UITP ADVANCING PUBLIC TRANSPORT

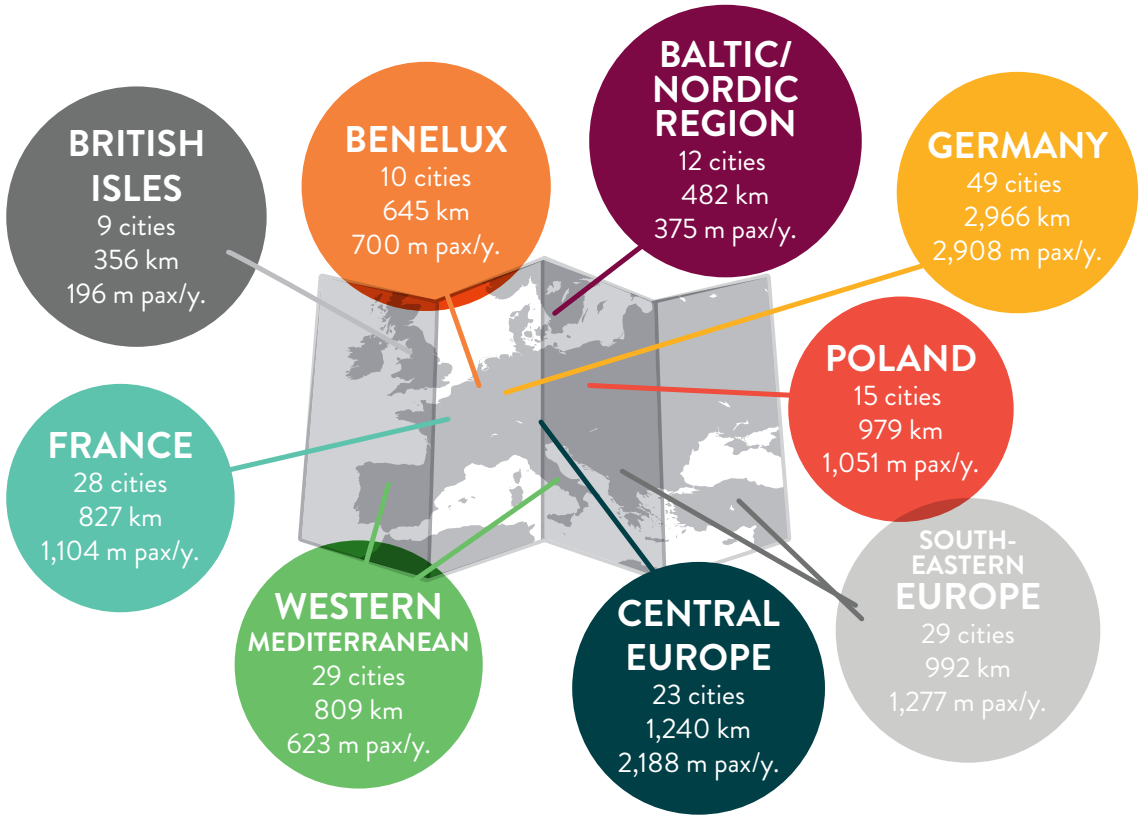
STATISTICS BRIEF

LIGHT RAIL AND TRAM: THE EUROPEAN OUTLOOK

NOVEMBER 2019

INTRODUCTION

Tram and light rail systems are available in 389 cities around the world, with more than half of them (204) in Europe. This Statistics Brief describes the evolution of light rail transit (LRT) in Europe since 2015[1], and provides a snapshot of the situation in 2018.



1 UITP collects rail data according to a three-year cycle (Metro, LRT and Regional & Suburban Railways)

A REMARKABLE RENAISSANCE

LRT has experienced a renaissance since the new millennium, with no less than 108 new cities (re)opening their first line, of which 60 are from Europe. This does not include new lines in existing systems and line extensions.

