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MULTIPLE UNITS - GLOBAL MARKET TRENDS

Forecast, Installed Base,
Suppliers, Procurement Projects

2024

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MULTIPLE UNITS - GLOBAL MARKET TRENDS

Forecasts, Installed Bases, Suppliers, Procurement Projects

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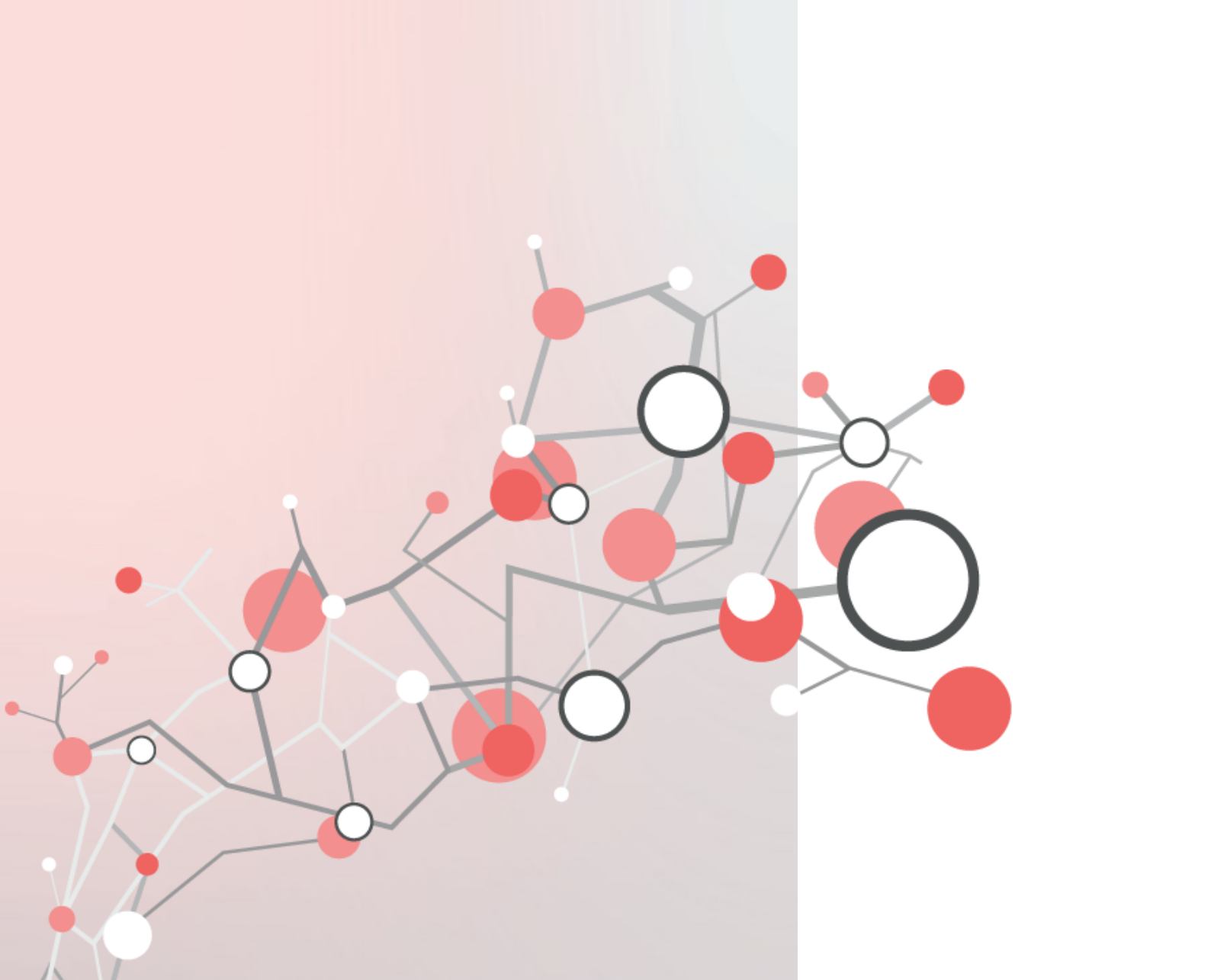
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CONTENT

- 1 Executive Summary.....**
- 2 Multiple unit market in Europe.....**
 - 2.1 Total market
 - 2.2 Germany.....
 - 2.3 France
 - 2.4 United Kingdom
 - 2.5 Italy
 - 2.6 Spain
 - 2.7 Austria
 - 2.8 Switzerland.....
 - 2.9 Poland
 - 2.10 Czech Republic
- 3 Multiple unit market in Asia**
 - 3.1 Total market
 - 3.2 India.....
 - 3.3 China
 - 3.4 Japan.....
 - 3.5 South Korea
- 4 Multiple unit market in North America.....**
 - 4.1 Total market
- 5 Multiple unit market in South / Central America**
 - 5.1 Total market
- 6 Multiple unit market in the CIS region.....**
 - 6.1 Total market
 - 6.2 Russia.....
- 7 Multiple unit market in Africa / Middle East**
 - 7.1 Total market
 - 7.2 South Africa.....
- 8 Multiple unit market in Australia / Pacific.....**
 - 8.1 Total market

