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# **LIGHT RAIL VEHICLES – GLOBAL MARKET TRENDS**

Forecast, Installed Base, Manufacturers,  
Infrastructure and Rolling Stock Projects

**2024**



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## **LIGHT RAIL VEHICLES – GLOBAL MARKET TRENDS**

Forecast, Installed Base, Manufacturers, Infrastructure and Rolling Stock Projects

Cologne October 2024

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**Copy for:**

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This MultiClient Study “Light Rail Vehicles – Global Market Trends” offers an analysis and well-founded assessment of the market for light rail vehicles. SCI Verkehr has already compiled eight MultiClient Studies on this topic.

The market for LRVs is a niche market, which has grown in the past decade and is expected to proceed with its growth over the next 5 years, despite current political tensions and budgetary problems of municipalities. SCI Verkehr forecast a growth rate of 3.8% p.a. from 2023 to 2028 for the total market starting from EUR 6.5 billion.

**In concrete terms, this market study of LRVs includes:**

- An overview of the worldwide market for LRVs differentiated by region, including an in-depth analysis of all relevant national markets. Network length, installed base and average vehicle age in 2023 of cities operating a large LRT system are provided.
- Comprehensive analyses of the current fleet stocks in terms of quantities, age structures and as well as future procurement potential up to 2030. An analysis of the current market shares of important manufacturers as well as a forecast of future vehicle requirements of customers up to 2030.
- Contracted, announced and expected future new vehicle procurement projects in all cities of the world.
- An overview of the most important drivers behind procurement and refurbishment of LRVs in the individual regions.
- A summary of global LRT systems, future infrastructure projects, network lengths, and forecasts of network developments up to 2030.

This MultiClient Study is based on numerous information sources, which are continuously analysed and evaluated, and are recorded in SCI Verkehr’s database system.

All in all, the study provides a well-founded analysis of the worldwide market for LRVs. It provides key, comprehensive and well-structured information on this vehicle segment. The study also serves to support operational and strategic corporate planning of players in the transport and railway industry.