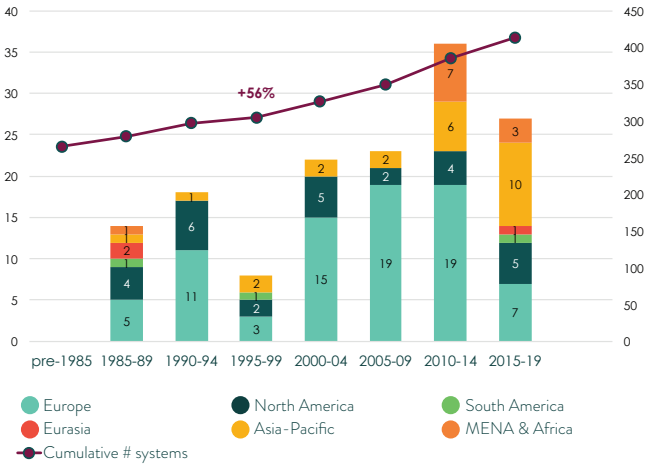


Figure 1: LRT system opening per half-decade, 1985-2019

Between 2015 and 2018, 420 km of new LRT opened in Europe. This makes up 36% of LRT line openings worldwide. 2017 was a watershed year as, for the first time, greenfield LRT projects in Asia-Pacific exceeded those in Europe.

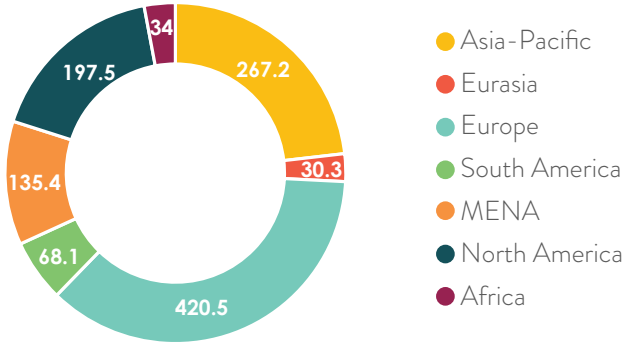


Figure 2: New LRT infrastructure (km), 2014-2018

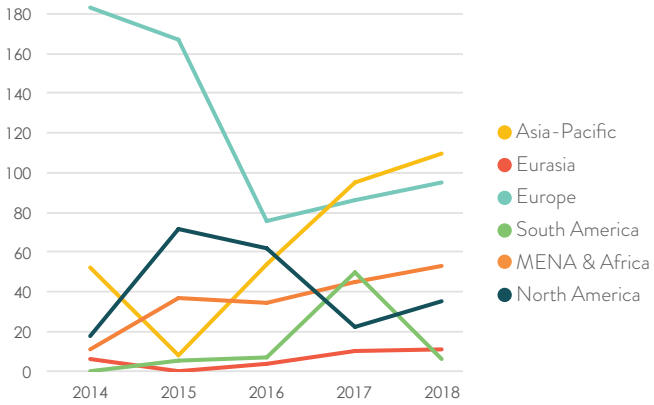


Figure 3: Evolution of LRT development (km)

RIDERSHIP

With a total annual ridership in Europe of 10,422 million in 2018, LRT carries as many passengers as metros and regional/commuter rail, and 10 times more passengers than air travel in Europe.[2] The *small* railways certainly do not play a *small* role in the sustainability of European cities.

The symbolic threshold of 10 billion passengers per annum was reached in 2016.

Germany and Central Europe make up half of all patronage, the rest being distributed as shown on Figure 4.

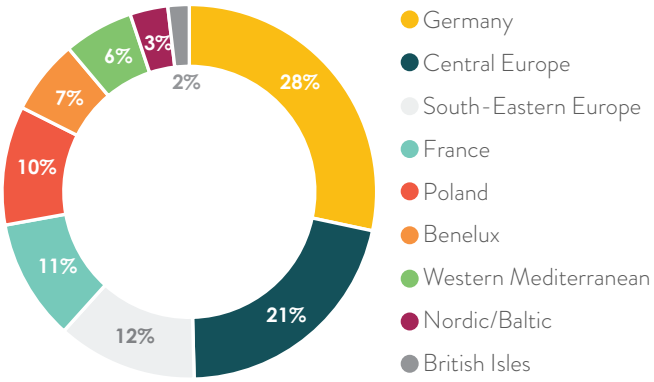


Figure 4: Ridership distribution[3] (m. passengers), 2018

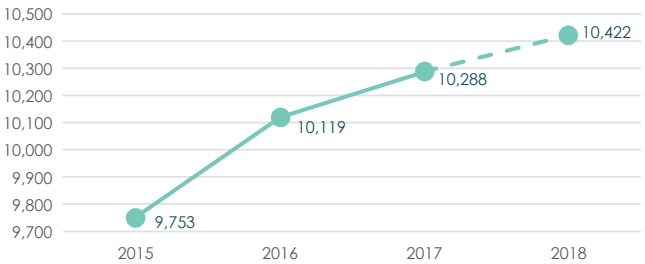


Figure 5: Ridership evolution in Europe (m. passengers), 2015-2018

2 Eurostat, 2017
3 2017 data used for France, Poland and Switzerland

Patronage data for 2018 is not yet available for all countries (France, Poland and Switzerland are missing). However, extrapolation yields a ridership growth of 6.9 % from 9,740 million in 2015 to 10,422 million passengers between 2015 and 2018 (See Figure 5). Demand growth is therefore 50% higher than the supply growth (km of line) over the same period of time, and signals a positive response from the travelling public.