CONTENT

- 9 Annex.....**
- 9.1 Market delimitation and methodology of the study
- 9.2 Market Analysis Methodology
- 9.3 Definitions, abbreviations, sources and figures



1

Executive Summary

Executive Summary

The worldwide market for multiple units has overcome numerous hurdles in recent years and is currently emerging stronger from the global crisis. In particular, the outlook for the vehicle industry is positive with numerous well-filled order books. However, these are also putting pressure on the industry, that still has to deal with challenges related to price increases, shortages of workers and the availability of resources.

[...]

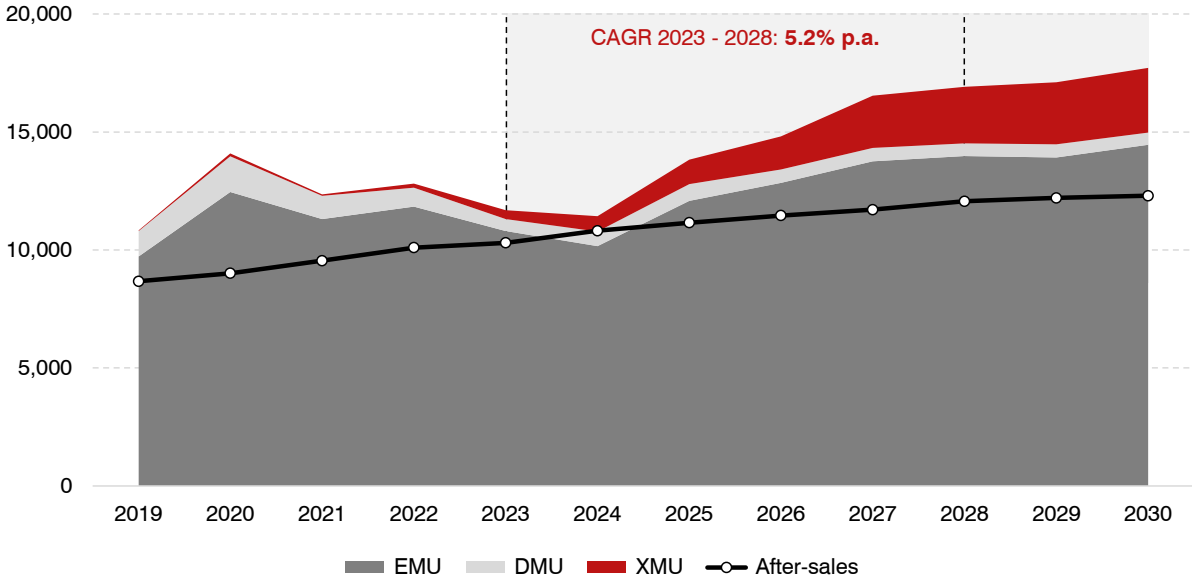
Despite ongoing crises and uncertainties in the global economy, the multiple unit market is expected to increase considerably in the upcoming years. With a yearly growth rate of [...]

[...]

Planned procurements, especially of multiple units in Europe, are largely secured by public financial guarantees or are commissioned directly by the countries and their regions. This underlines the [...]

● ●
Relatively rapid recovery, strong demand and [...]

Worldwide multiple unit market development (EUR million)



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Figure 1: Worldwide market development of OEM and after-sales for multiple units

Europe is the most important region in terms of [...]

In the other Asian core markets, a considerable growth rate is expected mainly due to the emergence of alternatively driven

multiple units (Japan) and a focus on technically more reliable, higher-quality trains (India).

