Conférence Européenne
des Directeurs des Routes

Conference of European
Directors of Roads

2021 Pan European Road Network Performance Report

CEDR Working Group Performance of Road Network

October 2022

Prepared by:	**CEDR WORKING GROUP PERFORMANCE (3.5)**	
Group leader	Jan Pettersson	Sweden
Group members	Lukas Kerbler	Austria
	Vesa Mannisto	Finland
	Hartmut Treichel	Germany
	Balazs Horvath	Hungary
	Pier Paolo Cartolano	Italy
	Sandro La Monica	Italy
	Jenne van der Velde	Netherlands
	Henrik Vold	Norway
	Piotr Ostaszewski	Poland
	Ana Faria Burnier	Portugal
	Anton Svigelj	Slovenia
	Xalo Fernández Villarino	Spain
	Kenneth Natanaelsson	Sweden
	Yan Cerf	Switzerland
	Nurettin Cirakli	United Kingdom - England
Other contributors	Niels Groenen	Belgium - Flanders
	Eric thor Straten	Denmark
	Mehis Leigri	Estonia
	G. Pétur Matthíasson	Iceland
	Cormac Synnott	Ireland
	Modestas Lukošiūnas	Lithuania
	Paul Mangen	Luxembourg
	Robert Zerafa	Malta
	Peter Schout	Netherlands
	Luis Gómez Diez-Madroñero	Spain

Approved by:	CEDR's EXECUTIVE BOARD on 22 September 2022
Edited and published by:	CEDR's Secretariat-General
CEDR report:	TR2022-02
ISBN:	979-10-93321-68-4

CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The 2021 report on the performance of the Pan European Road Network within participating CEDR countries is the seventh biennial report published by CEDR on this subject. The previous reports have focussed on the network of the European Union's TEN-T roads. However, the national networks of CEDR members do not always match those defined in the TEN-T network and CEDR's aim is to better reflect the strategic national roads of its members. For this version, and for consistency with previous versions the Pan European Road Network still mainly comprises the motorways and high-quality roads that form the TEN-T (Roads) network, and their equivalent strategic routes in non-EU countries.

CEDR's intention in producing these reports is to establish a stable set of data with which to monitor trends and identify changes in the performance of the network of European strategic roads amongst its members. The fact that this is the seventh biennial report illustrates the value that CEDR members attach to the information the report delivers and to its capacity to serve benchmarking purposes and to monitor the evolution of network performance over time. The report provides very detailed information on the structure and performance of the most important European strategic roads that is not available from other centralised information sources.

Data collected for this report are based on the CEDR performance reporting framework. This framework comprises a common Location Referencing Model for the road network and a set of common definitions for base data that are used to calculate performance indicators.

With 21 national road authorities (NRAs) providing data on a voluntary basis, the 2021 report covers approximately 77,000km of strategic roads which represents approximately 82% of the EU's TEN-T (roads) as a whole.

The network covered by the report represents some of Europe's most heavily used and significant roads with more than 34% carrying more than 20,000 vehicles per day and more than 33% has a traffic density of more than 6,000 vehicles per day per lane. Heavy Goods Vehicles (HGVs) make up a significant proportion of this traffic with more than 15% of the total traffic comprising HGVs on 25% of the network. The overall traffic demand has increased each year since 2011 before reducing between 2019 and 2021 which could be explained by the response to the Covid-19 pandemic. Nevertheless, national road administrations have planned capacity improvements on 31% of network sections.

Despite this level of demand, the rate of fatal accidents remains relatively low with an annual average across the network of approximately three fatal accidents per Billion Vehicle KMs travelled and these figures appear to have continued to gradually decline since 2015.

The ongoing support from CEDR members, and interest from third parties, shows that the Pan European Road Network Performance Report continues to be a useful analysis of the network at a European and national level. Furthermore, the performance report continues to evolve with new indicators being developed that look at safe and secure rest areas for truck drivers and the availability of facilities for charging electric vehicles and alternative fuels.

1 INTRODUCTION

1.1 The Pan European Road Network

The national road authorities (NRAs) of CEDR are responsible for the management and operation of the majority of high-capacity and strategic roads across Europe. The current Pan European Road Network comprises motorways and high-quality roads that are part of the European Union's TEN-T (Roads) network[1] and their equivalent strategic routes in non-EU countries. These are strategically important roads that:

- play an important role in long-distance traffic
- bypass the main urban centres on the routes identified by the network
- provide interconnection with other modes of transport
- link landlocked and peripheral regions to central regions of Europe

This network of roads offers users a high, uniform, and continuous level of services, comfort, and safety. It also includes infrastructure for traffic management, user information, dealing with incidents and emergencies and electronic fee collection, such infrastructure being based on active cooperation between traffic management systems at European, national, and regional level and providers of travel and traffic information and value-added services.

As presented in this report, the Pan European Road Network consists of two layers:

Core Network of the TEN-T: including the most important connections, linking the most important nodes, and is expected to be completed by 2030; and

Comprehensive Network of the TEN-T: Covering all European regions and is to be completed by 2050.

This report also identifies the non-Core Network which is made up of those parts of the Comprehensive Network that are not included in the Core Network.

The backbone of the Core Network is represented by nine Core Network Corridors, which are identified to streamline and facilitate the coordinated development of the Core Network. Oversight of the Corridors lies with European Coordinators, nominated by the European Commission.

1.2 Background to the Report

CEDR has long recognised the need for high-quality, comparable information about the performance of the Pan European Road Network and has, therefore, undertaken work to develop a simple, low-cost performance reporting framework that could be used by all members to provide such data.

This framework comprises a common location referencing model[2] for the Pan European Road Network and a set of common definitions for base data that is used to calculate performance indicators. The performance reporting framework has been the basis of the biennial CEDR report on the performance of the Pan European Road Network since 2009. The benefit of this framework is that:

[1] 'Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network'

[2] The methodology for the definition of the model is documented in the report '*TERN Location Referencing Model: Handbook & Implementation Guidance*' published by CEDR's Planning Working Group in 2008.

- all data is referenced to a common, stable location referencing model,
- all data is based on common data definitions, and
- data is provided directly by NRAs.

The framework therefore improves data quality and consistency and makes comparison of this information more meaningful.

1.3 Purpose the Report

The 2021 Pan European Road Network Performance Report is the seventh biennial report published by CEDR on the performance of the Pan European Road Network within CEDR participating countries. Since its inception, the scope of the report has evolved to include new aspects of network performance that reflect both CEDR's strategic priorities and matters of common interest amongst its members.

CEDR's intention in producing these reports is to establish a stable set of data with which to monitor trends and identify changes in the performance of the Pan European Road Network. As such, the report may provide a useful source of information for individual national road authorities (NRAs), regulatory bodies, and other stakeholders.

1.4 Structure of the Report

The document is divided up into six main sections and six annexes.

Section 2 provides general information about the network, including the Core Network and Core Network Corridors, and describes the general characteristics of the network in terms of road type, physical environment, number of lanes and planned capacity improvements.

Section 3 describes the network infrastructure and services including bridges, tunnels, use of intelligent transport systems (ITS), as well as rest areas and facilities for road users.

Section 4 analyses the performance of the Core Network Corridors in terms of traffic flow, proportion of heavy goods vehicles (HGVs) and fatal accident rate.

Section 5 describes the performance of the network, as a whole and at a national level, in terms of traffic flow, traffic density, proportion of HGVs, road transport mileage and fatal accident rate.

Section 6 provides an overall summary and conclusions.

Section 7 describes planned and potential future development of the report.

The methodology applied to the data collection process is described in **Annex 1**. The definitions for the collected data are provided in **Annex 2**.

Detailed national data for each indicator is provided in **Annex 3** and Thematic maps showing indicators at link level on the whole network are given in **Annex 4**.

Maps showing the Core Network Corridors and their length within the participating countries are provided in **Annex 5**.

Annex 6 concludes the report by providing background information on key socio-economic indicators and on the national road network of each participating country together with a brief profile of the national road authority.

1.5 Online Web Map

GIS technology has long been valued as a means of enhancing communication and collaboration in decision-making, effectively managing resources and assets, enhancing the efficiency of workflows, and improving the accessibility of information to the public.

The development of web maps further increases the possibility of information-sharing as users do not need to purchase and install software and become GIS experts since they are made available through a regular web browser with a simple, user-friendly interface.

A GIS web map has been developed to support the visualisation of collected data and to give higher visibility to the performance reports.

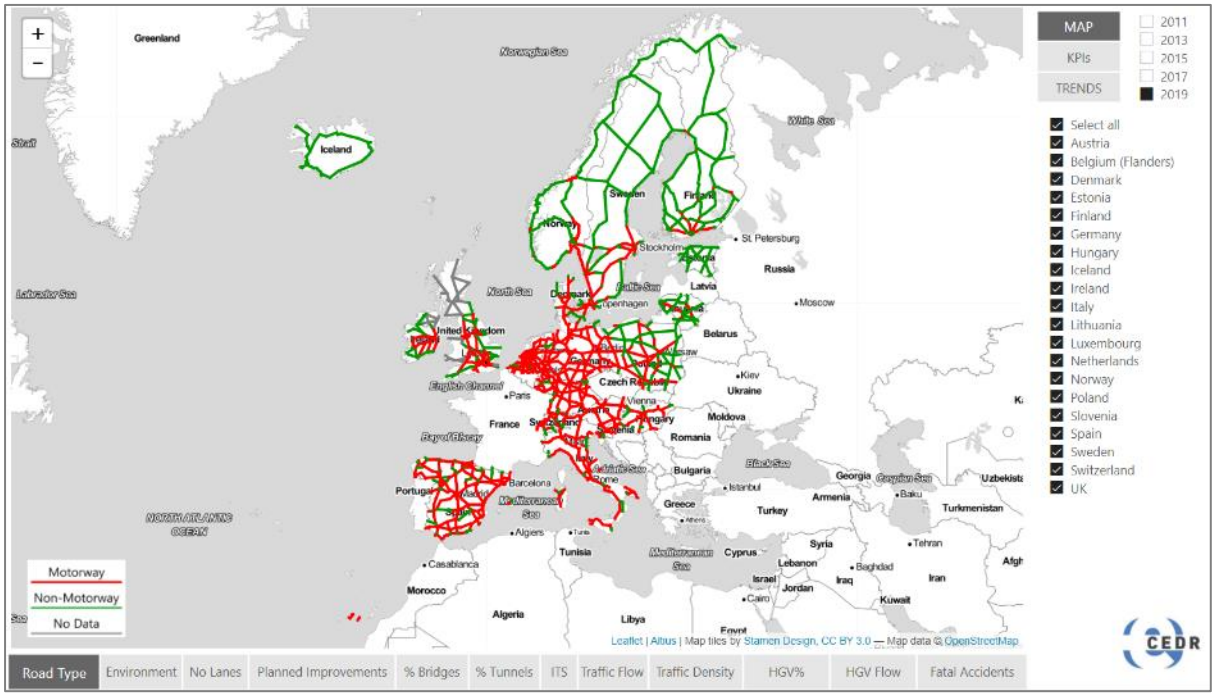


Figure 1 - CEDR Pan European Road Network GIS web map

The web map displays the GIS layer of CEDR's logical network, in conformity with CEDR's Location Referencing Model, and allows for the visualisation of thematic maps showing road performance indicators at link level and for different years. It also supports graphical reporting of network level data, KPIs and trends.

The online web map is published on the CEDR website at https://cedr.eu/ten-t-roads-performance-gis-web-map.

1.6 Participating Countries

In total, 21 countries voluntarily provided data for the 2021 report representing approximately 77,000km of the strategic roads, which is approximately 82% of the TEN-T. Table 1 summarises the countries that have been included in the reports published since 2009.

Table 1 - Countries participating in the Pan European Road Network Performance Reports

Country	2009	2011	2013	2015	2017	2019	2021
Austria	■	■	■	■	■	■	■
Belgium (Flanders)			■	□	■	■	■
Belgium (Wallonia)	■	■	■	□	□	□	□
Bulgaria					□	□	□
Cyprus	■	■	□	□	□	□	□
Czech Republic					□	□	□
Denmark	■	■	■	■	■	■	■
Estonia	■	■	■	■	■	■	■
Finland	■	■	■	■	■	■	■
France	■	■	□	□	□	□	□
Germany	■	■	■	■	■	■	■
Greece	■	■	■	■	■	□	□
Hungary	■	■	□	□	■	■	■
Iceland	■	■	■	■	■	■	■
Ireland		■	■	■	■	■	■
Italy	■	■	■	■	■	■	■
Latvia					□	□	□
Lithuania	■	■	■	■	■	■	■
Luxembourg	■	■	■	■	■	■	■
Malta			■	■	□	■	■
Netherlands			■	■	■	■	■
Norway	■	■	■	■	■	■	■
Poland				□	■	■	■
Portugal					□	□	□
Romania					□	□	□
Slovenia	■	■	■	■	■	■	■
Slovak Republic					■	□	□
Spain	■	■	■	■	■	■	■
Sweden	■	■	■	■	■	■	■
Switzerland			■	■	■	■	■
United Kingdom	■	■	■	■	■	■	■

■ Network and updated data included in analysis
□ Network included in maps, but no data included in the analysis

As far as data coverage is concerned, it should be noted that:

1. For Belgium, only the Flanders Agency for Roads and Traffic (AWV[3]) contributed to the 2021 report. Consequently, all Belgium (network and traffic) data in this report relate to Flanders region only.
2. For Italy, as in previous reports, only Anas[4] contributed to the 2021 report. Consequently, all Italy (network and traffic) data in this report relate to those parts of the TEN-Tthat are managed by Anas.
3. For the United Kingdom, only National Highways[5] contributed to the report. Consequently, all United Kingdom data relates only to those parts of the strategic road network in England that were part of the TEN-T prior to the UK's departure from the EU.
4. In 2021, a new state-owned infrastructure company (Autobahn GmbH) took over responsibility for the administration of the federal motorways in Germany. As a result of this transition, Germany was only able to provide partial data for the 2021 report.
5. Portugal have indicated that they intend to participate in future reports.

