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READING SAMPLE

## **WORLDWIDE MARKET FOR MULTIPLE UNITS**

**Market Volumes for OEM Business and After-Sales  
Service as well as Prospects for Market Developments  
of Multiple Units**

**2022**

**WORLDWIDE MARKET FOR MULTIPLE UNITS**

Market Volumes for OEM Business and After-Sales Service as well as Prospects for Market Developments of Multiple Units

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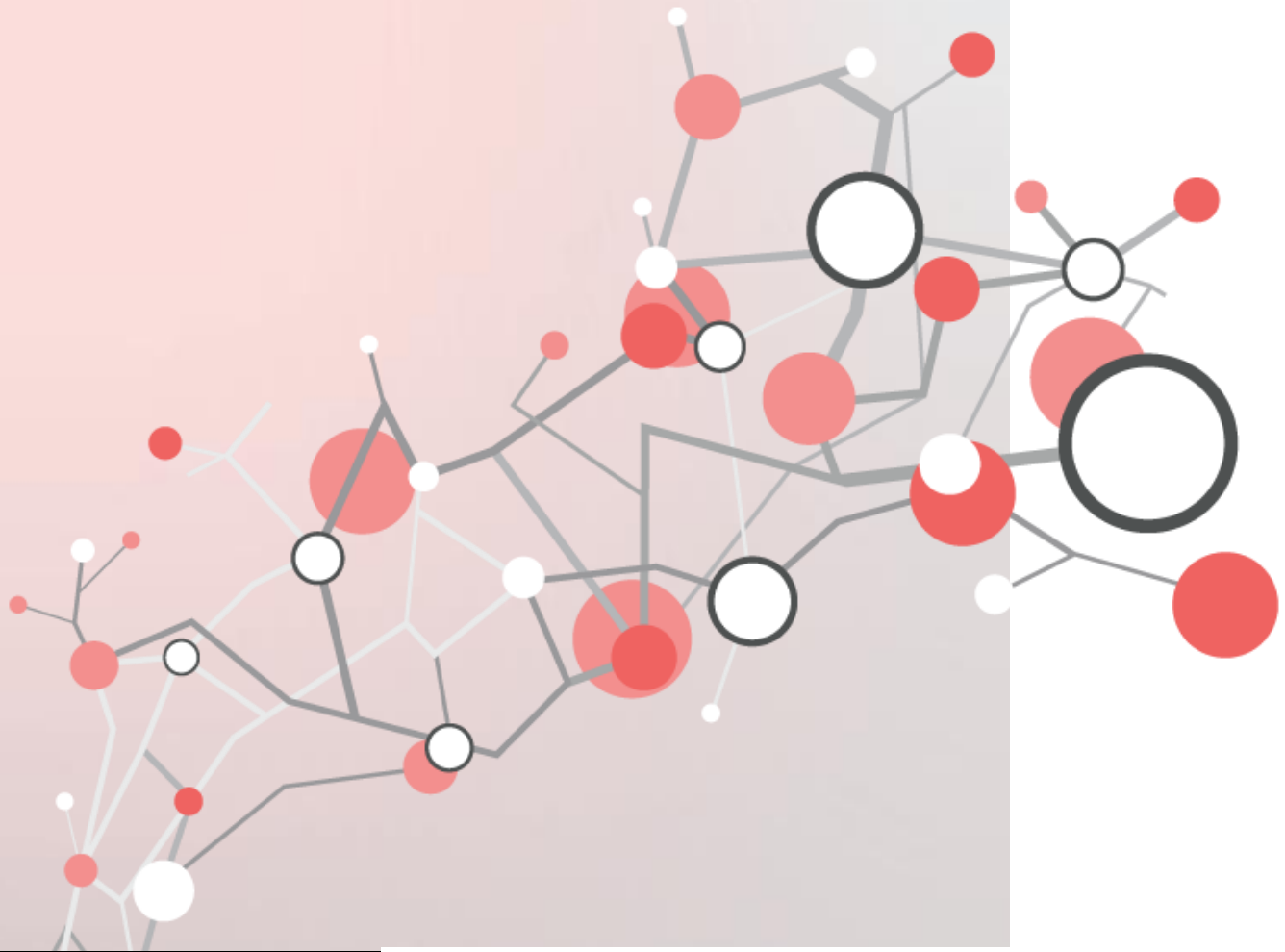
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## Multiple unit market in North America