Multiple unit market volume per world region (OEM; in EUR million)

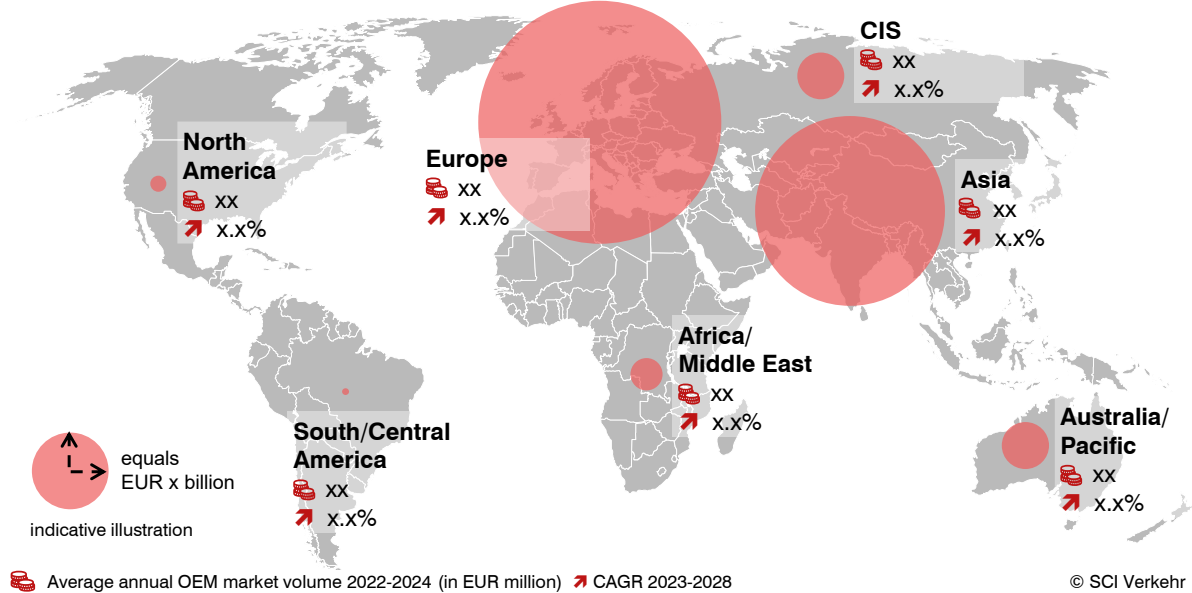


Figure 2: Multiple unit OEM market volume per world region

[...]

[...]

With the acquisition of Bombardier, Alstom has further diversified and strengthened its market position regarding regional and commuter trains. [...]

Top manufacturer market shares worldwide (Companies with >100 units delivered, 2019-2023)

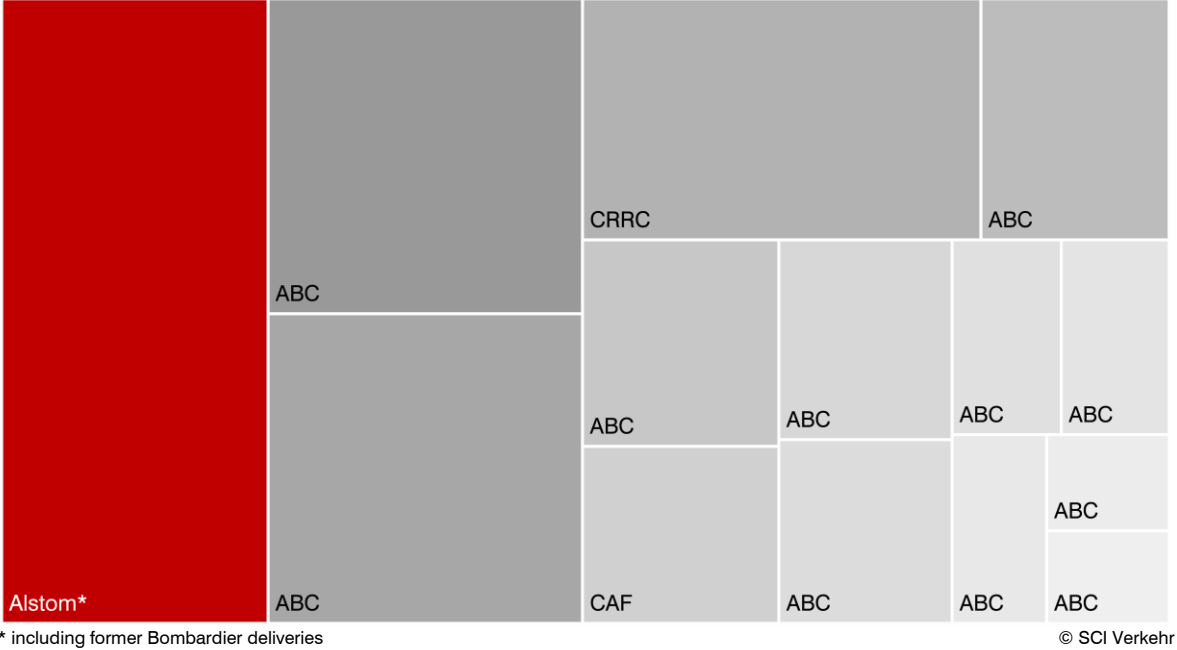


Figure 3: Top manufacturer market shares worldwide

XX
active
manufacturers
with multiple unit
deliveries to
51
countries worldwide
(2019-2023)