More detailed background information about the participating countries is included in Annex 6.

[3] The Agency for Roads and Traffic (AWV) is an internal autonomous agency that manages about 7000 km of regional roads and motorways and about 6,700 km of cycle paths. The Agency wants to realise safe, smooth and sustainable mobility for all road users in Flanders.

[4] ANAS S.p.A. is an Italian government-owned company deputed to the construction and maintenance of Italian motorways (partly managed by Atlantia SpA through its subsidiary Autostrade per l'Italia S.p.A.) and state highways under the control of Italian Ministry of Infrastructure and Transport.

[5] National Highways, formerly the Highways Agency and later Highways England, is a government-owned company charged with operating, maintaining and improving motorways and major A roads in England.

2 ABOUT THE NETWORK

The current Pan European Road Network is shown in Figure 2 and largely mirrors the TEN-T as of October 2022.

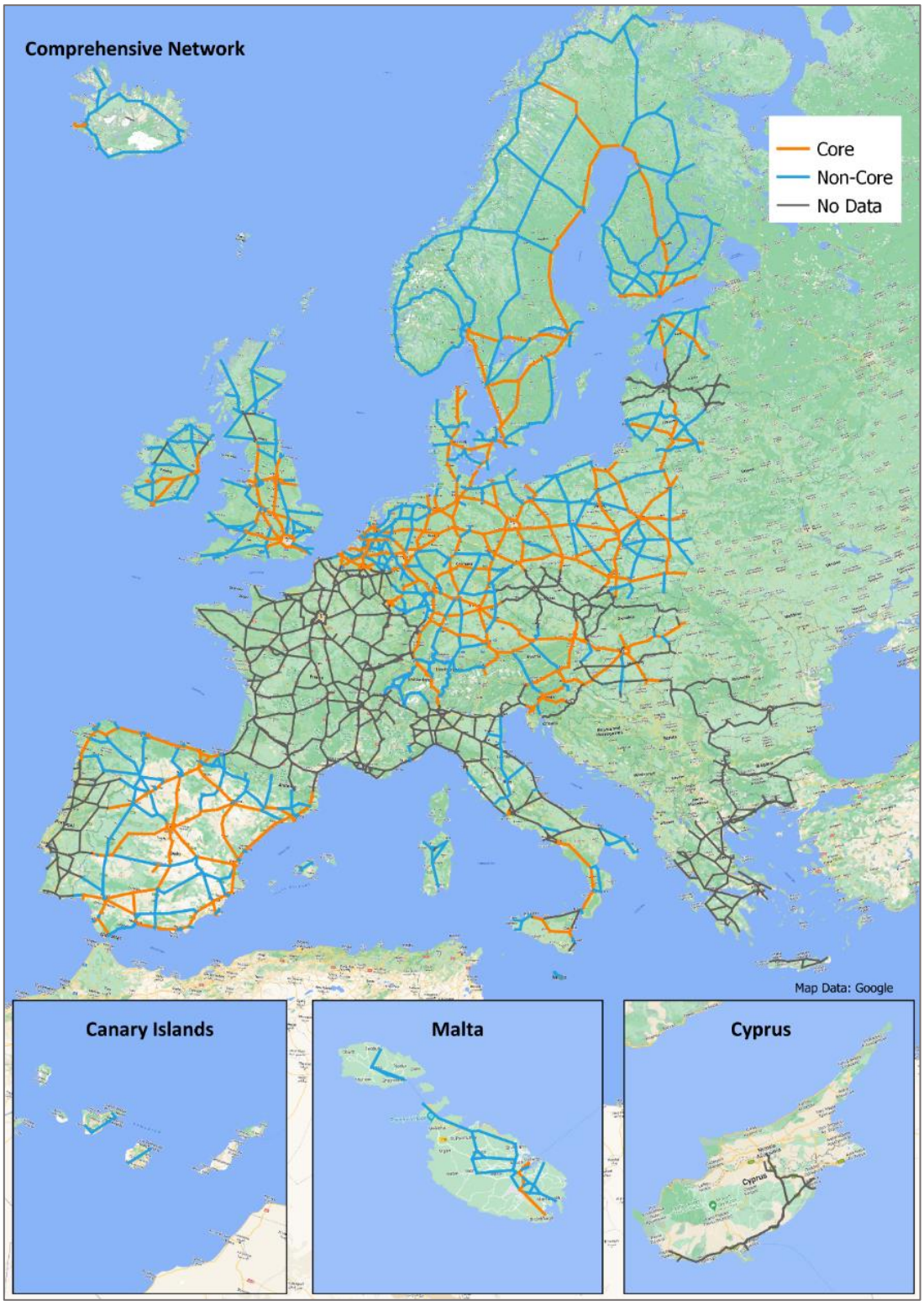


Figure 2 - The Pan European Road Network

The length of TEN-T Core and Non-Core Network in each of the participating countries, and the proportion of the Core and Non-Core Networks with respect to the Comprehensive Network, is shown in Figure 3. The percentages show the proportion of the network that is included in the Core Network in each country.

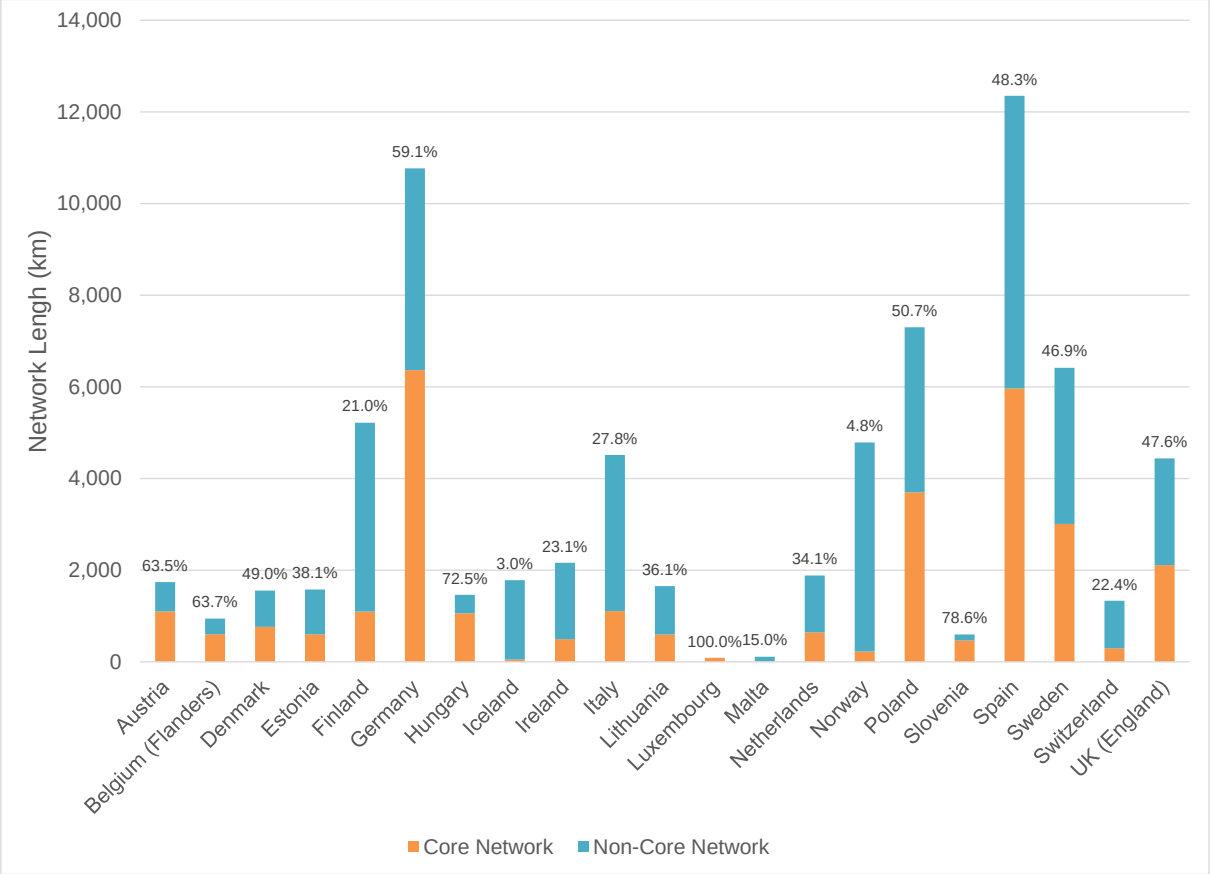


Figure 3 - Comparison of length of Core and Non-Core Sections

The countries with the greatest extent of TEN-T roads are Spain, Germany and Poland. Countries with highest proportion of Core Network are Luxembourg (100%), Slovenia (79%) and Hungary (72%) while Iceland (3%) and Norway (5%) have the lowest shares. However, it should be noted that only 90km of strategic roads in Luxembourg are part of the TEN-T and comprise only 0.3% of the Core network.

The correlation between the length of the PERN and the surface area of each participating country is shown in Figure 4. It can also be seen that most of the participating countries have a surface area of less than 100,000 km^2 and a network shorter than 2,200 km. The trend line clearly shows that the length of the network is proportionate to the size of the country.

Moreover, this figure shows how the countries form two groupings based on their surface area and length of network: bigger countries (i.e. those with a surface area greater than 100,000 km^2), which can be further broken down into countries with a relatively long network (above the trend line) and countries with a relatively short network compared to their surface area (below the trend line), and smaller countries (i.e. those with a surface area smaller than 100,000 km^2).

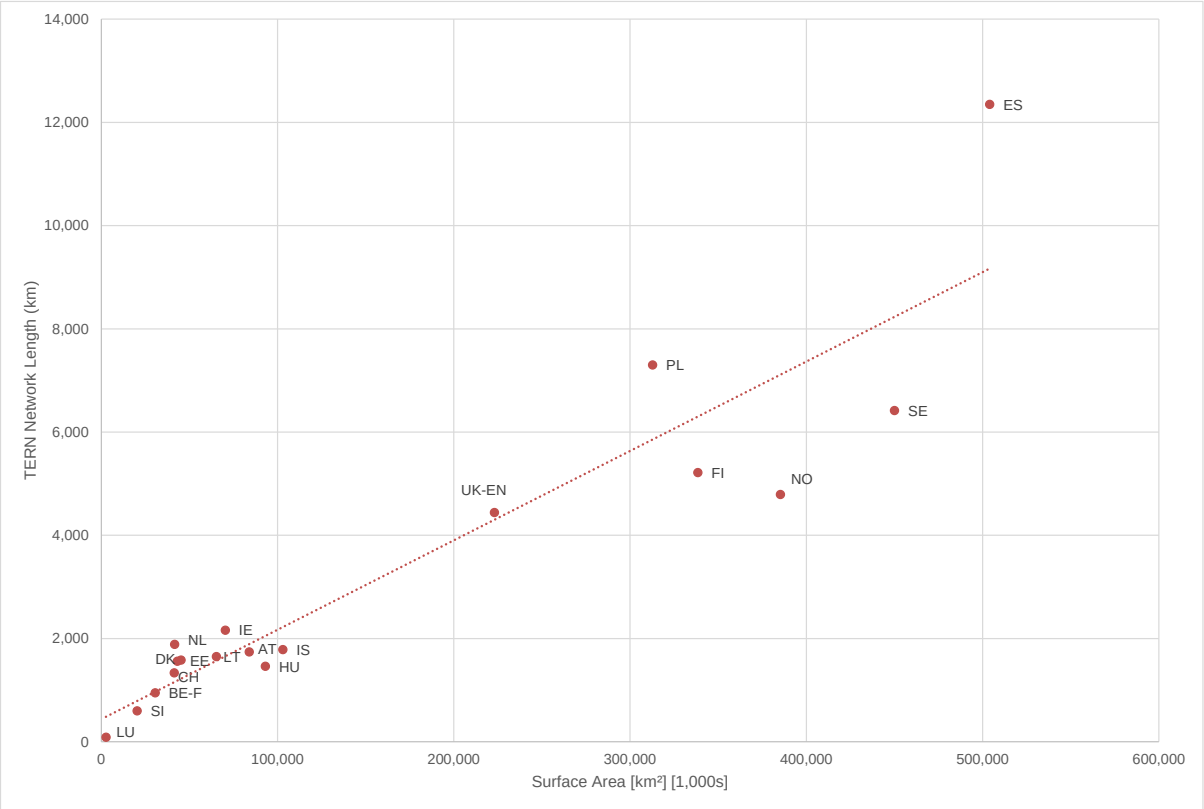


Figure 4 - Comparison of the length of the Pan European Road Network and the surface area of CEDR countries

2.1 Core Network Corridors

The nine Core Network Corridors (CNCs) are shown in Figure 5. The concept of the CNCs was introduced in 2014, are the backbone of the TEN-T Network. Individual maps of the CNCs are provided in Annex 5.