Figure 6 shows different ridership evolution according to regions, ranging from a strong 17.5 % in the British Isles, where infrastructure growth was also the strongest, to 1.5% in Poland.

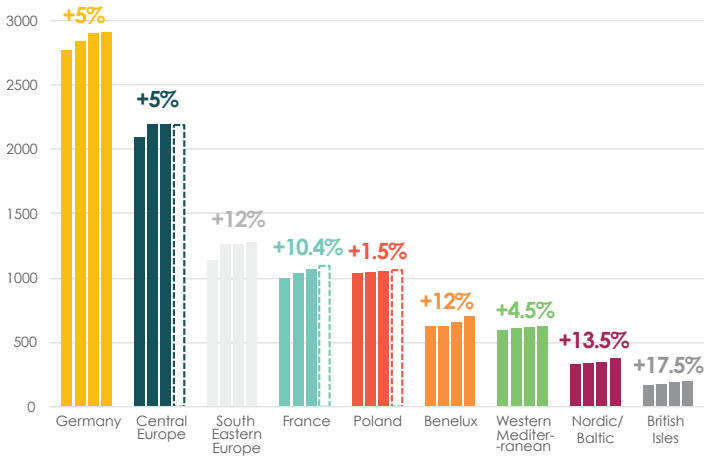


Figure 6: Ridership evolution by region (m. passengers) 2015-2018 [4]

With a ridership growth of 6.9% between 2015 and 2018, demand growth is 50% higher than the supply growth.

Data about passenger-kilometers is available for 17 countries. The average LRT journey in Europe is 3.27km.

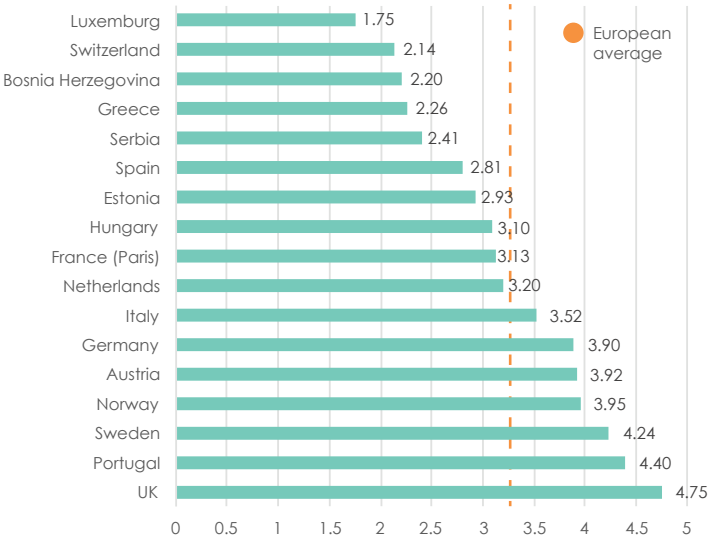


Figure 7: Average distance per trip in selected countries (km), 2017

4 Please note, the outlined bars indicate estimations

LRT popularity is best measured by the annual number of LRT trips per inhabitant per year. The annual use ranges from 10 to 182 trips and can be explained by a variety of factors, mainly by the system development and sophistication.

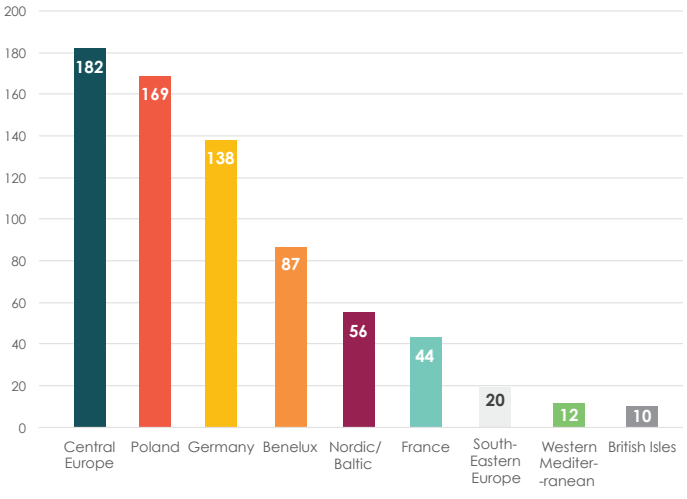


Figure 8: Number of LRT trips per year per inhabitant, 2017

The busiest LRT network is Budapest, Hungary, with 427 million passengers. All systems in Figure 9 are long-established tram networks. The only exception is Paris where LRT was re-introduced almost 30 years ago.