Deliveries 2019-2023 (units)

EMU SD	XX
EMU DD	XX
DMU	XX
Bi-mode	XX
XMU	XX

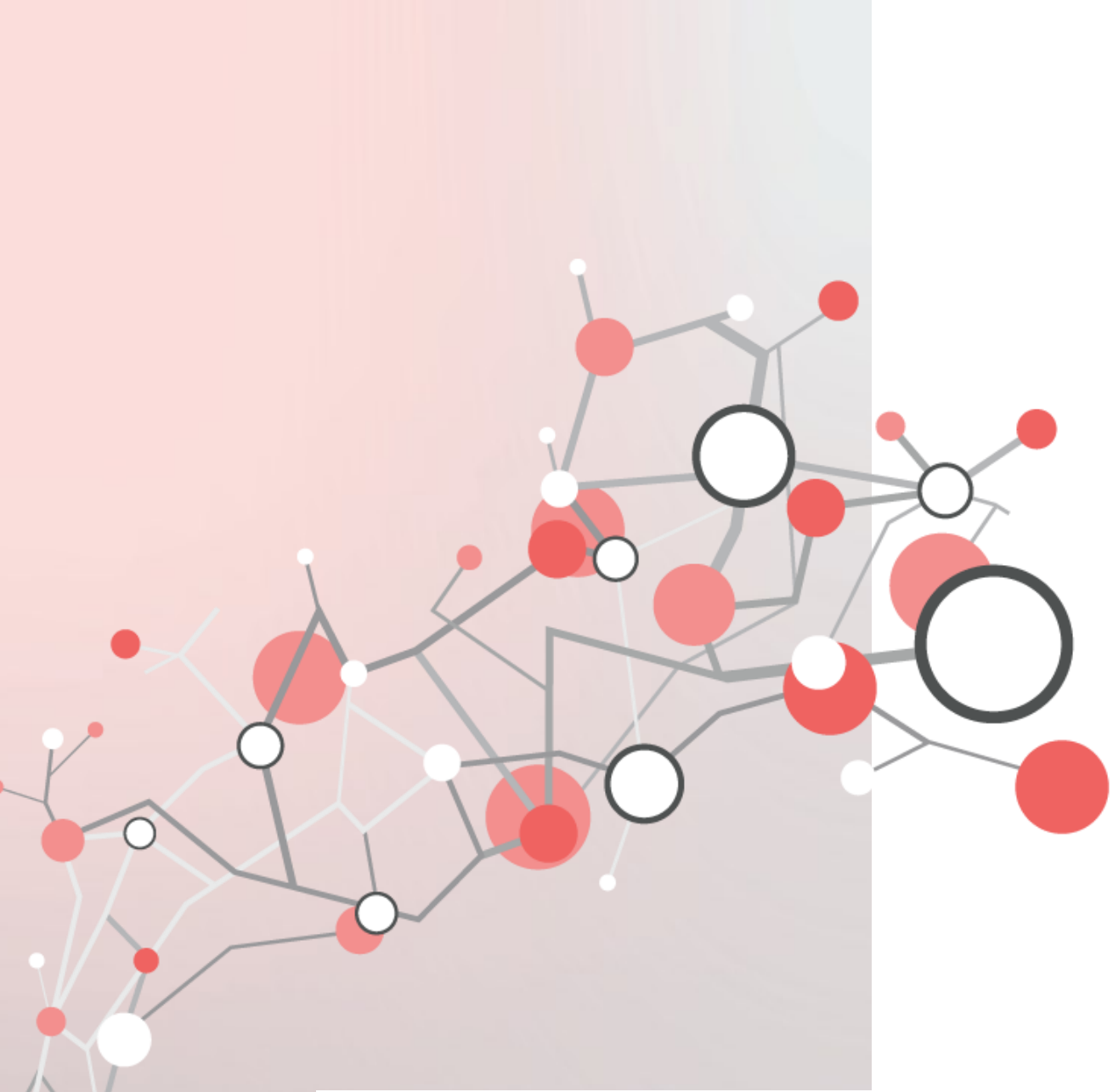
[...]

Chinese CRRC with catch-up effect and strong domestic business – Slower expansion due to high regulatory barriers in Europe – India with ambitious production programmes including foreign manufacturers

[...]

[...]

In Europe, the largest regional market for multiple units, Alstom’s market dominance is not likely to cause characteristics of further market concentration. In order to receive approval [...]