Table 2 shows the length of the CNCs by road type covered by this report. It should be noted that some road sections belong to more than one corridor and some sections to none, therefore, the total CNCs' length cannot be computed by summing up the lengths of the individual corridors. Moreover, due to lack of information on some corridor sections, the total length of each corridor could be underestimated.

Overall, Core Network Corridors account for 38% (28,897 km) of the entire total network covered by the 2021 report.

Section 4 compares the performance of the nine CNCs in terms of traffic, HGVs and accidents.

Table 2 - Length of Core Network Corridors by Road Type

Corridor	Total Length (km)		
	Motorway	Non-Motorway	Total
Atlantic	2,474	7	2,481
Baltic-Adriatic	2,380	196	2,576
Mediterranean	4,385	103	4,488
North Sea-Baltic	4,710	1,362	6,072
North Sea-Mediterranean	1,014	85	1,099
Orient/East-Med	1,883	77	1,960
Rhine-Alpine	1,404	42	1,446
Rhine-Danube	2,041	88	2,129
Scandinavian-Mediterranean	5,169	1,477	6,646
All	**25,460**	**3,437**	**28,897**

Figure 5 – TEN-T Network Road Corridors

2.2 Road Type

Given the importance of the Pan European Road Network in providing inter-urban connectivity at a European level, most of the network is motorway (61%) as indicated in Figure 6.

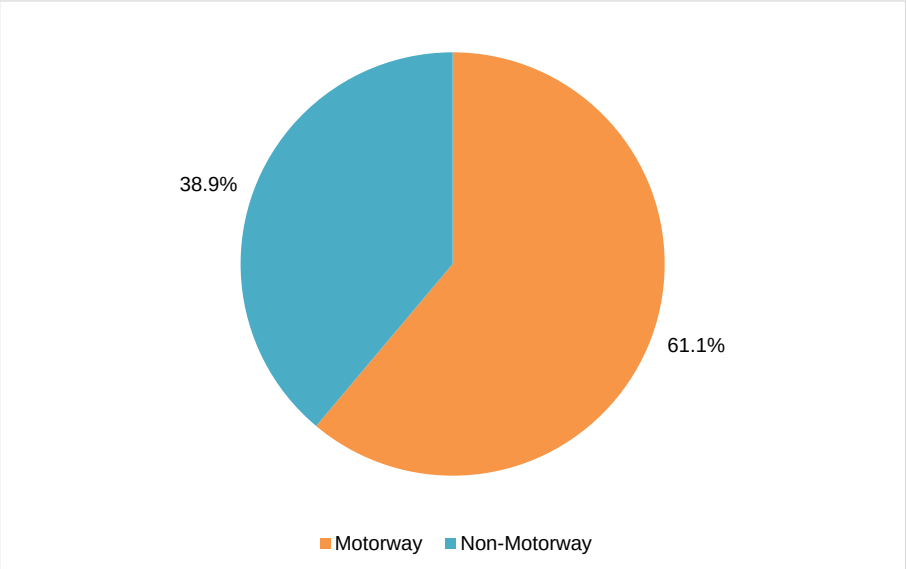


Figure 6 - Distribution of road types on the Pan European Road Network

The split between motorway and non-motorway roads at a national level is shown in Figure 7. In Austria, Luxembourg, and the Netherlands, the TEN-T consists entirely of motorways. In contrast, in Estonia, Iceland and Malta the TEN-T is almost entirely made up of non-motorway roads.

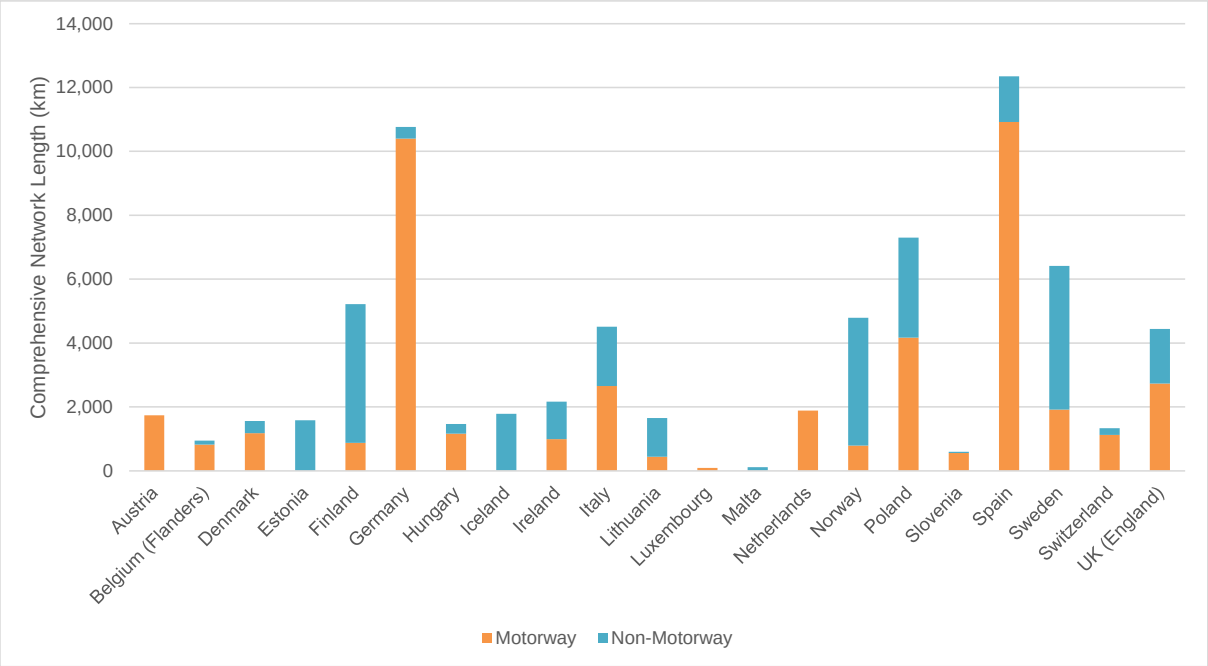


Figure 7 - Distribution of road types on the Pan European Road Network by country

The comparison between the composition of Comprehensive, Core and Non-Core networks shown in Figure 8 indicates that the proportion of motorways on the Comprehensive Network as a whole is 61%. The Core Network is predominantly made up of motorways (86%) while the Non-Core Network is more evenly split between motorways (43%) and non-motorways (57%).

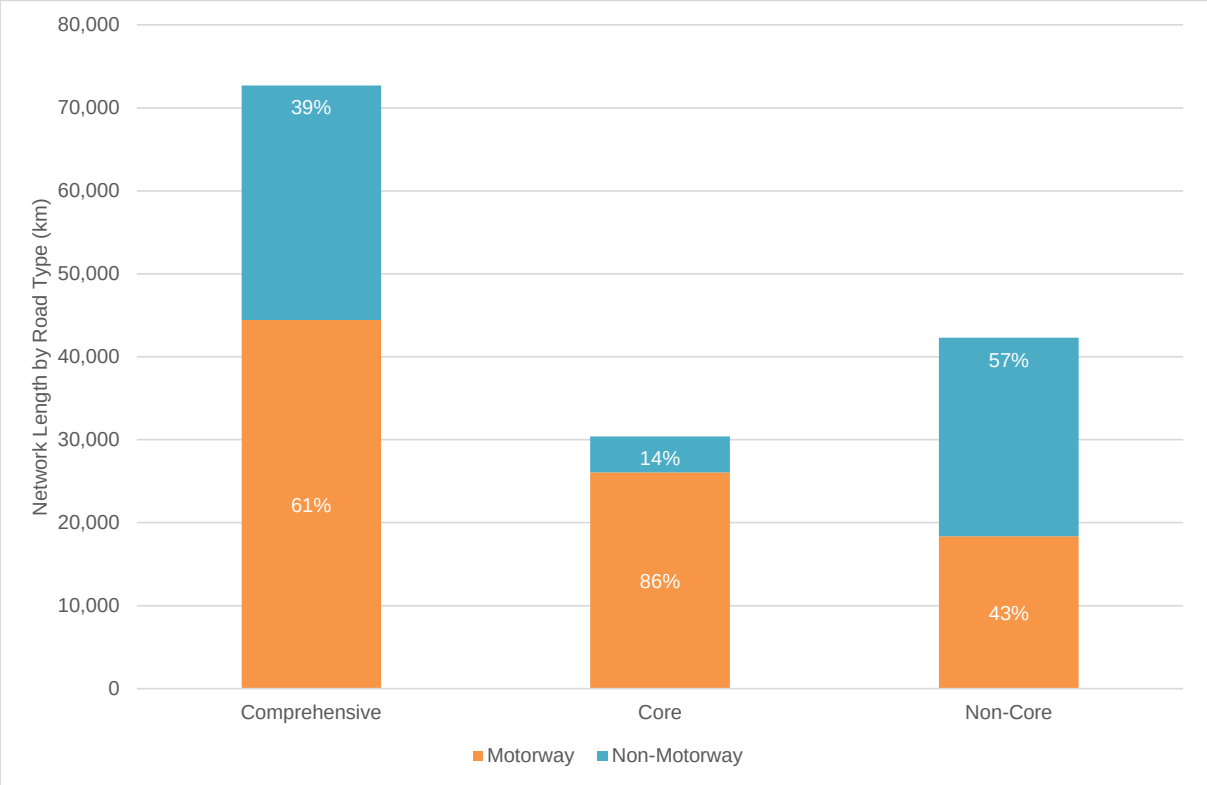


Figure 8 - Comparison of road types on the Comprehensive, Core and Non-Core networks

2.3 Physical Environment

Figure 9 shows the physical environment around the Pan European Road Network. Again, not surprisingly given its purpose to facilitate inter-urban movement, 90% of the network is rural.

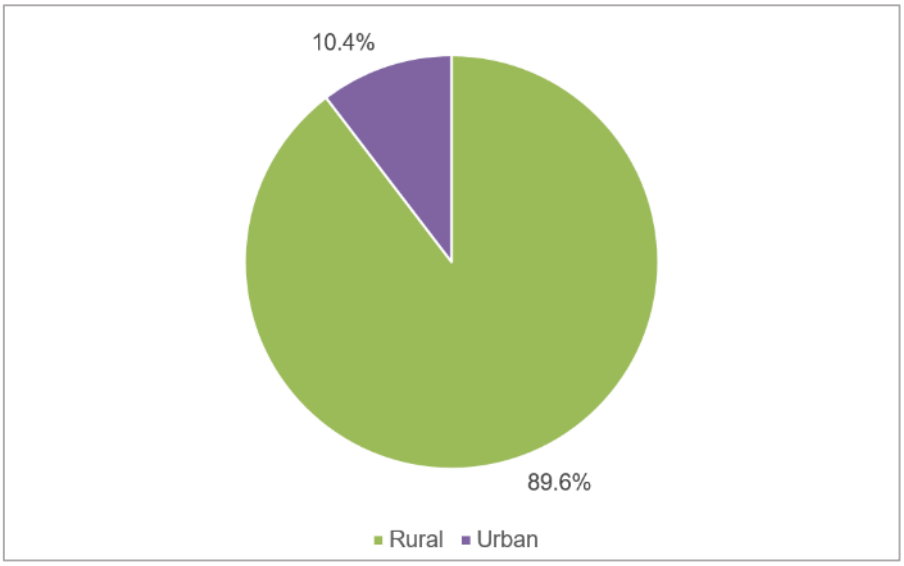


Figure 9 - Physical environment of the Pan European Road Network

2.4 Number of Lanes

The average number of lanes on the road sections comprising the Pan European Road Network provides an indication of the capacity of the network. Figure 10 shows that, amongst the participating countries, a relative majority (49%) of the Comprehensive network has between 2 and 4 lanes and 24% has more than 4 lanes, while 26% has 2 lanes or less. However, on the Core Network (which is predominantly motorway) 39% of the Core Network has more than 4 lanes and 10% has less than 2 lanes.