## 2. Europe

### 2.1 Total Market

#### 2.1.1 Market Overview

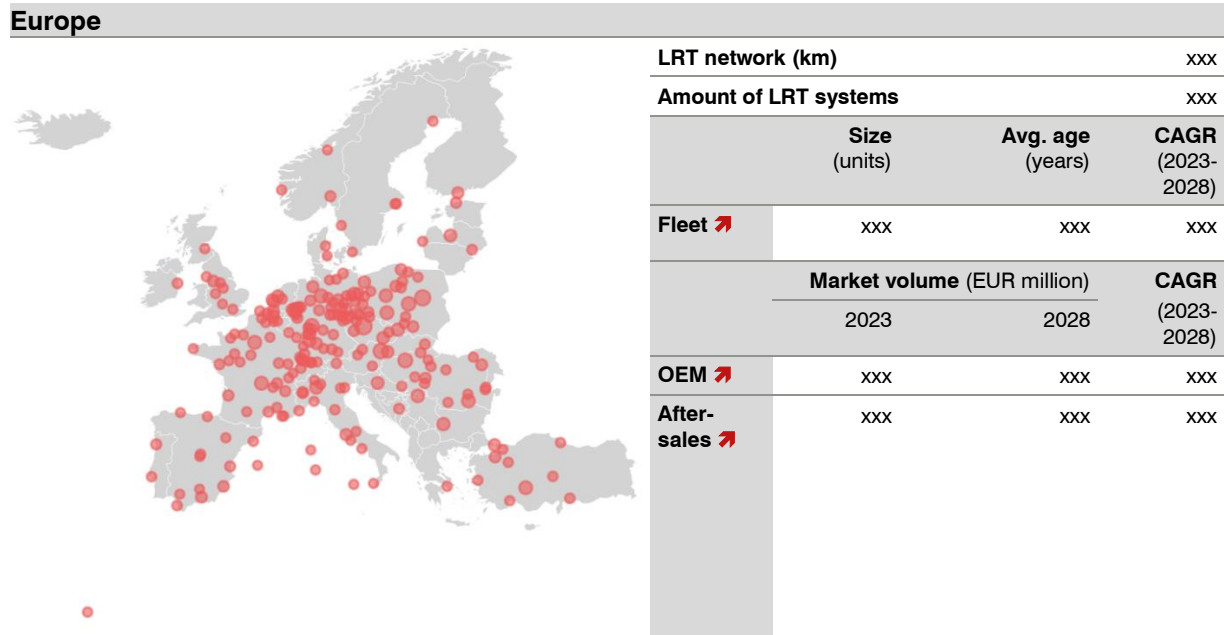


Figure 8: Europe: LRV market overview

Europe remains the largest LRV market in the world regarding the procurements of new vehicles and after-sales expenditures as well as the operating installed base.

SCI Verkehr expects an annual growth of around xxx% from 2023 to 2028 for the OEM market, starting already from a high level. The high OEM growth is mainly based on increasing procurement for replacement and higher unit price through technology upgrades of LRVs. Introduction of tram-train systems in Germany and Austria combined with a large order contribute to stable and high market size as well. The after-sales market is expected to grow above inflation with an annual rate of xxx%, driven by increase in installed base due to capacity increase, introduction of tram-train services and line extensions.

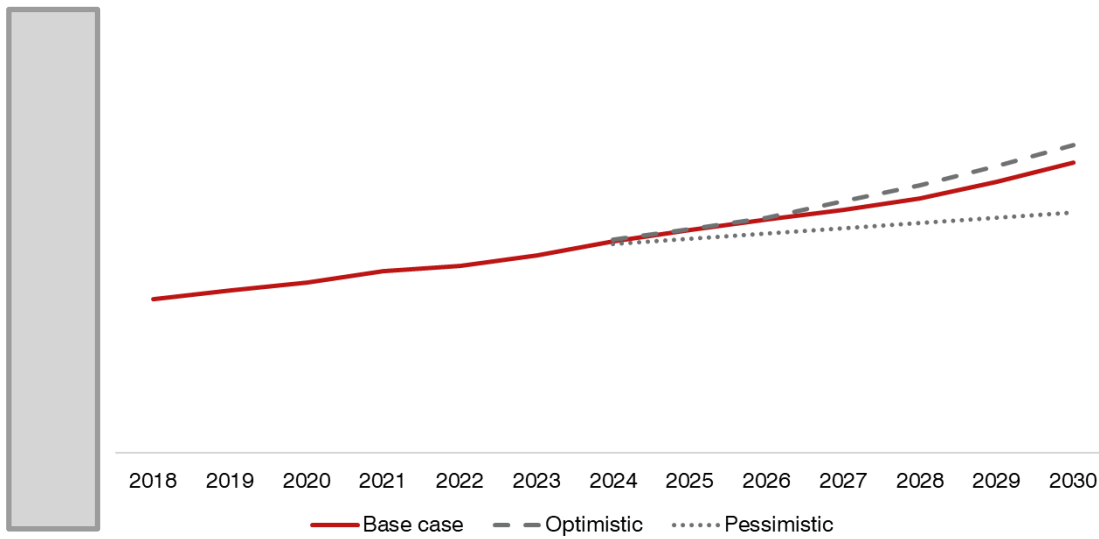
[.....]

#### 2.1.2 Infrastructure

Around xx km of light rail transit networks are currently in operation in around xx European cities. LRT networks in Europe are configured in various different gauges and different voltages. With nearly 65%, the standard gauge (1,435 mm) is the most common. Another fourth of the European LRT network is equipped with metre gauge, among them the networks in Belgrade, Mannheim, Helsinki and Zagreb being the largest. In total there are eight different voltages being employed in European networks. Around half of the network employs 600 V DC. Other common voltages are 750 V DC, 650 V DC, 660 V DC and 700 V DC sorted by reducing relevance.