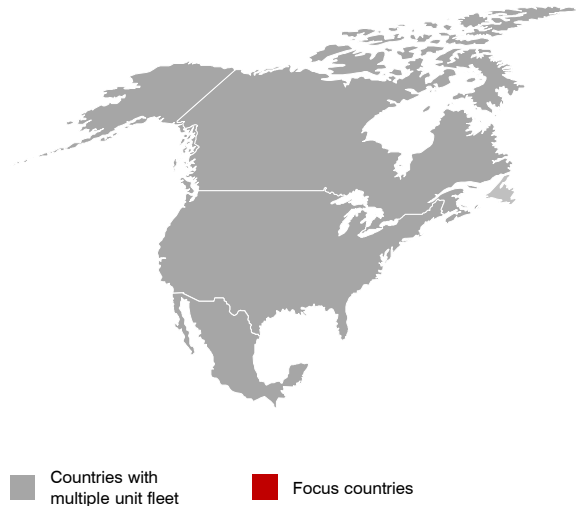
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Multiple unit market in North America

2 Multiple unit market in North America

2.1 Total market

2.1.1 Market overview and outlook



Passenger transport market (2023)			
Mainline railway network (km)			xx
<i>thereof</i> electrified			xx
Transport performance (million pkm)			xx
Rail modal share (%)			xx
Share of PSO (%)			xx
Share of Open Access (%)			xx
Fleet ↗	Size (units)	Avg. age (years)	Trend
EMU	xx	xx	→
DMU	xx	xx	↗
XMU	xx	xx	↗
OEM ↗	Market volume (EUR million)		CAGR, p.a. (2023-2028)
	2023	2028	
EMU	xx	xx	x.x%
DMU	xx	xx	x.x%
XMU	xx	xx	x.x%
After-sales ↗	Market volume (EUR million)		CAGR, p.a. (2023-2028)
	2023	2028	
EMU	xx	xx	x.x%
DMU	xx	xx	x.x%
XMU	xx	xx	x.x%

↗ ↘ → Increasing, decreasing or stable trend (5-year outlook)

The North American market for multiple units plays a somewhat less important role, especially in comparison to the continent's very large landmasses and the length of the existing railway network, which is used for freight and long-distance passenger services primarily – with some exceptions on the east coast. The widespread use [...]

In the entire North American region, approximately xxx multiple units were in operation in 2023, with over 90% accounting for EMUs. Although the XMU fleet is expected to experience a stronger growth in the coming years, [...]

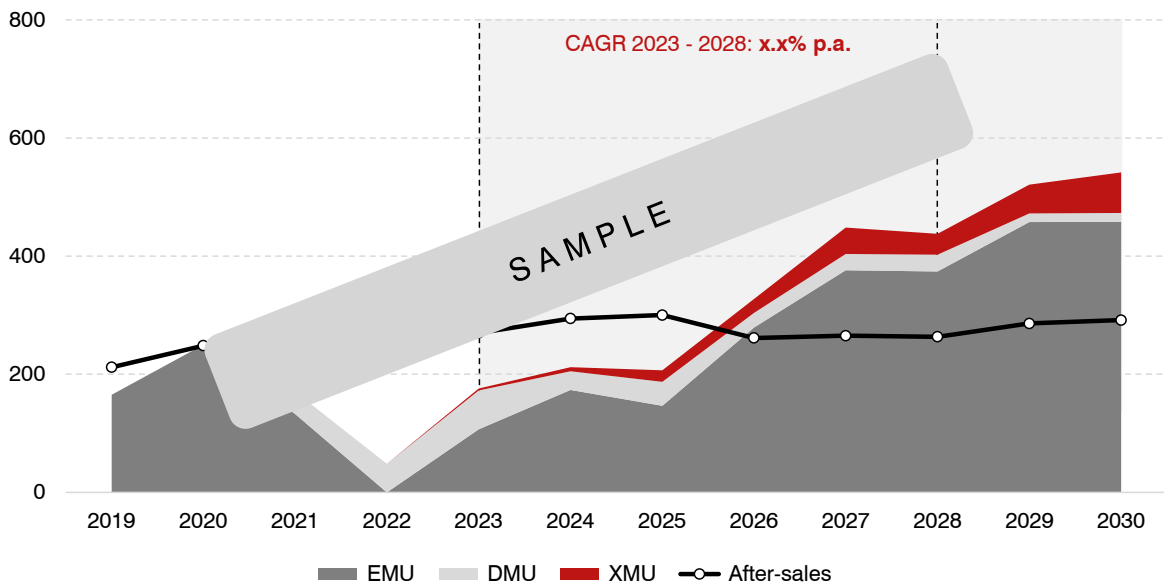
[...]

Market development

With a market volume of only EUR xxx million in 2023 (average p.a. 2022-2024), the North American market is at a low current level.

[...]