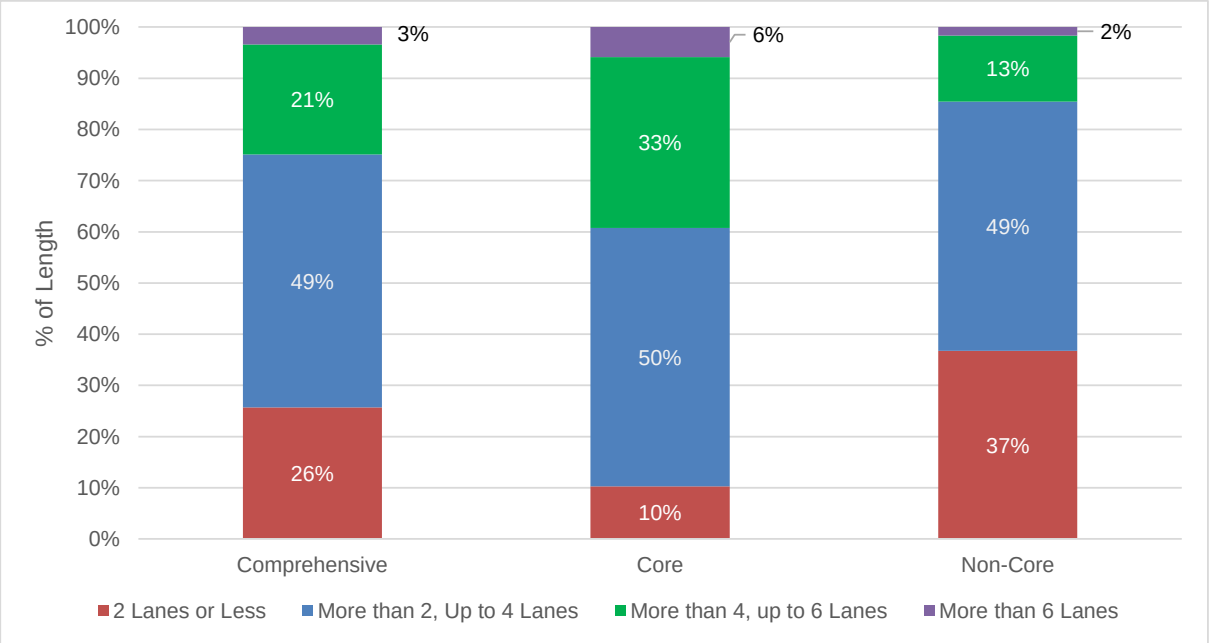


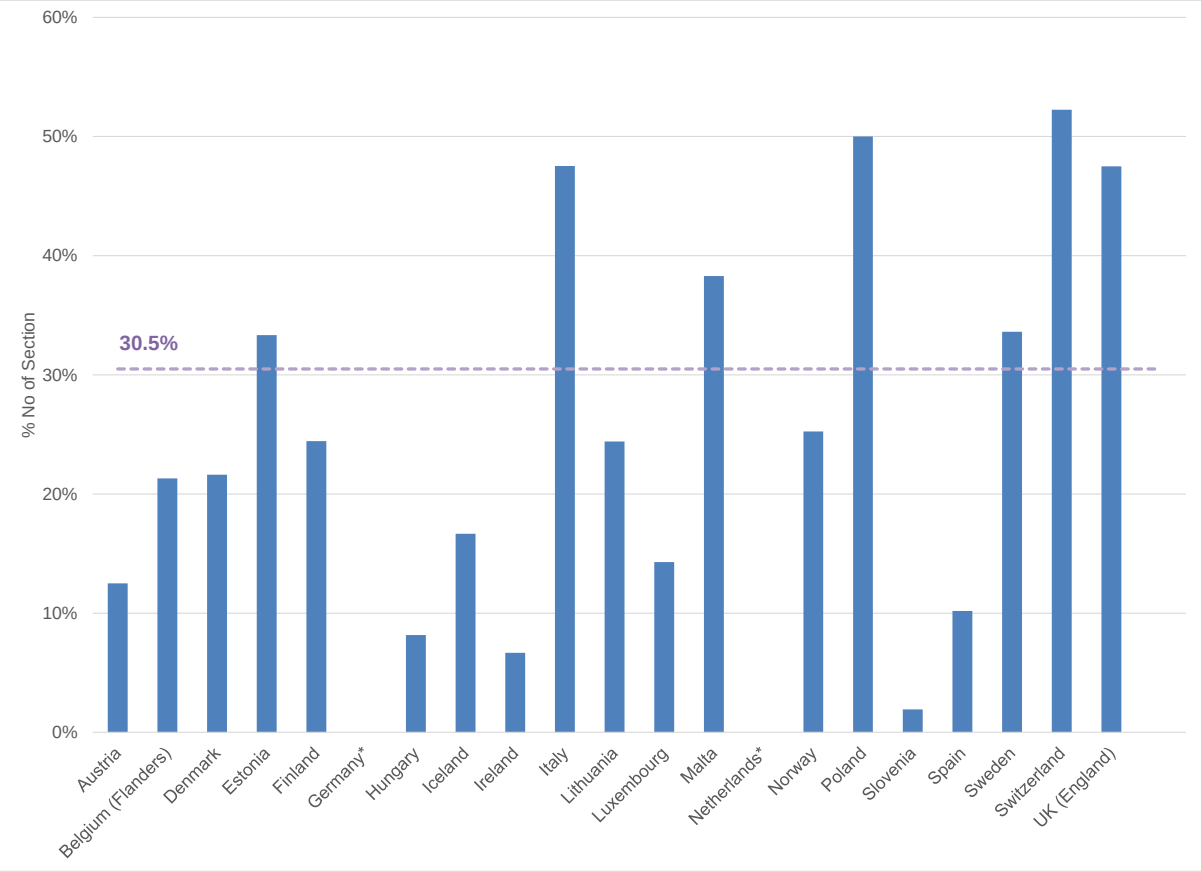
Figure 10 - Comparison of the number of lanes on the Comprehensive, Core and Non-Core networks

2.5 Planned Capacity Improvements

Participating countries provided information about any planned works to increase the capacity of the Pan European Road Network. This is an indication that there are existing capacity issues, i.e. these parts of the network regularly experience congestion.

Figure 11 shows that all countries that provided data have planned capacity improvements ranging between 2% of sections (Slovenia) and 52% of sections (Switzerland).

On average, 31% of the sections that make up the Pan European Road Network are planned to receive capacity improvements.



* - No Data

Figure 11 - Planned capacity improvements on the Pan European Road Network

3 NETWORK INFRASTRUCTURE AND SERVICES

This section describes the physical infrastructure and services provided for users of the network. This includes bridges, tunnels, intelligent transport systems (ITS), as well as rest areas and refuelling facilities.

3.1 Bridges

This indicator shows the proportion of the network length consisting of bridges longer than 100m. On average, 2.3% of the network by length, where data was provided, consists of bridges.

Figure 12 shows that there is considerable variability between individual countries with mountainous countries in particular (e.g. Austria, Italy, Norway, and Switzerland) having between 5% and 8% of the Pan European Road Network consisting of bridges. Conversely, less than 0.3% of the network in, Iceland, Ireland and Lithuania is made up of bridges.

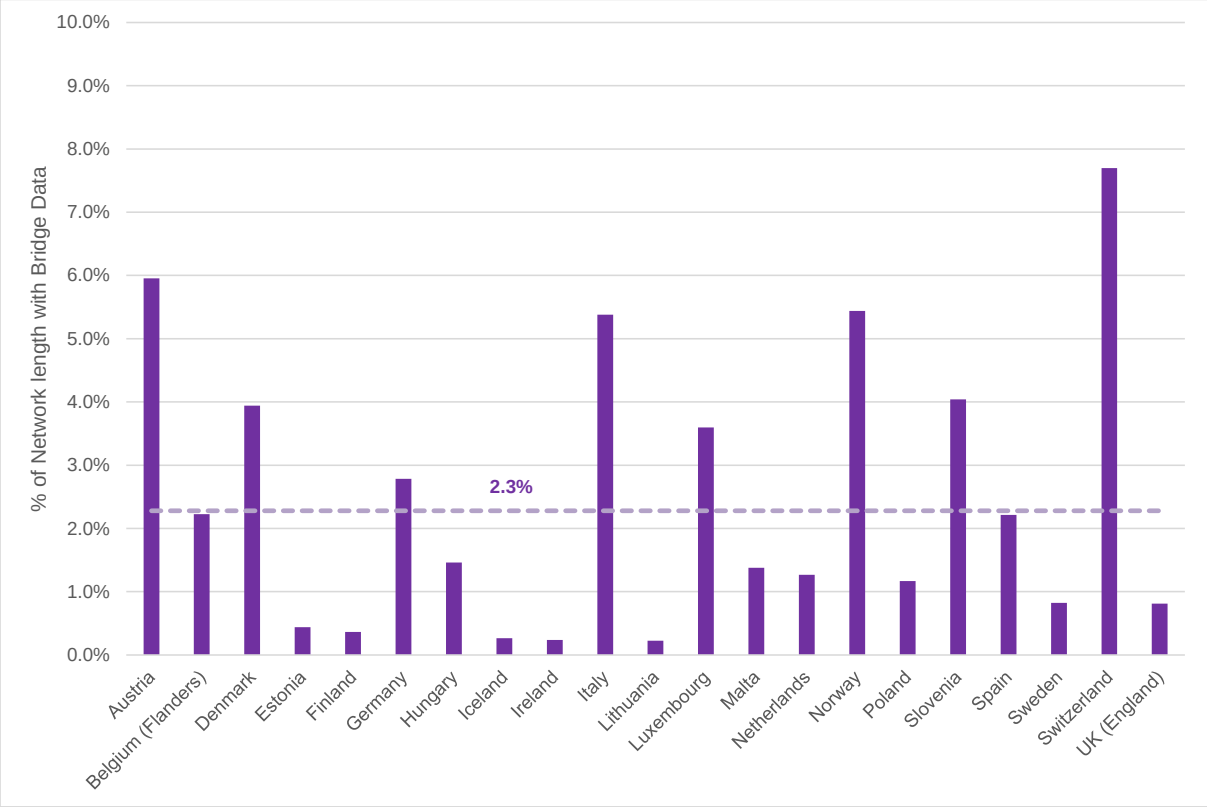


Figure 12 - Length of bridges as proportion of total length of national Pan European roads

3.2 Tunnels

This indicator shows the proportion of the network length that is made up of tunnels longer than 300m. On average, 1.9% of the network by length, where data was provided, consists of tunnels.

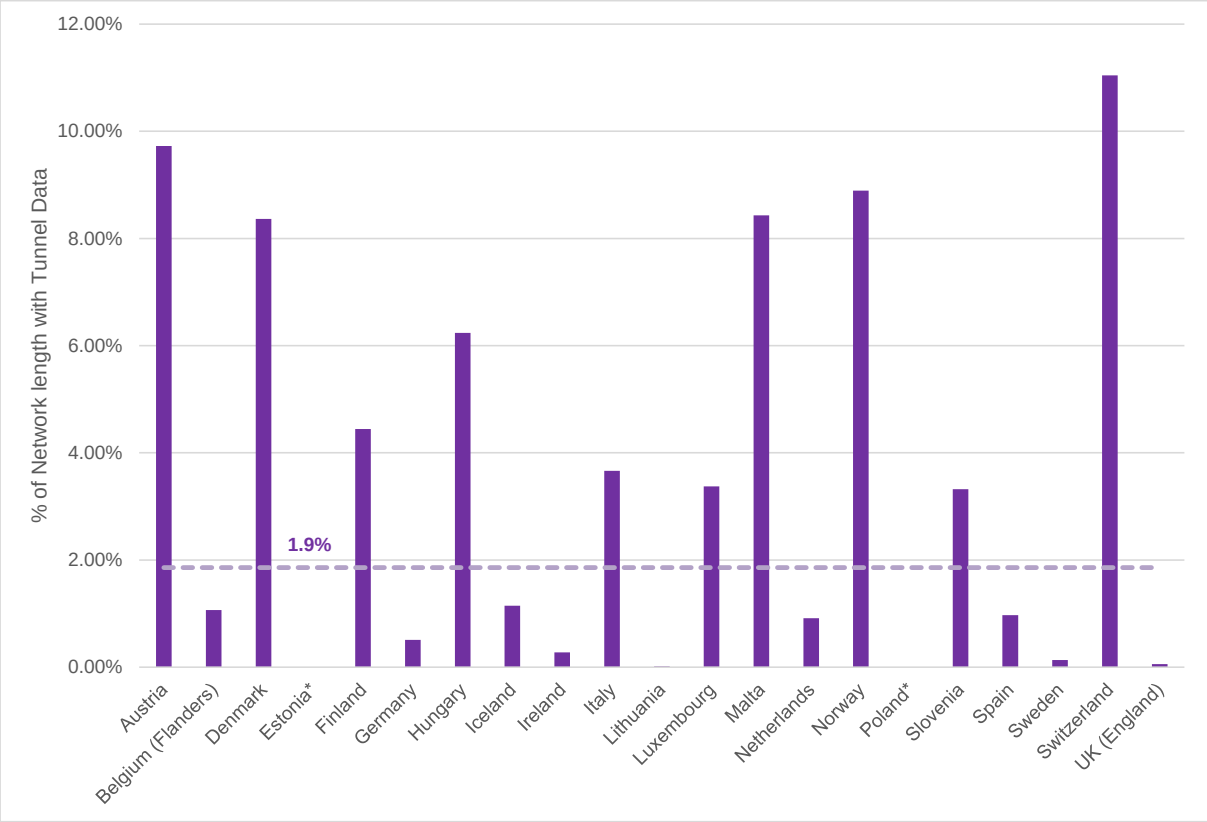


Figure 13 - Length of tunnels as proportion of total length of national Pan European roads

Figure 13 shows that, as with bridges, there is considerable variability between individual countries with Austria, Denmark, Hungary, Malta, Norway and Switzerland having between 6% and 11% of the network by length consisting of tunnels. Conversely, tunnels make up less than 0.1% of the network in Estonia, Lithuania, Poland, Sweden and the UK.