## 5 Multiple unit market in North America

### 5.1 Region

#### 5.1.1 Overview

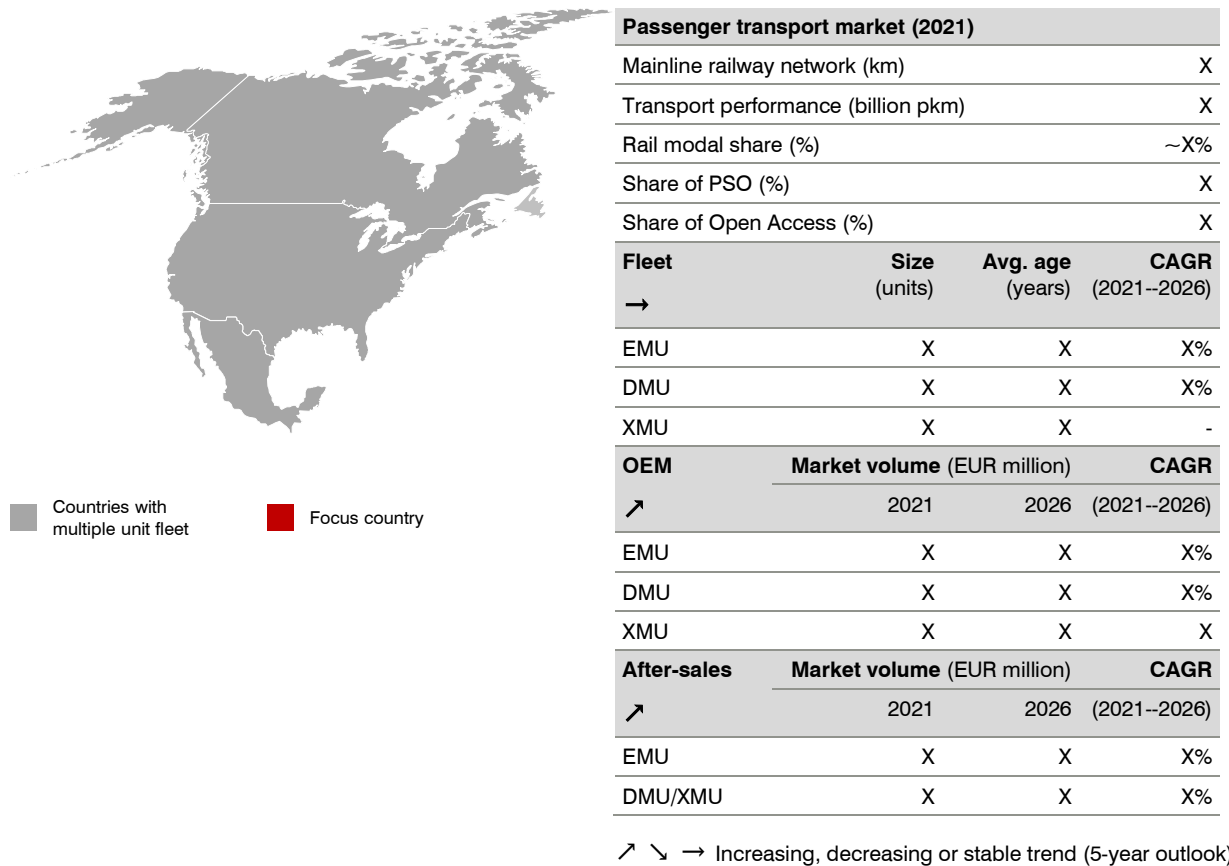


Figure 1: Market Overview in North America

The North America region consists of the three markets USA, Canada and Mexico, playing a subordinate role worldwide in passenger rail transportation compared to their size of the countries. The current fleet mostly consists of EMUs. The small number of DMUs is expected to slightly grow until 2026, making North America one of the few regions with a positive DMU outlook. With an average age of 16 years, the DMU fleet belongs to the youngest one in all regions.