The largest LRT networks in Europe are in Karlsruhe (because of tram-train network), Cologne, Berlin, Chorzow, Vienna and Budapest with all networks exceeding 150 km in network length. An additional 20 networks exceed 100 km in length.

**LRT system in operation in Europe (in km)**



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Figure 10: Europe: LRT system infrastructure development

[.....]

**Planned expansions for LRT networks in Europe in non-core countries**

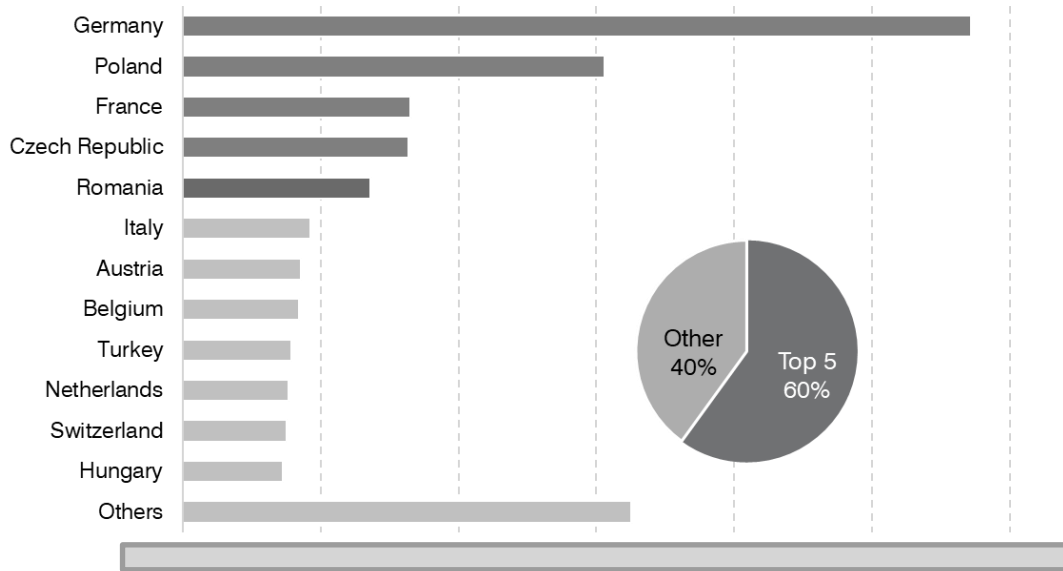
[.....]

| LRT infrastructure expansions in Europe by country and city (non-core countries) |                |                                   |                |                     |                    |  |
|--|----------------|-----------------------------------|----------------|---------------------|--------------------|--|
| Country  | City           | Project title                     | Distance in km | Expected completion | Project status     |  |
| Bosnia-Herzegovina   | Sarajevo       | LRT Sarajevo: Ilidza - Hrasnica   | 12.9           | 2025                | Bosnia-Herzegovina |  |
|  |                |                                   |                |                     |                    |  |
|  |                |                                   |                |                     |                    |  |
|  |                |                                   |                |                     |                    |  |
|  |                |                                   |                |                     |                    |  |
| United Kingdom   | Stoke on Trent | LRT Stoke on Trent: Initial plans | 40             | 2031                | Planning           |  |

**2.1.3 Fleet**

In Europe there are twelve national markets with a fleet of more than 500 units among the total of 29 countries operating LRT. Germany is hosting by far the largest fleet in Europe. Other large markets are Poland, France, Czech Republic and Romania. France has become the third largest European operator in the last decades with its investments in new light-rail infrastructure the past decade.