Multiple unit market development in North America (EUR million)



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Figure 4: OEM and after-sales market development of multiple units in North America

As in the recent past, there will be ongoing substantial procurements of EMUs in the next years, particularly in the major metropolitan areas. [...]

[...]

First HMUs manufactured by Stadler were delivered to California in 2023 and are expected [...]

[...]

North America - Current and future market volume for OEM and after-sales			
Market volume (EUR million)	2023	2028	CAGR
New vehicles / OEM	xx	xx	x.x%
EMU	xx	xx	x.x%
DMU	xx	xx	x.x%
XMU	xx	xx	x.x%
After-sales business	xx	xx	x.x%
Total	xx	xx	x.x%


The market development of the three countries in the North American region will hereafter contribute to the total North American market volume in the coming years:

- In the **United States**, a series of significant rail contracts was awarded in recent years.
 - ABC
 - ABC
 - [...]
- **Canadian** long-term market development includes several key projects.
 - [...]
 - [...]
- In **Mexico**, the Tren Maya project is well advanced and deliveries are being continued in the next years:
 - [...]
 - [...]

The after-sales market is forecasted to show minor growth and range between [...].

[...]

Main drivers for procurement in the North American multiple unit market

Drivers	Relevance	Trend
Transport demand		
- [...]		
- [...]		
Infrastructure		
- With the latest programmes initiated under President Joe Biden, the rail infrastructure in the largest market USA benefits. Also, Canada has pledged to increase funding for rail infrastructure. Future of (political) decisions is unclear, however.	●	
- Ongoingly postponed infrastructure renovation will be provided with necessary funds.		
- Some states recently emphasis the electrification of lines, shifting to more EMU trains in the future.		
Rolling stock fleet		
- [...]		
- [...]		
Environment		
- [...]		
- [...]		
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2.1.2 Transport market

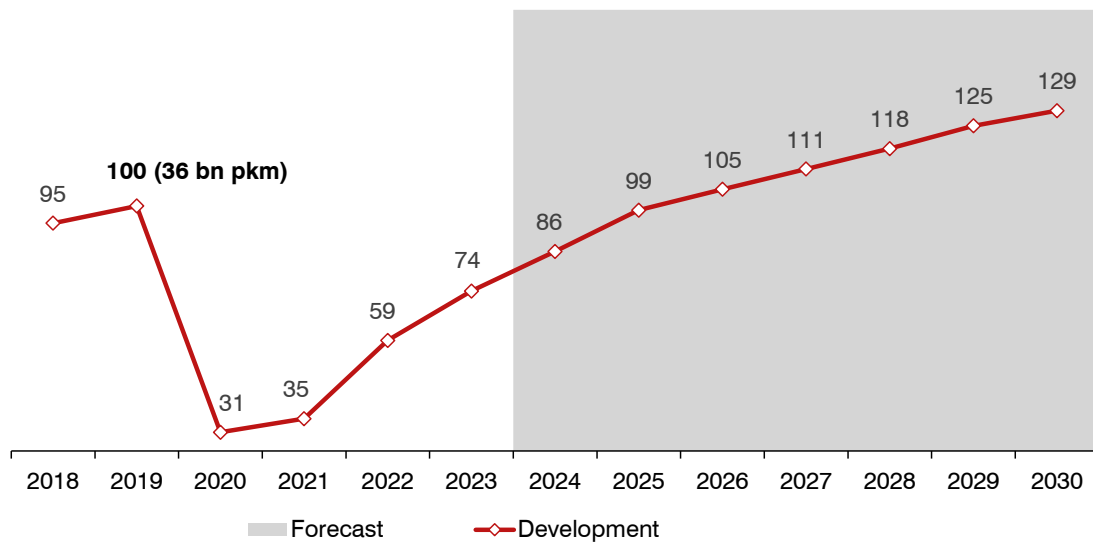
Transport performance

North America: Transport market		
Transport performance	Performance development	Rail modal share
26.4	X.X	X%
billion pkm, 2023	CAGR 2023-28	

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In 2023, the passenger transport performance in North America grew to 26.4 billion pkm, an increase of 25.7% compared to 2022, but failed to regain the pre-Covid-19 level 2019 of 35.8 billion pkm. As pkm numbers have not recovered as anticipated after the pandemic, SCI Verkehr expects that the pre-pandemic level will not be reached until 2026. The largest passenger market is the US with a volume of almost 90% of the total North American market. While railways play a crucial role in freight transport in North America, it is only of marginal importance in passenger transport.

North America: Development and forecast of passenger rail performance¹
(pkm, Index 100 = 2019)



1: Total market; Source: Eurostat, Prognosis: SCI Verkehr

Figure 5: North America: Development of passenger rail performance

[...]

Market regulation and competition

In the US, regional passenger rail transport services are provided by governmental or quasi-governmental agencies. Commuter rail networks exist just in a few metropolitan areas. [...]