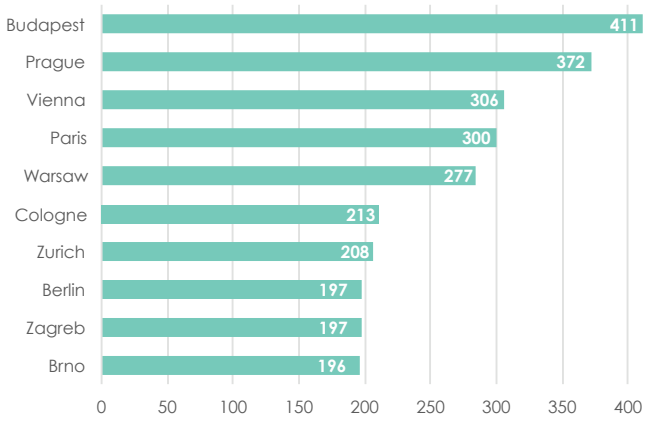


Figure 9: Top-10 busiest LRT systems in Europe (m. passengers), 2017

INFRASTRUCTURE

Between 2015 and 2018, LRT infrastructure in Europe grew by 3.9% from 8,943 km to 9,296 km.

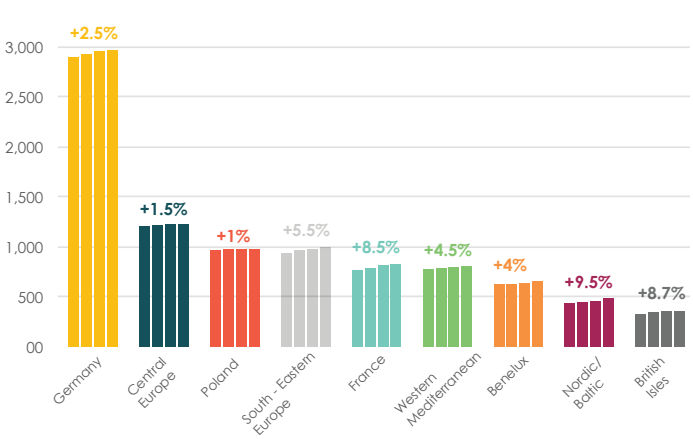


Figure 10: Evolution of line length in Europe (km), 2015-2018

There are notable differences between network structures across the countries. While the European average lies at 7.3 km, lines tend to be longer on average in countries with newer systems and limited number of lines, while older and more complex systems feature lower average line length.

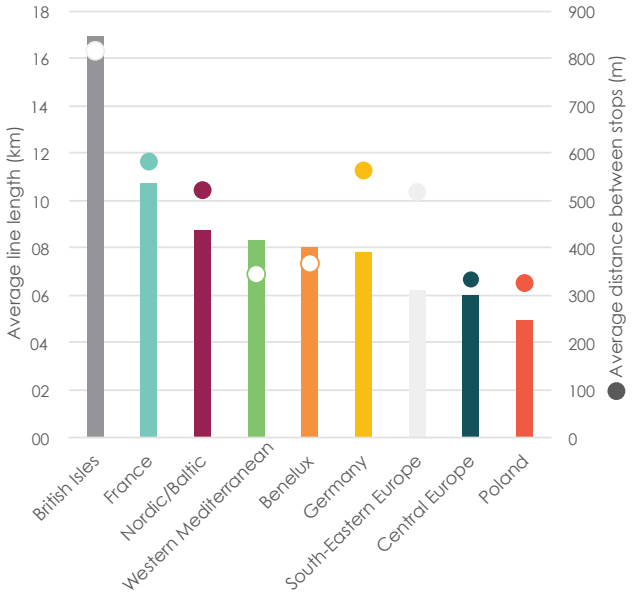


Figure 11: LRT network characteristics, 2018

The longest LRT network in Europe is Berlin (193 km) reaching third place worldwide after Melbourne (250km) and Saint Petersburg (246km).