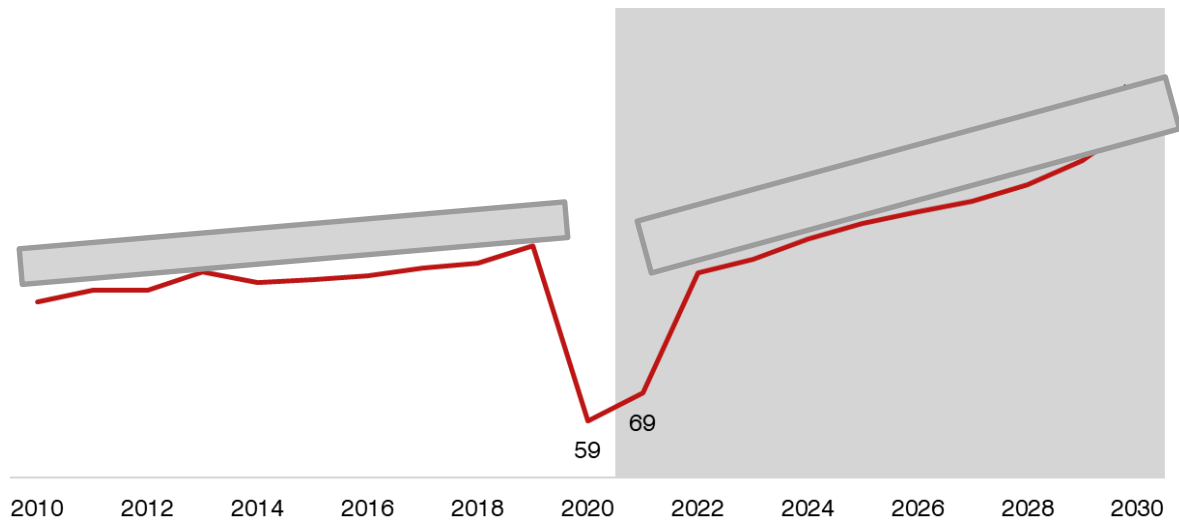
[...]

#### 5.1.2 Transport market

##### Transport performance

The passenger rail volume in North America grew from XX billion pkm in 2014 to XX billion pkm in 2019, which represents an annual growth of about X%. While rail plays a crucial role in freight transport in North America, rail is of little importance in passenger transport. This is due to the dominance of air and road transport especially in the long-distance transport segment in the USA.

Passenger rail transport performance in North America (Index 2010 = 30.0 billion pkm)



Source: National statistical offices, SCI Verkehr forecast

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Figure 2: Passenger rail transport performance in North America

This situation is not likely to change significantly in the next few years. Nevertheless, rail passenger transport performance in the region is expected to grow strongly until 2030. After some very sharp declines due to Covid-19, a return to pre-crisis levels is expected by 2024. In the long term, despite low population and urban population growth, the region grows relatively strongly, mainly due to large infrastructure projects in the US and Mexico. Hence, a comparatively large growth rate (of X% p.a. in transport performance is expected in the period 2025-30.

[...]

### Competition

In the U.S., regional passenger rail services are provided by governmental or quasi-governmental agencies. Commuter rail systems exist just in a few metropolitan areas. The most significant passenger rail transport systems are in the Northeast between Washington, Baltimore, Philadelphia, New York City and Boston, in the Chicago area, as well as in California, where the Coaster and Metrolink, connect the rural areas of San Diego and Los Angeles. Also notable is the new electrified commuter rail system in Denver, which was constructed in the 2000s to complement the city's light rail system. The San Francisco Bay Area additionally hosts several local rail operators.