In Canada, passenger rail services are mostly [...].

[...]

2.1.3 Installed base

North America: Installed base		
Total fleet 2023	Fleet development 2023-28	Average age 2023
X,XXX	X.X%	19.8
units (rounded)	CAGR (units)	years

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The installed base of multiple units in North America is comparatively small with only roughly x,xxx units in total. However, the average age of the multiple unit fleet of approx. 20 years is in line with the European and Asia fleets. A moderate growth of the multiple unit fleet is expected, mainly supported by the development of commuter rail networks in the region.

Fleet per country in North America (units)

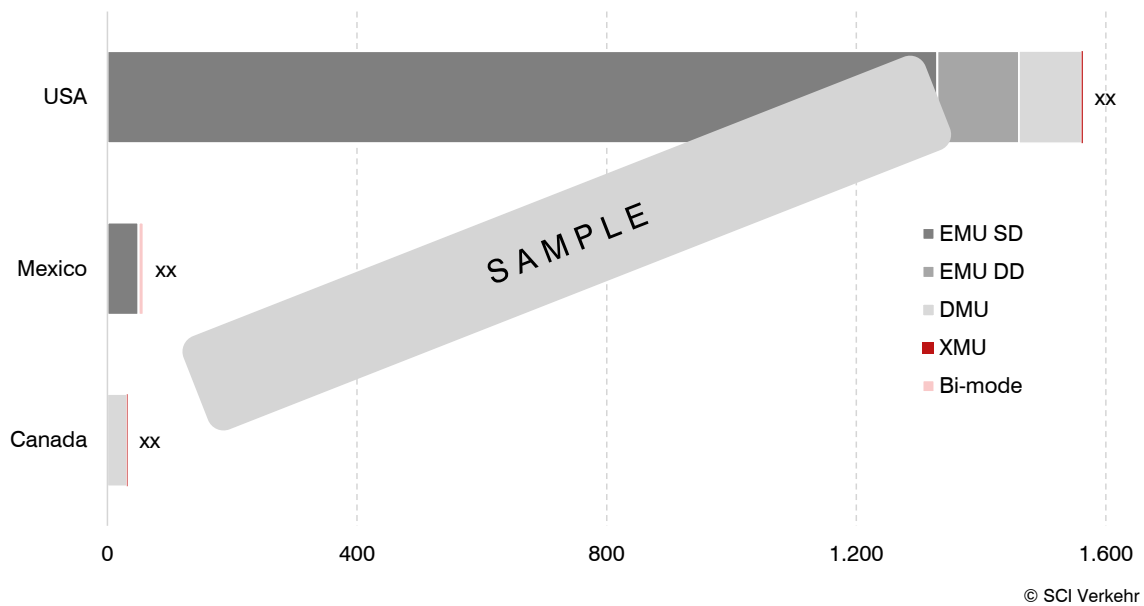


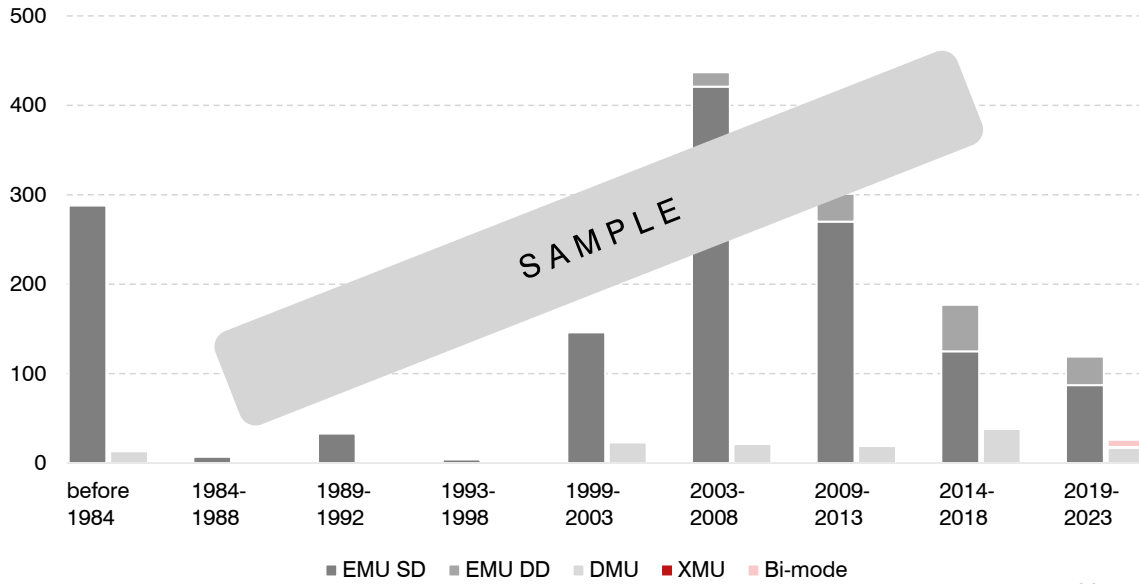
Figure 6: Multiple unit fleet per country in North America

The multiple unit fleet in North America is located almost exclusively in the USA with Mexico and Canada having just small parts of it. With around 100 DMUs in the total fleet, nearly 1,500 units are propelled electrically accounting for around 95% of the fleet, underlining the employment of multiple units in electrified and urban environments.