3.3 Intelligent Transport Systems (ITS)

This indicator describes the deployment of Intelligent Transport Systems on the Pan European Road Network. The values show the proportion of the road network equipped with different levels of ITS. The levels range from Level 0 to Level 4 as shown below and are based on the EasyWay Deployment Guidelines:

Level 0	None
Level 1	Monitoring system (e.g. real-time data about traffic/weather conditions is collected by or on behalf of the road administration)
Level 2	Traffic information system (road administration passively manages the network e.g. information about traffic/weather conditions is provided to road users)
Level 3	Traffic management system (road administration actively manages the network e.g. variable speed limits, dynamic lane management, ramp metering)
Level 4	Cooperative ITS (i.e. vehicle-to-vehicle or infrastructure-to-vehicle information)

Figure 14 shows the overall distribution of ITS in the participating countries. This shows that 60% of the Comprehensive network is covered by Level 2 ITS (i.e. traffic information systems) while 25% is Level 3 (i.e. actively managed). 7% of the Comprehensive network has no ITS at all while less than 0.5% has Level 4 (i.e. cooperative ITS).

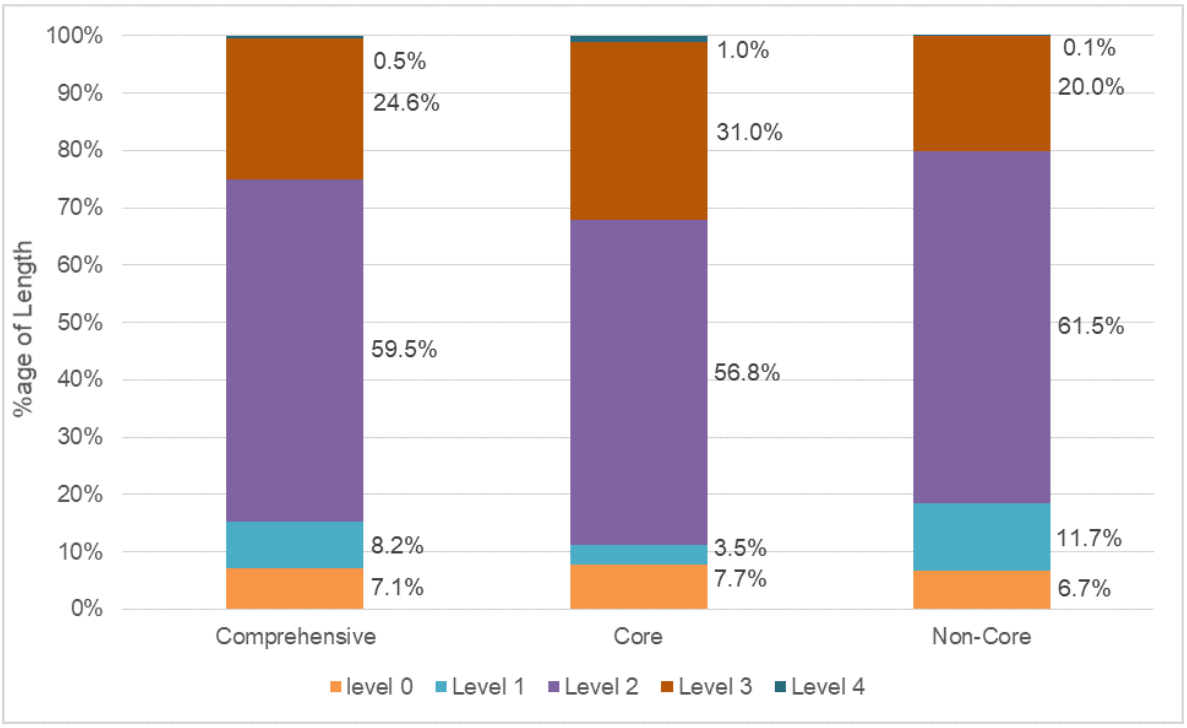


Figure 14 - Distribution of ITS on Comprehensive, Core and Non-Core Networks

No surprisingly, the biggest share of ITS technology on the Core Network where 89% is Level 2 technology or above compared with 70% on the Non-Core Network.

Table 3 shows the distribution of ITS levels for each participating country. This shows that the countries with the largest proportion of Level 3 and Level 4 ITS are Luxembourg (100%), Switzerland (95%), Netherlands (86%) and Norway (71%). The countries with the largest proportion of ITS at Level 1, or below, are Poland (82%), Ireland (55%) and Italy (50%).

Table 3 - Distribution of ITS by level for each participating country

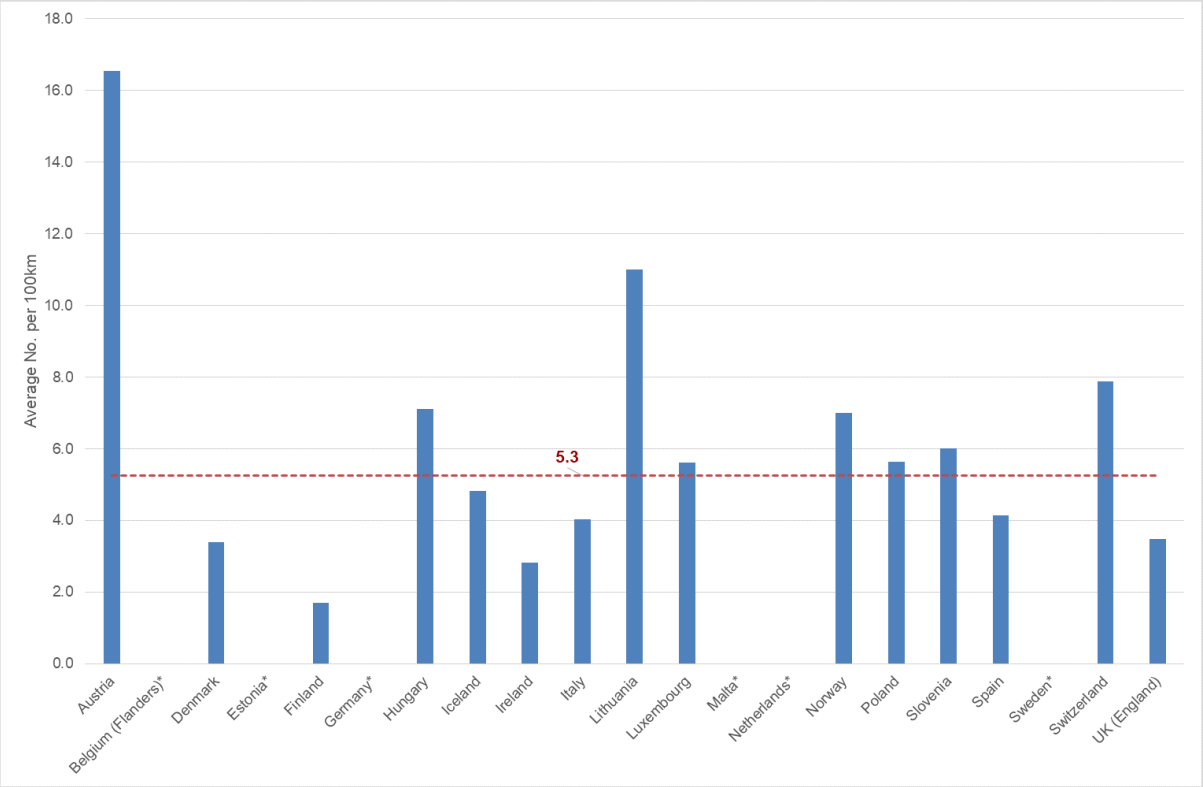
Country	Total length (km)	Level 0	Level 1	Level 2	Level 3	Level 4	No data
Austria	1,740	0.0%	0.0%	83.6%	15.0%	1.4%	0.0%
Belgium (Flanders)	948	0.0%	0.0%	34.3%	65.7%	0.0%	0.0%
Denmark	1,559	0.0%	0.0%	93.7%	3.1%	0.0%	3.1%
Estonia	1,581	0.0%	0.0%	70.6%	29.4%	0.0%	0.0%
Finland	5,217	0.0%	0.0%	75.5%	24.5%	0.0%	0.0%
Germany	10,767	0.0%	0.0%	48.5%	50.3%	0.0%	1.2%
Hungary	1,463	2.8%	6.2%	69.7%	11.4%	9.9%	0.0%
Iceland	1,786	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Ireland	2,163	7.7%	46.9%	40.1%	5.0%	0.0%	0.3%
Italy	4,514	0.0%	50.0%	44.5%	0.0%	3.3%	2.3%
Lithuania	1,652	0.0%	0.0%	94.9%	5.1%	0.0%	0.0%
Luxembourg	89	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Malta	114	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Netherlands	1,886	0.0%	7.7%	6.6%	85.6%	0.0%	0.0%
Norway	4,790	0.0%	0.0%	29.0%	70.6%	0.4%	0.0%
Poland	7,301	67.9%	14.0%	18.1%	0.0%	0.0%	0.0%
Slovenia	599	0.0%	0.0%	45.9%	54.1%	0.0%	0.0%
Spain	12,348	0.0%	11.6%	88.1%	0.3%	0.0%	0.0%
Sweden	6,417	0.0%	0.0%	92.4%	7.6%	0.0%	0.0%
Switzerland	1,333	0.0%	0.0%	5.4%	94.6%	0.0%	0.0%
UK (England)	4,441	0.0%	0.0%	51.3%	48.6%	0.0%	0.1%
TOTAL	**72,707**	**7.1%**	**8.2%**	**59.2%**	**24.5%**	**0.5%**	**0.6%**

3.4 Rest Areas and Facilities for Road Users

This set of indicators was introduced in 2019 to provide a measure of the level of services provided to users of the Pan European Road Network and comprises the frequency of rest areas, including those with dedicated parking areas for truck drivers, charging facilities for electric vehicles and refuelling facilities with alternative fuels such as CNG (Compressed Natural Gas) and/or LPG (Liquefied Petroleum Gas).

Frequency of Rest Areas

Figure 15 shows that there is wide variation in the frequency of rest areas on the Pan European Road Network which ranged between 16.6 per 100km (Austria) and 1.7 per 100km (Finland). On average, amongst the countries that were able to provide data, there are 5.3 per 100km or approximately one every 19km.

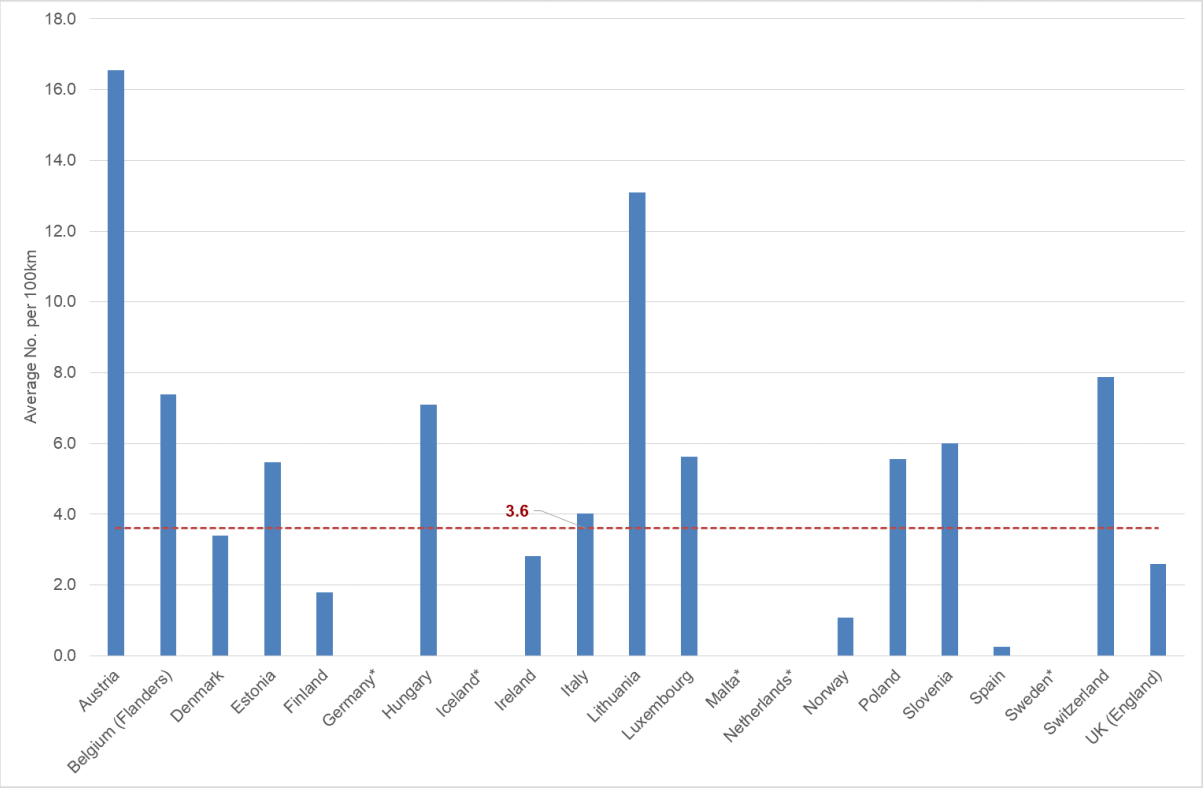


* - No Data

Figure 15 - Frequency of rest areas on national Pan European Roads

Rest Areas with Parking Areas for Truck Drivers

Figure 16 shows the frequency of rest areas with dedicated parking facilities for truck drivers. Again, there is wide variation with results ranging between more than 16.6 per 100km (Austria) to 0.3 per 100km (Spain). On average, amongst countries that were able to provide data, there are 3.6 per 100km or approximately one every 28km.