**LRV fleet per country in Europe** (in units, 2023)



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Figure 10: Europe: LRV fleet per country

The age distributions highlight that the largest operator countries in Europe have a large share of old vehicles that need to be replaced soon. Especially Poland’s, the Czech Republic’s, Italy’s and particularly the Romanian fleets are considerably old with an average age of more than xx years. The countries with smaller LRT systems have a rather younger fleet resulting from recent procurements due to infrastructure expansion. In addition, France having expanded the national LRT systems on a wider scale in the past decades possess a relatively young fleet with only xx years on average.

[.....]

Figure 11: Europe: LRV fleet age distribution

[.....]

Figure 12: Europe: LRV fleet age distribution by core market

[.....]

### 2.1.4 Manufacturers

[.....]

Figure 13: Europe: Market shares of manufacturer

The European market is highly diverse, featuring large companies serving multiple markets, smaller manufacturers focused on their domestic markets, and international players.

| Largest manufacturers of LRV in Europe |                              |                               |
|--|------------------------------|-------------------------------|
| Manufacturer                           | Activity (Brief description) | Units delivered (2019 – 2023) |
| Alstom                                 |                              |                               |
| CAF                                    |                              |                               |
| Stadler                                |                              |                               |

| Largest manufacturers of LRV in Europe |                              |                               |
|--|------------------------------|-------------------------------|
| Manufacturer                           | Activity (Brief description) | Units delivered (2019 – 2023) |

[.....]

### 2.1.5 Market volume & Development

[.....]

Figure 14: Europe: Market volume forecast

OEM market: The very high growing market volumes with an annual growth rate of xx% is mainly driven by replacement procurements and new tram-train project, starting from a high current level of EUR xx million. Many cities announced their plan to procure substantial numbers of new vehicles or have awarded contracts with a high number of optional vehicles which could be taken over next years, e.g. Prague. A large tram-train project, jointly procured from several cities in Germany and Austria will drive the market.

After-sales market: Slightly growing installed base and price increase in wages and spare parts drive the market and CAGR is expected to be xx% until 2028. The current market size is at around EUR xx million due to many vehicles in operation.

| LRV – Relevance and trends of drivers in Europe   |                   |           |       |
|---|-------------------|-----------|-------|
| Drivers   | Brief description | Relevance | Trend |
| Political support for urban rail public transport | –                 | ●         | ↗     |
| Fleet structure                                   | –                 | ●         | ↗     |
| Infrastructure development                        | –                 | ◐         | ↗     |
| Mobility demand                                   | –                 | ◐         | ↗     |

Relevance for procurements: ● very high → ○ none || 5-year trend: ↑ strongly increasing → ↓ strongly decreasing

In many non-focus countries large procurements projects are ahead. Projects for focus countries are shown in the dedicated subchapters.

| OEM projects for LRV in Europe without core countries |          |       |           |          |                |           |   |
|---|----------|-------|-----------|----------|----------------|-----------|---|
| Country   | City     | Units | Type      | Supplier | Go Opportunity | Delivery  | Remarks   |
| Bosnia-Herzegovina                                    | Sarajevo | 15    | Tango NF3 | Stadler  | 100%           | 2023-2024 | The Bosnian Canton of Sarajevo awarded Stadler a contract to supply 15 light rail vehicles in 2021. The order worth EUR 34.7 million is being financed with loans from the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD). Stadler had won the tendering process over Durmazlar, CAF, Skoda Transportation and Alstom. The three-car standard-gauge LRVs have a capacity of 180 passengers, including 79 seated, with six doors including four twin-leaf doors, air-conditioning systems, |

| OEM projects for LRV in Europe without core countries |      |       |           |          |                |          |   |
|---|------|-------|-----------|----------|----------------|----------|---|
| Country   | City | Units | Type      | Supplier | Go Opportunity | Delivery | Remarks   |
|   |      | 10    | Tango NF3 | Stadler  | 100%           | 2025     | USB sockets, a passenger information system and CCTV.<br>The Canton of Sarajevo in Bosnia has signed a contract with Stadler for the purchase of ten additional new light rail vehicles of the type Tango NF3. The total value of the contract amounts to EUR 29.7 million. |