The relevance of double-deck multiple units [...].

[...]

Age structure multiple unit fleet in North America (units)



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Figure 7: Multiple unit age structure in North America

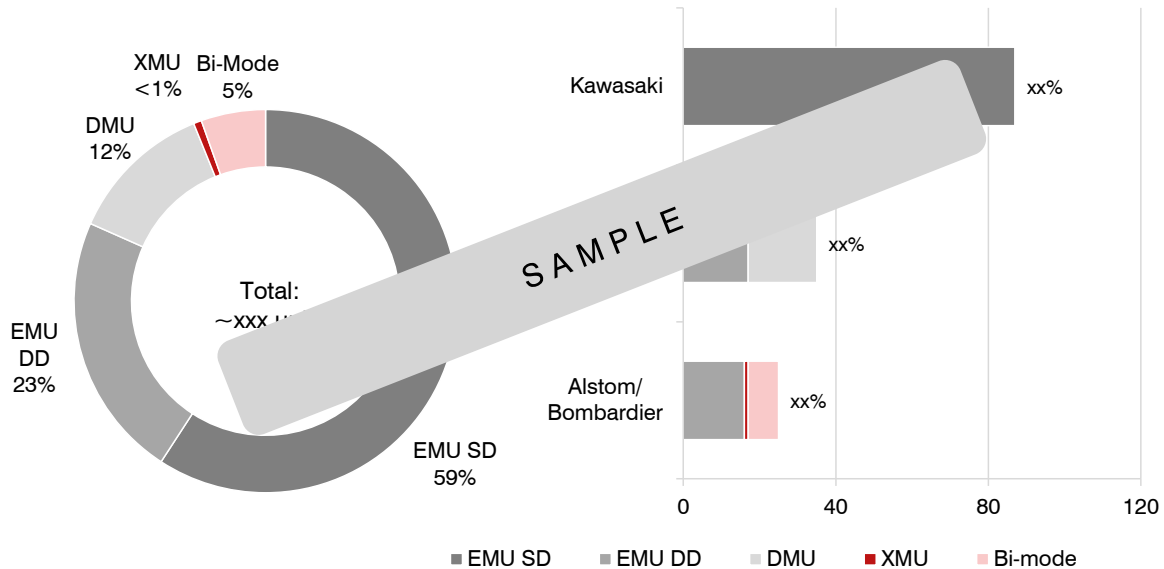
Even though the average age of the multiple unit fleet in North America is quite young, a substantial number of EMUs procured before [...].

[...]

2.1.4 Manufacturers

Between 2019 and 2023, approx. xxx multiple units were delivered to the North American countries. Single-deck EMUs made up more than half of this mix, while double-deck EMUs rank second with a little less than 25%. More than 10% of the vehicles delivered were DMUs, and bi-mode vehicles constituted around 5% of all deliveries in the past five years. In addition, a small fraction of the multiple units featured an alternative drive.

Market shares of multiple units in North America (deliveries 2019-2023; units)



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Figure 8: Market shares of multiple units in North America

The figure demonstrates quite clearly that the share of single-deck EMUs and market leader Kawasaki’s market share are the same, as the Japanese manufacturer was responsible for all deliveries in that segment. Stadler comes in second with a share of more than 20%, comprising deliveries for both double-deck EMUs and DMUs. The remaining stake in the market was held by the newly connected association of Alstom and Bombardier.

North America: Manufacturers		
Manufacturer	Activity	Units delivered
Kawasaki	- [...]	xx
	- [...]	
Stadler Rail	- [...]	xx
	- [...]	
Alstom/Bombardier	- [...]	xx
	- [...]	

Looking ahead to the future, deliveries of Alstom’s trains for the Tren Maya project will significantly increase in the short term. Stadler remains very present in regard to XMUs: Metra based in Chicago has already awarded a framework contract to Stadler for the deliveries of BEMUs. Additionally, the Swiss manufacturer will launch a BEMU version of its KISS double-deck train in California. This will also be complemented by additional deliveries of Flirt H2 trains.

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