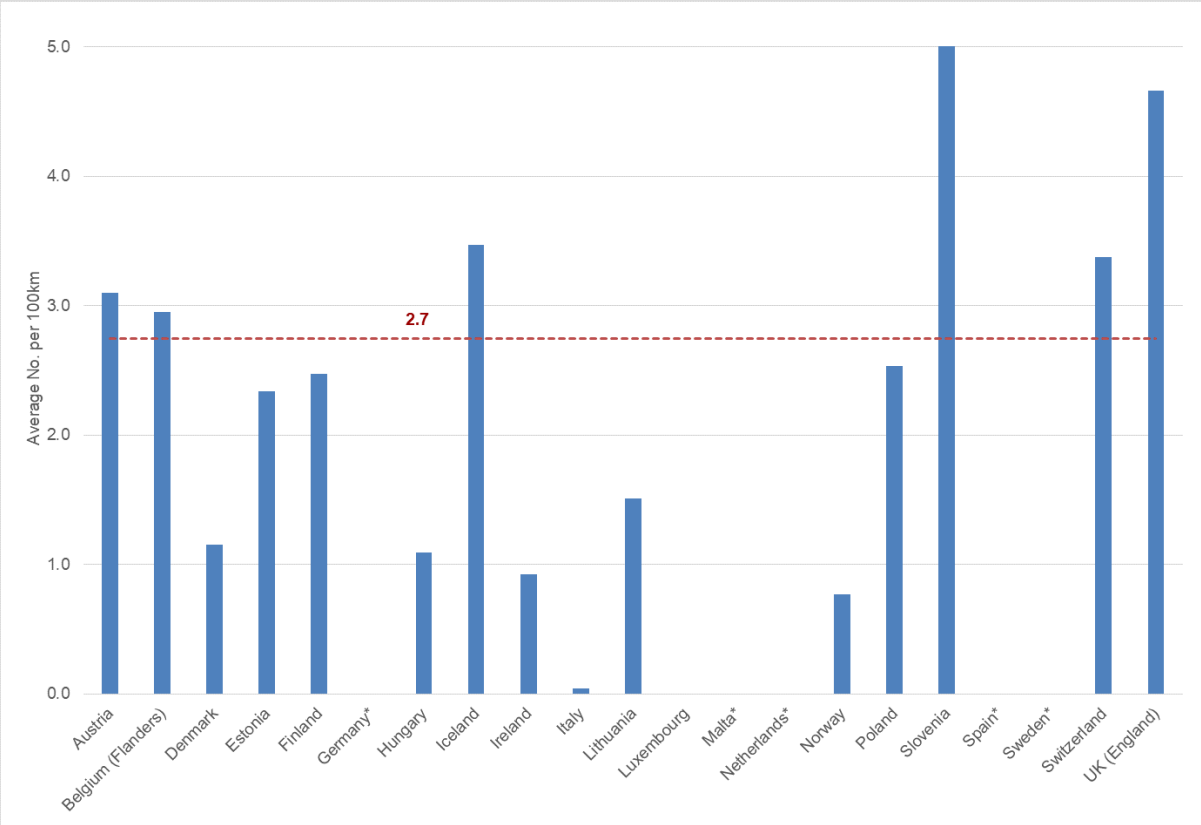


* - No Data

Figure 16 - Frequency of rest areas with parking facilities for truck drivers on national Pan European roads

Rest Areas with Electric Vehicle Charging Facilities

Figure 17 shows the frequency of rest areas with charging facilities for electric vehicles. There is less variation with results ranging from 5.0 per 100km (Slovenia) to less than 0.1 per 100km (Italy). Amongst those countries that were able to provide data, the average frequency was 2.7 per 100km or approximately one every 37km.

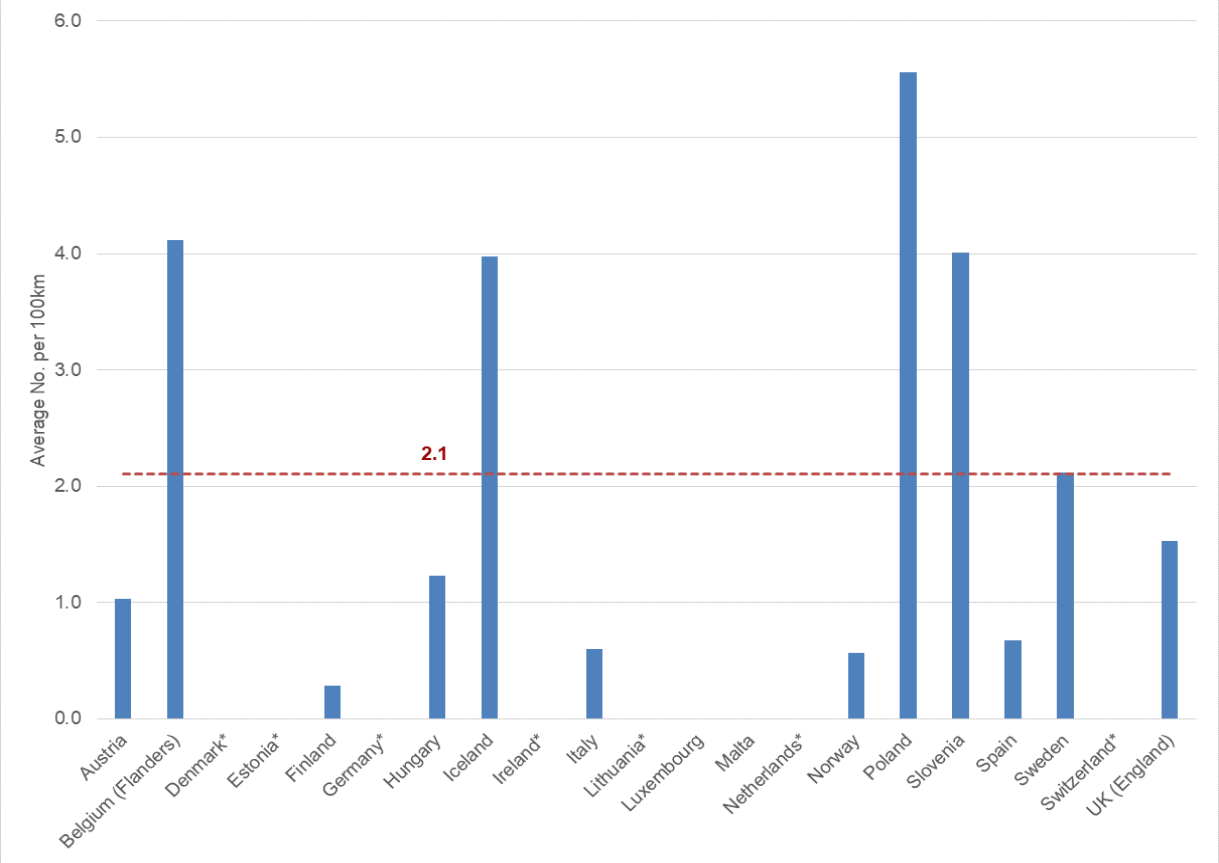


* - No Data

Figure 17 - Frequency of rest areas with charging facilities for electric vehicles on national Pan European roads

Rest Areas with Alternative Fuel Refuelling Facilities

Figure 18 shows the frequency of rest areas with refuelling facilities for alternative fuels such as CNG (Compressed Natural Gas) and/or LPG (Liquefied Petroleum Gas). Again, there is wide variation with results ranging from more than 5.6 per 100km (Poland) to less than 0.5 per 100km (Finland). The average frequency among countries that were able to provide data was 2.1 per 100km or one every 50km.



* - No Data

Figure 18 - Frequency of rest areas with alternative fuel refuelling facilities on national Pan European roads

4 CORRIDOR PERFORMANCE

This section looks at the network level performance of the nine Core Network Corridors based on data about traffic flow, proportion of HGVs and fatal accident rate collected for this report, and which are analysed in more detail in Section 5.

4.1 Average Traffic Flow

Figure 19 compares the average traffic flow (AADT) on the nine Core Network Corridors.

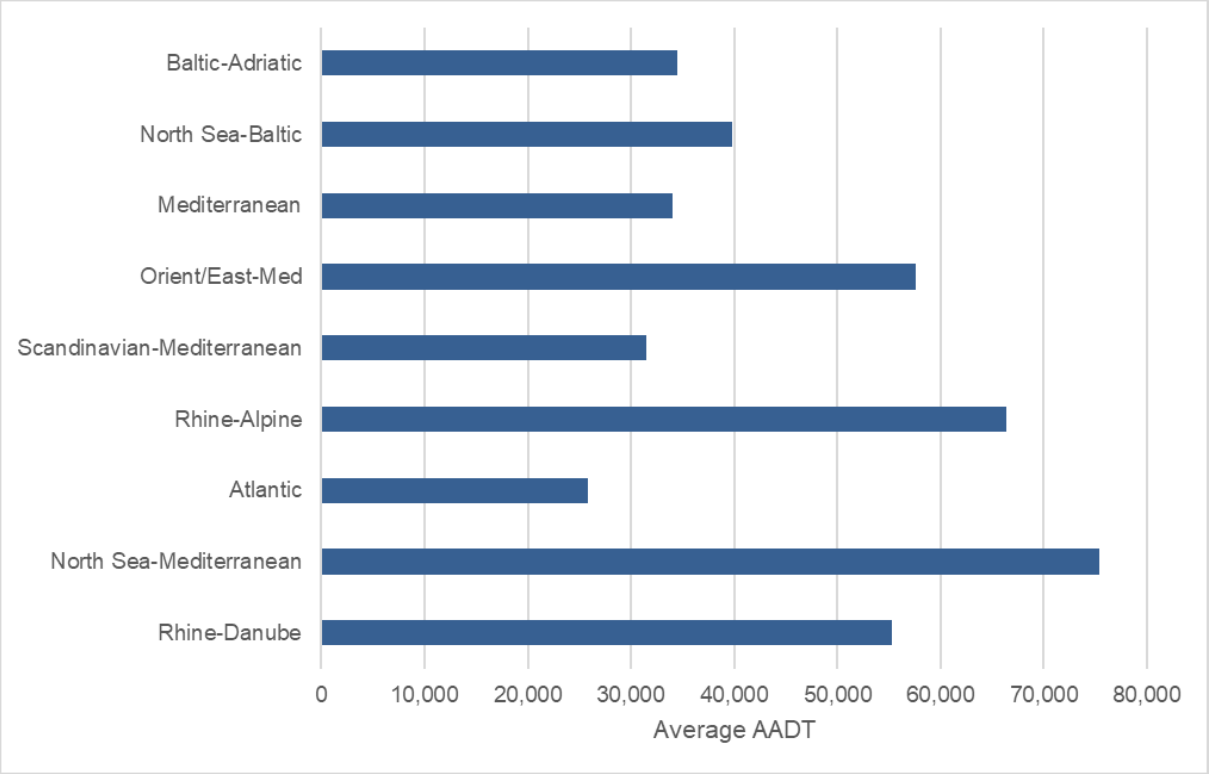


Figure 19 - Annual average daily traffic flow on the Core Network Corridors

The North Sea – Mediterranean corridor has the highest average traffic flow at 75,367 vehicles per day followed by Rhine - Alpine (66,385) and Orient/East-Med (57,568). The corridors with the lowest average traffic flow are Atlantic (25,794), Scandinavia - Mediterranean (31,545) and Mediterranean (33,997). The average for the corridors is 58,952 46,694 vehicles per day.

4.2 Proportion of Heavy Good Vehicles

Figure 20 compares proportion of Heavy Goods Vehicles on the nine Core Network Corridors.