[...]

### 5.1.3 Fleet overview

The North American fleet of multiple units includes an approximate XX units, operated primarily in the US. The other regional markets Mexico and Canada only contribute around XX units each. For the largest national market the US, the employment of locomotive hauled passenger coaches is still very common, particularly outside the North-eastern states on catenary free lines. With around XX DMUs in the total fleet, nearly XX units are propelled electrically accounting for around XX% of the fleet, underlining the employment of multiple units in electrified and urban environments.

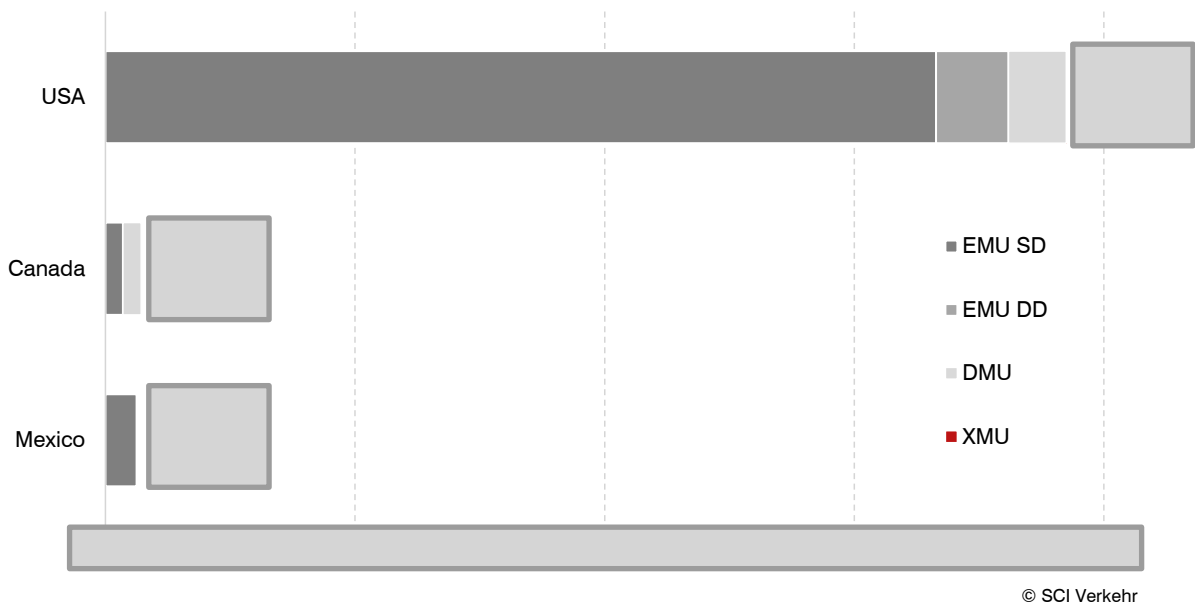


North America – Fleet segmentation of the installed base				
Segment	Fleet size (units)	Fleet size (cars)	Cars per unit	Average fleet age (years)
EMU SD	X	X	X	X
EMU DD	X	X	X	X
DMU	X	X	X	X
XMU	X	X	X	X
<b>Total</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>

Figure 3: Fleet segmentation of the installed base in North America

Unlike in Europe, regional train services in remote areas with DMUs are rather uncommon. The relevance of double deck multiple units in the US is still limited, it is however expected to increase in the upcoming years, with Stadler delivering KISS units to Caltrain and establishing a new production line. In addition, CRRC will deliver double deck commuter units for services around Chicago. Currently, there are only test trials with XMU in the region. It can however be expected with different manufacturers introducing XMU for the North American market, that his vehicle segment will gain in importance in the medium term.

