed and metro rail projects, the after-sales market is expected to grow driven by network enlargements.

China – Average Market Volume by Investment Target 2022 and 2027 (EUR million)



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Important new development and upgrade infrastructure projects:

Major infrastructure projects including electrification (Conventional Rail, High Speed Rail, Light Rail Transit, Metro)						
Project title	Transport mode	Status	New Route [km]	Upgrade [km]	Start of Construction	Completion
HSR Chengdu - Lanzhou	HSR	Construction	730	0	2012	2027
HSR Shangqiu - Hefei South - Hangzhou East (Shanghang line)	HSR	Construction	520	277	2016	2023
HSR Zhongwei - Lanzhou (Zhong-Lan line)	HSR	Construction	236	0	2016	2023
[...]						
[...]						