41120

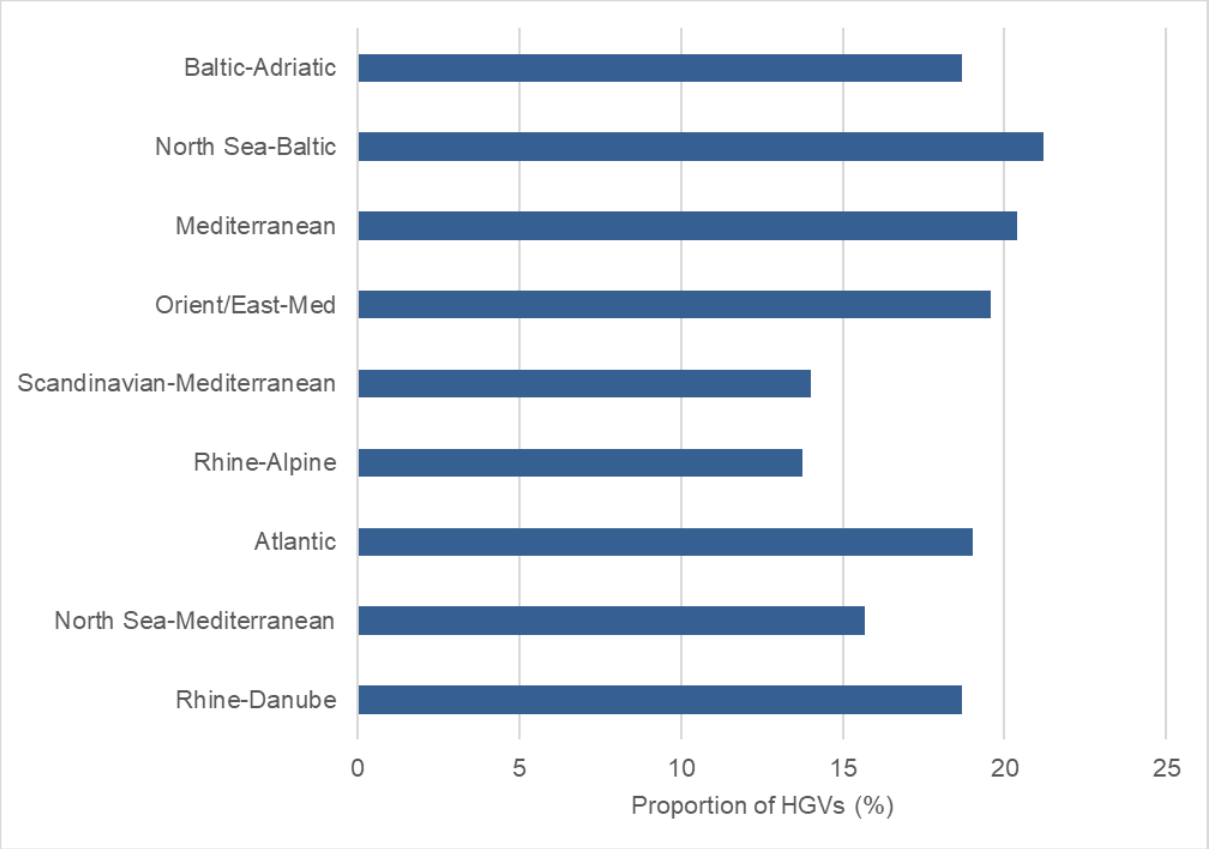


Figure 20 - Proportion of HGVs using the Core Network Corridors

The figure shows that North Sea – Baltic corridor has the greatest percentage of HGVs (21%) while the Rhine – Alpine corridor has the smallest proportion of HGVs (14%). The average figure for the corridors is 18% HGVs.

4.3 Fatal Accident Rate

Figure 21 compares Fatal Accident Rate (Number per Billion VehKm) on the nine Core Network Corridors.

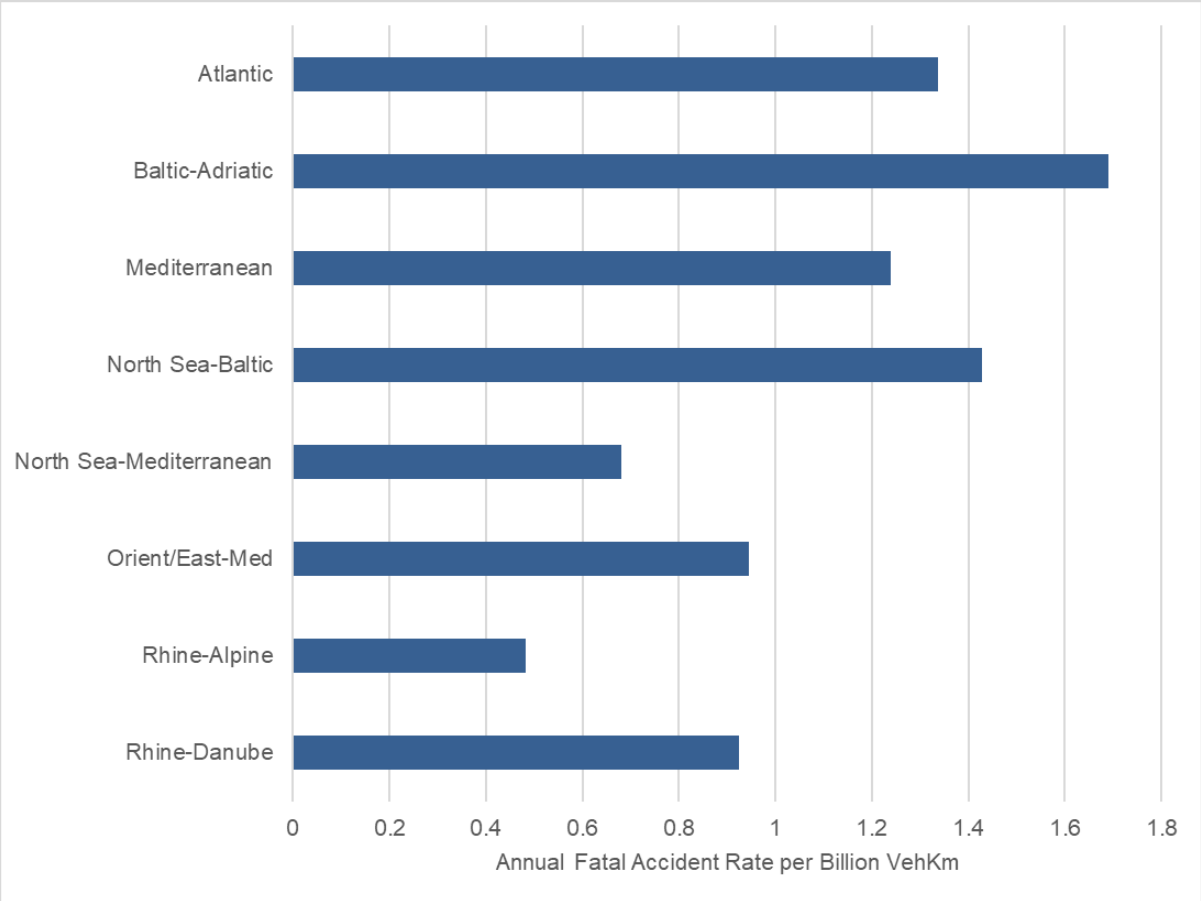


Figure 21 - Fatal accident rate on the Core Network Corridors

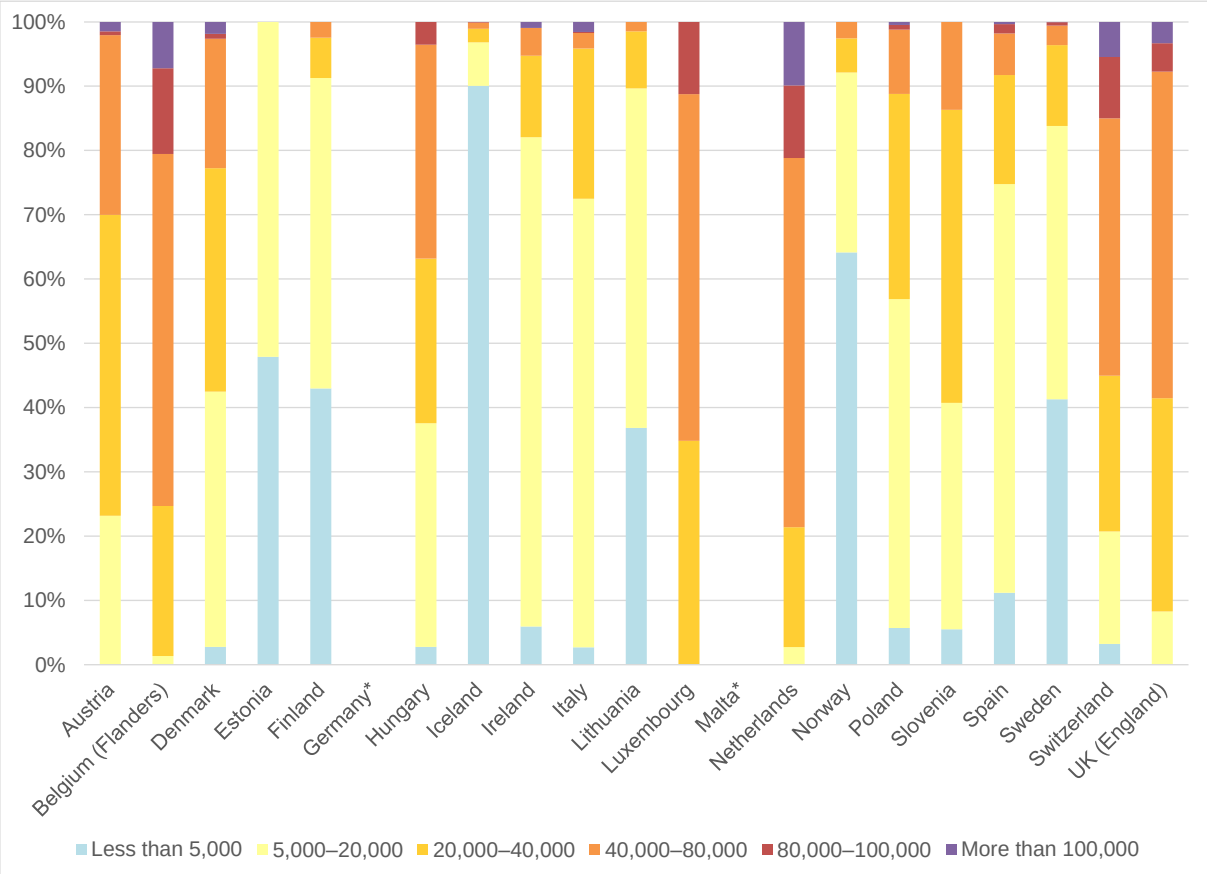
This shows that the Baltic-Adriatic corridor has the highest annual fatal accident rate (1.7 per Billion VehKm) while the Orient/East-Med corridor has the lowest (0.5 per Billion VehKm). The average figure for the corridors is 1.0 per Billion VehKm.

5 NETWORK PERFORMANCE

This section looks at the detailed performance of the Pan European Road Network at a national level. It should be noted that this doesn't necessarily represent the performance of the national networks, only those sections which have been selected to be part of the Pan European Road Network and the characteristics of these selected sections may vary between countries.

5.1 Average Traffic Flow

This indicator shows the average number of vehicles per day crossing the section expressed as the Annual Average Daily Traffic (AADT). The values for traffic volumes have been grouped into bands to provide a better understanding of the performance of the roads.



* - No Data

Figure 22 – National distribution of traffic flow on Pan European roads

Figure 22 shows the distribution of the network length by Traffic Flow bands for each participating country. This shows that the countries carrying the most traffic are Netherlands, Belgium (Flanders), Switzerland and the UK with 9.8%, 6.2%, 5.5% and 3.3% of the network carrying more than 100,000 vehicles per day respectively.

Conversely, the countries with the least traffic are Iceland, Norway, Estonia, Finland and Sweden, each with more than 40% of the network carrying fewer than 5,000 vehicles per day.

Figure 23 shows the distribution of Traffic Flow on the Pan European Road Network for which data is available. This shows that most of the network (65.4%) carries less than 20,000 vehicles per day and 18.9% of the network carries between 20,000 and 40,000 vehicles per day. 12.9% of the network carries between 40,000 and 80,000 vehicles per day and just 2.7% carries more than 80,000 vehicles per day.