**Fleet per country in North America (units)**



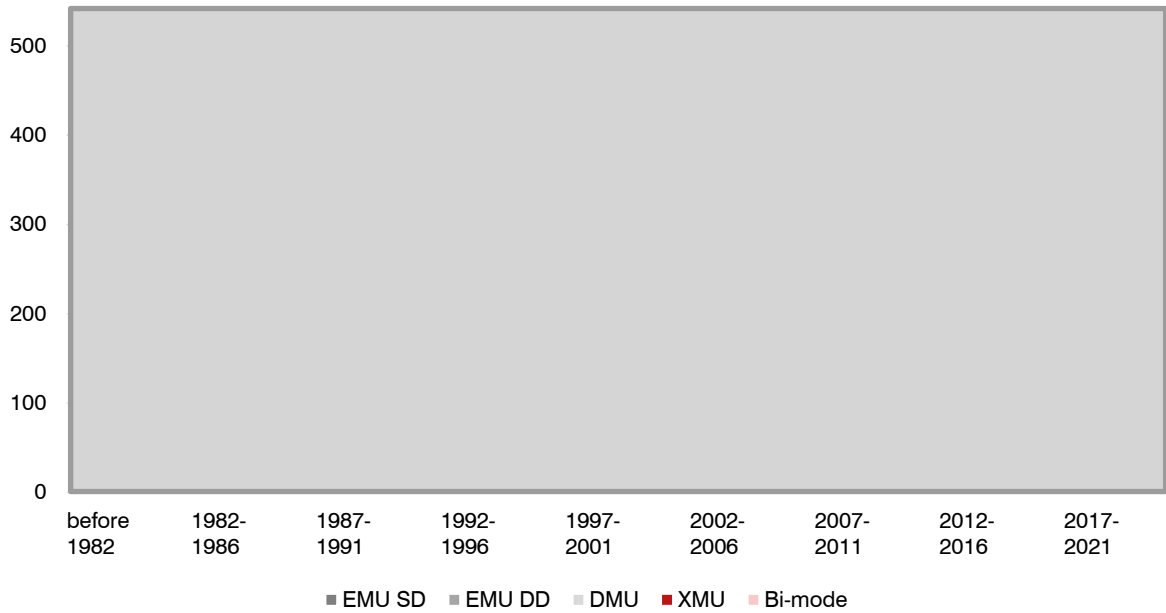
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Figure 4: Fleet overview in North America

As previously outlined, EMUs in the USA account for more than XX% of the entire North American multiple unit fleet. As commuter services are mainly located in the metropolitan areas, most of the vehicles are operated around large cities on the east coast of the USA. XX% of the installed base are distributed among only four major cities and their agglomerations:

[...]

Age structure multiple unit fleet in North America (units)



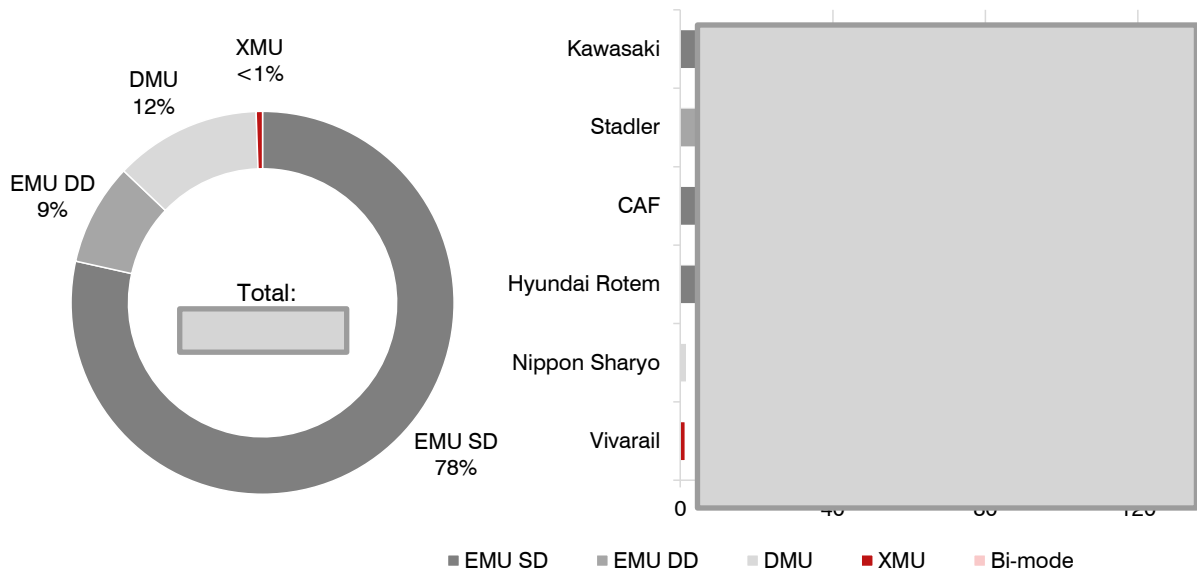
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Figure 5: Age structure multiple units in North America