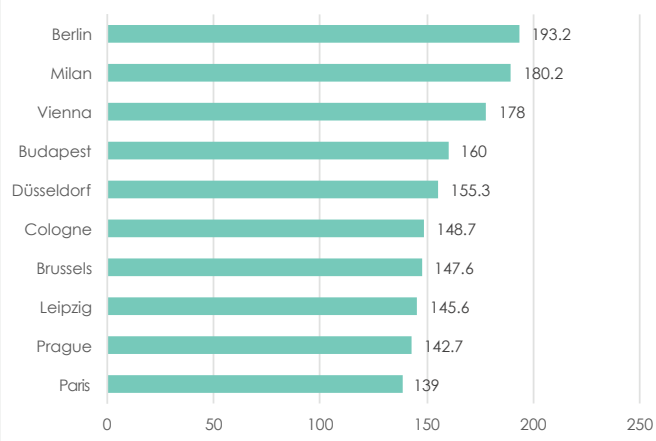


Figure 12: Top-10 longest LRT systems in Europe (km), 2018

MOBILE ASSET

The fleet available to operate the 1,276 LRT lines in Europe consists of 20,754 trams and light rail vehicles.

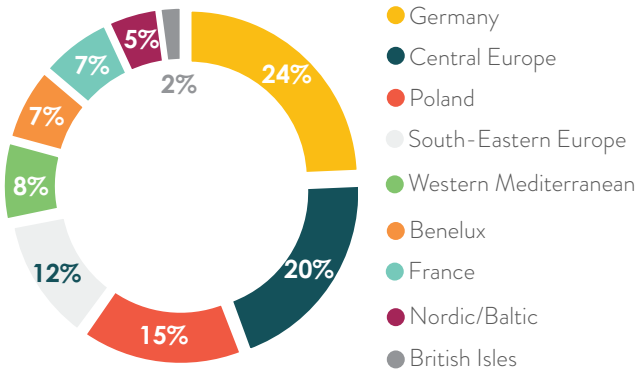


Figure 13: Distribution of mobile assets by European regions, 2018

Currently **51% of the total installed fleet in Europe are partial or full low-floor vehicles**, with 100% of the fleet in France, Spain, Ireland, UK and Norway being low-floor vehicles.

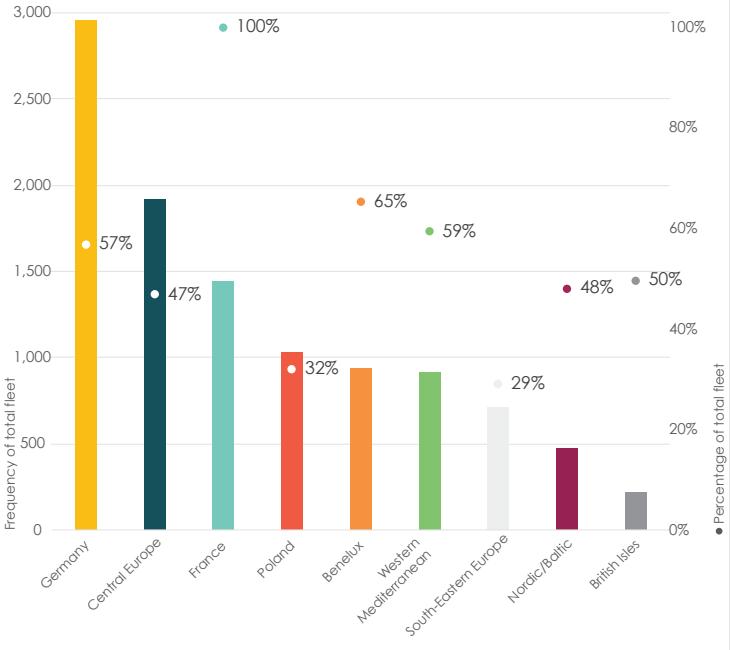


Figure 14: Low-floor vehicles by regions, 2018

A frequent rolling stock KPI is the average yearly mileage per unit. The average annual mileage per vehicle in Europe is 52,000 km, ranging between 38,700 km and 77,500 km. The discrepancy can be partly explained by the fleet age structure. In addition, this value is theoretical and based on the assumption that all vehicles are equally used.