5.1.4 Manufacturers

Various manufacturer took part in multiple units' deliveries in the past five years in the North American market, mainly from Japan, Western Europe and South Korea. Around XX% of the units delivered were within the EMU segment. **Kawasaki** remains the market leader, however, **Hyundai Rotem** lost market shares and **Stadler** and **CAF** are now in second and third place respectively compared to previous years. Stadler delivered almost all DMUs to the North American market. In the alternative drive segment, **Vivarail** delivered two BEMU to RDC in the United States, but the vehicle is so far only used for test and demonstration purposes.

Market shares of multiple units in North America (deliveries 2017-2021; units)



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Figure 6: Market shares of multiple units in North America

[...]

In North America, some of the most important multiple unit procurement projects include:

North America – Selection of multiple unit projects						
Segment	Type	Supplier	Status	Amount (units)	Delivery (from - to)	Description
EMU SD	M-8	Kawasaki	deliveries completed	XX	2019-2021	In 2016, the Connecticut Department of Transportation (CTDOT) ordered 60 additional M-8 EMU cars from Kawasaki to meet surging ridership demand on Metro North Railroad's New Haven Line.
EMU DD	KISS	Stadler	deliveries ongoing	XX	2020-2024	The KISS platform from Stadler is a double-deck EMU. It was originally designed for high-capacity services on suburban rail lines, but has expanded into further regional transport services ever since. [...]
DMU	Flirt	Stadler	first deliveries started	XX	2021-2023	The Flirt is a multiple-unit train platform designed for regional services from Swiss manufacturer Stadler. Most of the orders, especially in the European market, are for EMUs. [...]
Bi-mode	X'Trapolis	Alstom	ordered	XX	2023-2025	The X'Trapolis is a series of multiple-unit trains designed and built by Alstom. [...]

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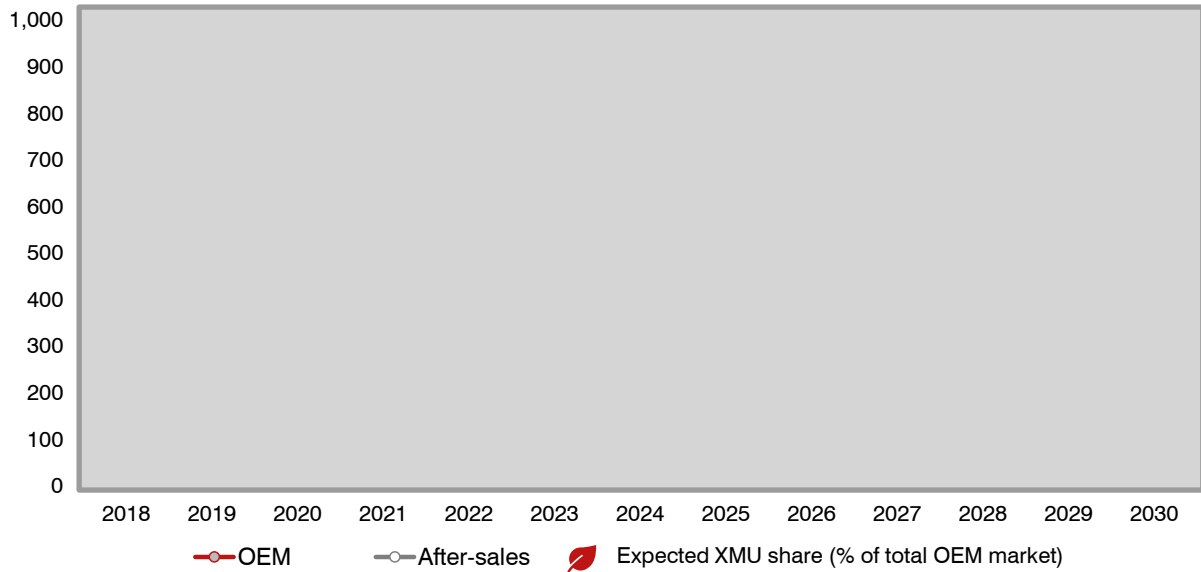
Figure 7: Selection of multiple unit projects in North America

### 5.1.5 Market outlook

Coming from a low regional market volume of around EUR XX million in 2021, SCI Verkehr expects sustained strong market growth within the 2020s, to more than EUR XX million until 2030. Across the region all national markets will show a growing market volume, however the US American market will generally account for around XX of the market. Given new procurements of DMUs, the fleet will grow in the years to come. As an example, Stadler’s first delivery of Flirt models to the USA for the TEX Rail commuter rail line in the Dallas/Fort Worth area will take place in 2022. Apart from electrically-operated conurbation services, DMUs have been procured for non-electrified lines in large commuter areas. These vehicles are often produced by European manufacturers.

[...]

Market development for new vehicles and after-sales services in North America (EUR million)



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Figure 8: Development of multiple unit market volume in North America

In comparison, the after-sales market is forecasted to show minor growth and range between EUR XX and XX million. This can be explained by the wide adoption of multiple units in the upcoming years that generally require less after-sales effort, in particular at the beginning of their vehicle lifetime.

North America - Current and future market volume for OEM and after-sales			
Market volume	New vehicles / OEM	After-sales business	Total market
2021 (EUR million)	XX	XX	XX
2026 (EUR million)	XX	XX	XX

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Figure 9: Current and future market volume for OEM and after-sales in North America.

The main drivers on regional level for the procurement of multiple units can be summarized as follows:

North America – Drivers of procurement for multiple units			
Drivers	Brief description (drivers sorted by relevance)	Relevance	Trend
Fleet structure	<ul style="list-style-type: none"> <li>– Demand for replacement procurements due to ongoing disposal of many older vehicle series on established networks in the USA.</li> </ul> <p>[...]</p>	●	
Infrastructure development	<ul style="list-style-type: none"> <li>– With the latest infrastructure of President Joe Biden, the rail infrastructure in the largest market US will benefit in a never seen manner. Also, Canada has pledged to increase funding for rail infrastructure.</li> </ul> <p>[...]</p>	●	
Environment and sustainability	<ul style="list-style-type: none"> <li>– The primary emphasis is still rather on expanding the rail system as a whole, before expanding alternative drives. However, few states in the US, notably on the east and west coast are launching pilot projects for alternative drives and intensify investments in electrification of existing lines.</li> </ul>	●	
Financial resources	<ul style="list-style-type: none"> <li>– Increased financial support from the federal governments in the US and Canada for cities and agglomerations. The state support is heterogenous, whereas densely populated blue</li> </ul>	●	

North America – Drivers of procurement for multiple units			
Drivers	Brief description (drivers sorted by relevance)	Relevance	Trend
	states provide funds for commuter and regional networks, others are lacking adequate funding. [...]		
Mobility demand	– There is demand for additional short corridor services throughout the USA, which includes both additional frequencies for existing routes and establishing new routes between major cities. [...]		
Relevance for procurements: ● very high → ○ none    5-year trend: ↑ strongly increasing → ↓ strongly decreasing			
			© SCI Verkehr GmbH

Figure 10: Drivers of procurement for multiple units in North America