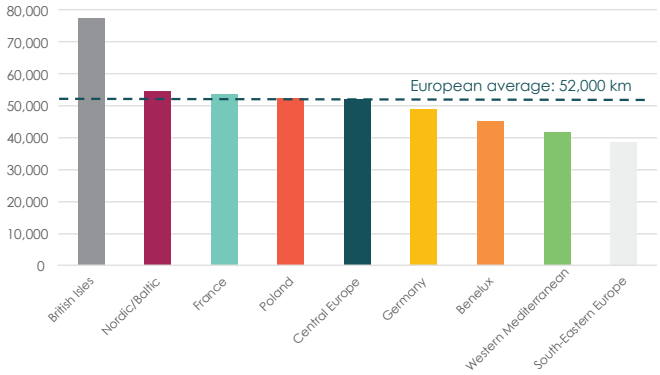


Figure 15: Average annual mileage per light rail vehicle (km), 2018

PERSPECTIVE

With continued pressure to reduce congestion, tackle air quality in cities and reduce greenhouse gas emission contributing to climate change, LRT will continue to obtain support of decision-makers and the travelling public in Europe. **LRT is clean and space-efficient.**

However, much attention and resources will go into the maintenance, modernisation and replacement of assets to keep ageing systems attractive and fit for operational purpose. For this reason, the growth of green-field projects in Europe will continue to slow down.

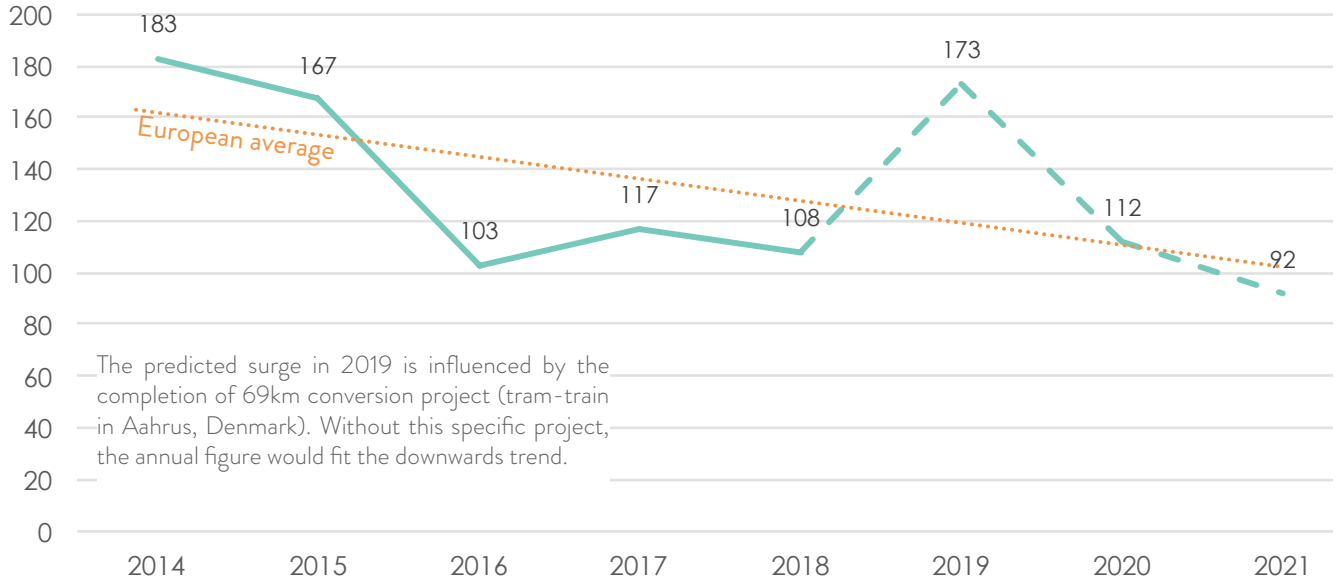


Figure 16: Forecast for new LRT infrastructure in Europe (km)

DEFINITION AND METHODOLOGY

The data for this document was extracted from a database compiled by UITP, using official company data and other authoritative sources (national statistics office, national associations, etc.).
LRT and trams are urban rail guided systems operated at least partly on line-of-sight, on infrastructure shared with other users and partly on their own infrastructure. Systems operated on guided rubber-tyred multi-articulated vehicles with Right-of-Way 2 are included.

Infrastructure predictions are based on scenarios developed from UITP's rail project database.
This Europe LRT landscape is based on the full LRT Statistics Report 2019 which includes further details and analysis.

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This Statistics Brief was prepared by the Rail Unit of the UITP Secretariat.

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