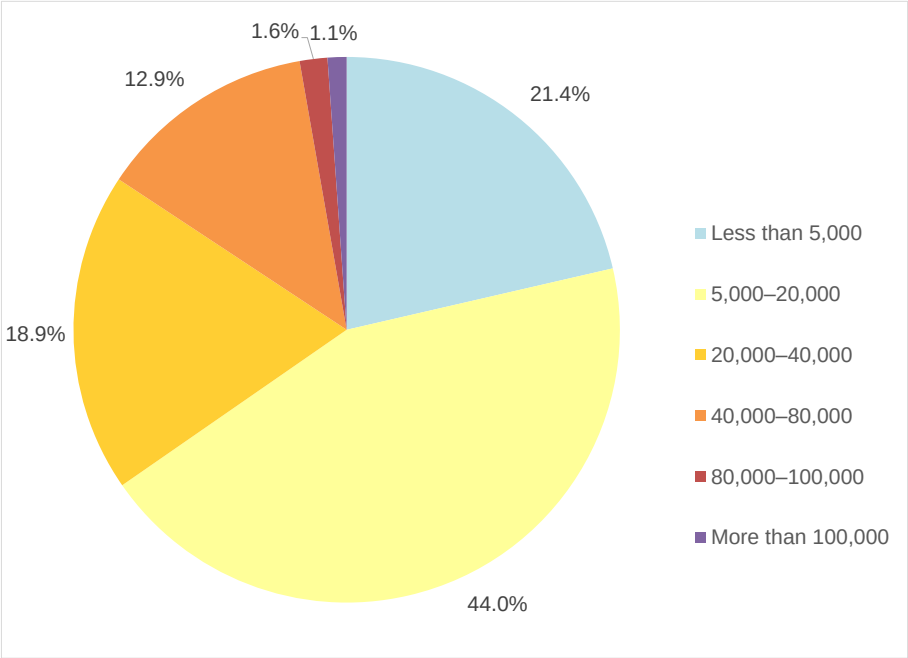
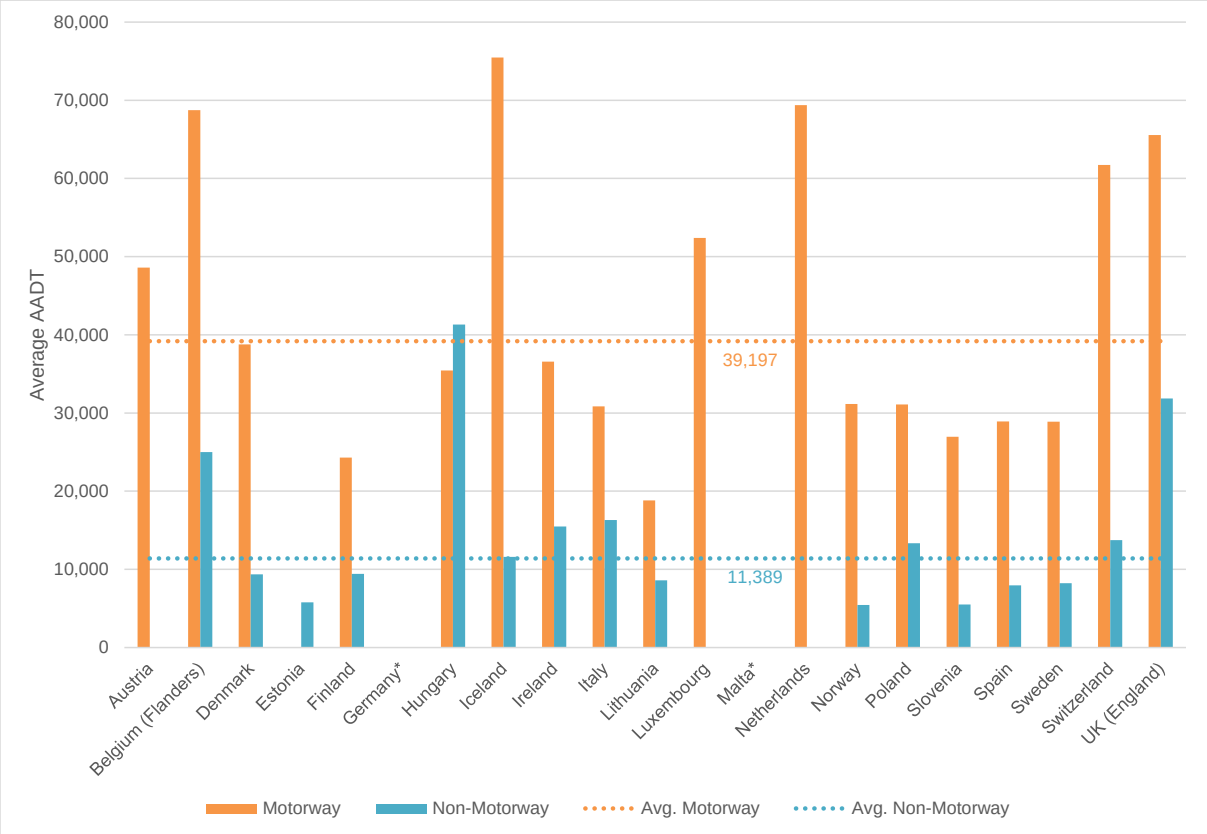


Figure 23 - Distribution of traffic flow on the Pan European Road Network

Figure 24 shows the average value for AADT on the Pan European Road Network by country and road type. The indicator calculated as the length weighted average of the AADT values on the different logical sections.

The weighted average AADT for the whole Comprehensive Network is 28,599 vehicles per day. It ranges from 39,197 vehicles per day on motorways to 11,389 vehicles per day for non-motorway sections[6].

As would be expected, the length weighted average AADT is substantially higher for motorways than for non-motorway roads in all countries, except for Hungary[7], where the average traffic flow values are similar for both road types.



* - No Data

Figure 24 – National average traffic flow by road type on Pan European roads

(The network in Austria, Luxembourg and Netherlands consists only of motorways. The network in Estonia and Malta consists only of non-motorway roads.)

6 The high value of the length weighted average AADT for motorways in Iceland can be explained by the fact that the only two sections identified as motorways (accessing Reykjavik) show very high traffic flows.

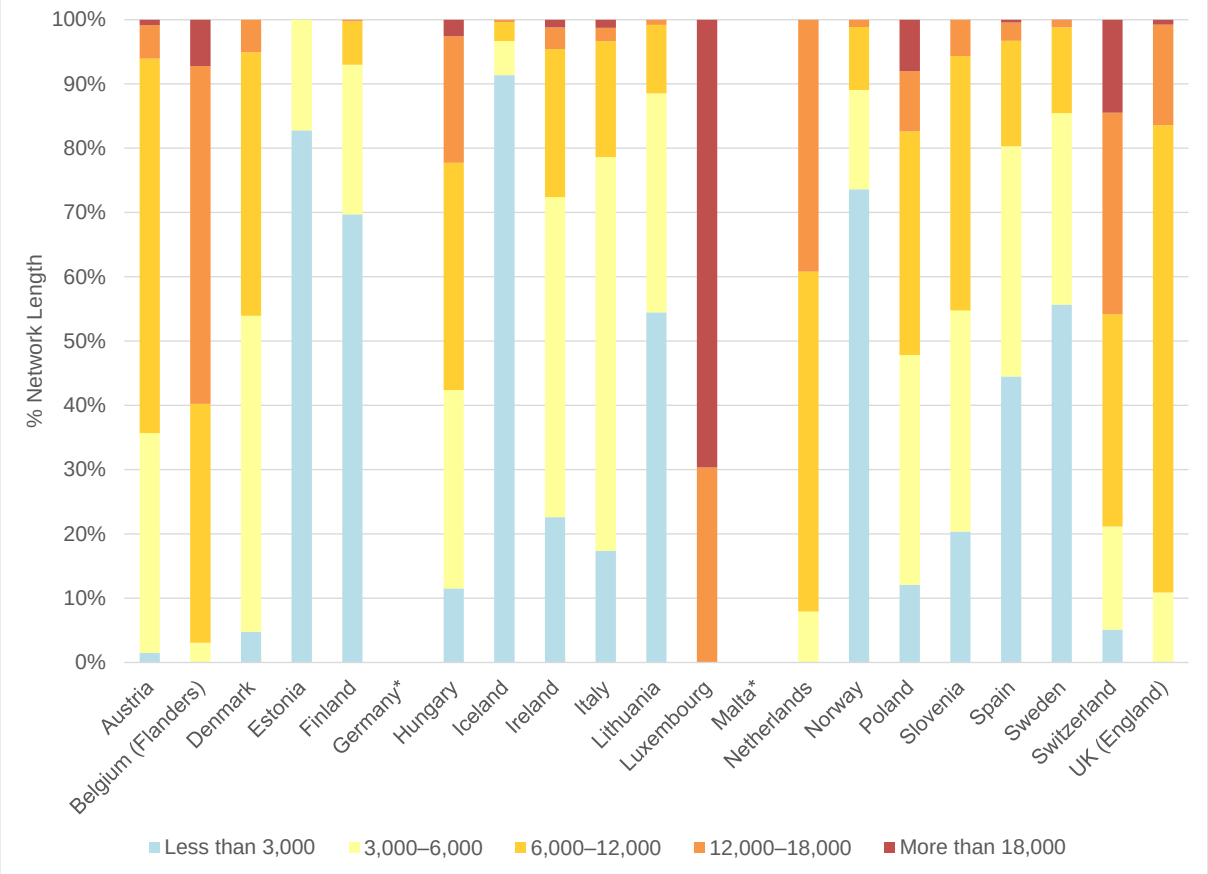
7 The figures for Hungary are because the ring around Budapest (M0) is an expressway. Practically 40% of the Hungarian population lives in and around Budapest and the motorway network is also very radial, every major route leads to Budapest, that's why the non-motorway category has larger traffic flow than the motorway category.

5.2 Traffic Density

Traffic Density is expressed as the average annual daily traffic per lane and is calculated from data provided on Traffic Flow and Number of Lanes. By combining information on traffic flow and number of lanes, this indicator identifies the proportion of the Pan European Road Network which could experience congestion problems.

Figure 25 shows the distribution of Traffic Density for each participating country. It shows that the countries with the greatest average traffic density are Luxembourg, Switzerland, Poland, and Belgium (Flanders), each with more than 5% of the network carrying more than 18,000 vehicles per day per lane.

The countries with the lowest average traffic density Iceland, Estonia, and Finland, in each of which more than 60% of the network has an average traffic density of less than 3,000 vehicles per day per lane.



* - No Data

Figure 25 – National Distribution of traffic density on Pan National roads

Figure 26 compares the Traffic Density on the Pan European Road Network (calculated from data provided on the Annual Average Daily Traffic and Number of Lanes) to the national population (from Eurostat) for each participating country. This shows most countries are in a cluster where the traffic density increases with population. The exceptions are Luxembourg which has the highest level of traffic yet also has the smallest population, and Poland, Spain and the UK which have relatively low levels of traffic density in relation to their population size compared with other countries. These differences may be a function of the length of network in these countries relative to size of their populations. This is illustrated in Figure 27.

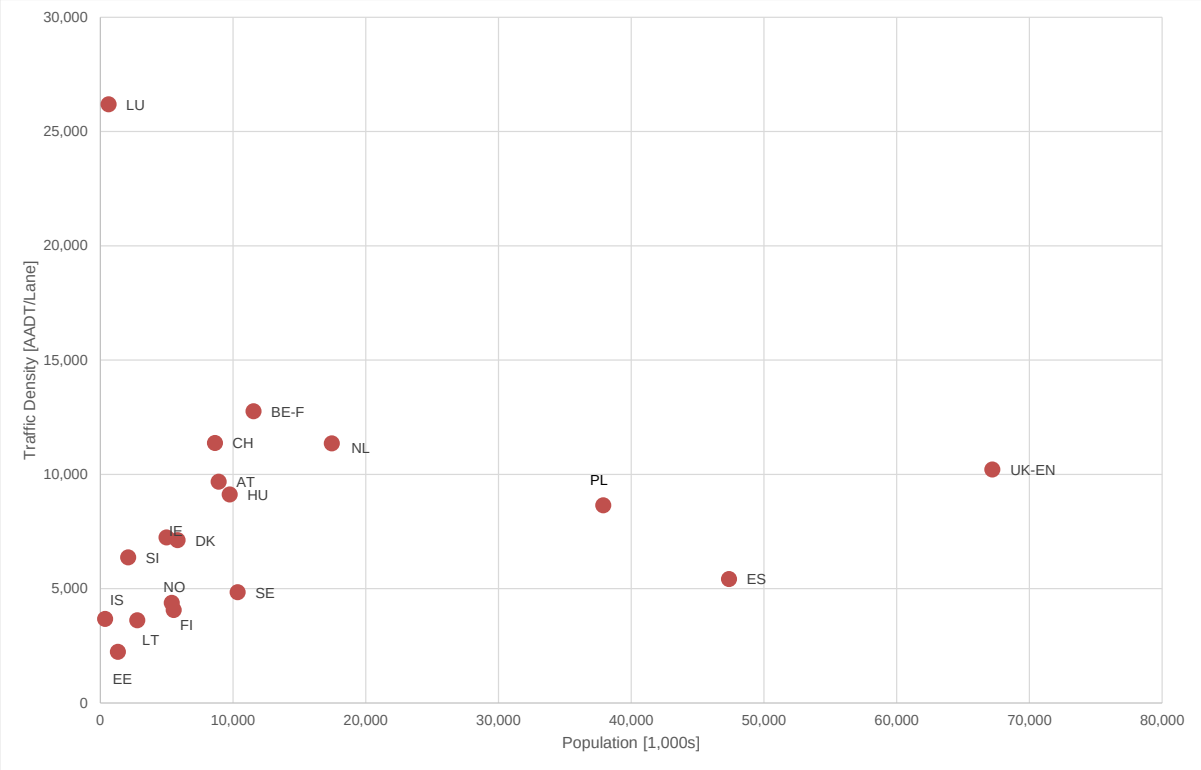


Figure 26 - Comparison of Population and Traffic Density on Pan European Roads

Figure 27 combines the surface area (y-axis), population (x-axis), and relative traffic density (size of the circles). It shows that Belgium (Flanders), Switzerland, Austria, Luxembourg, and the Netherlands have a relatively high traffic density on their network in relation to their population and surface area and therefore that the networks in these countries have the highest levels of demand.

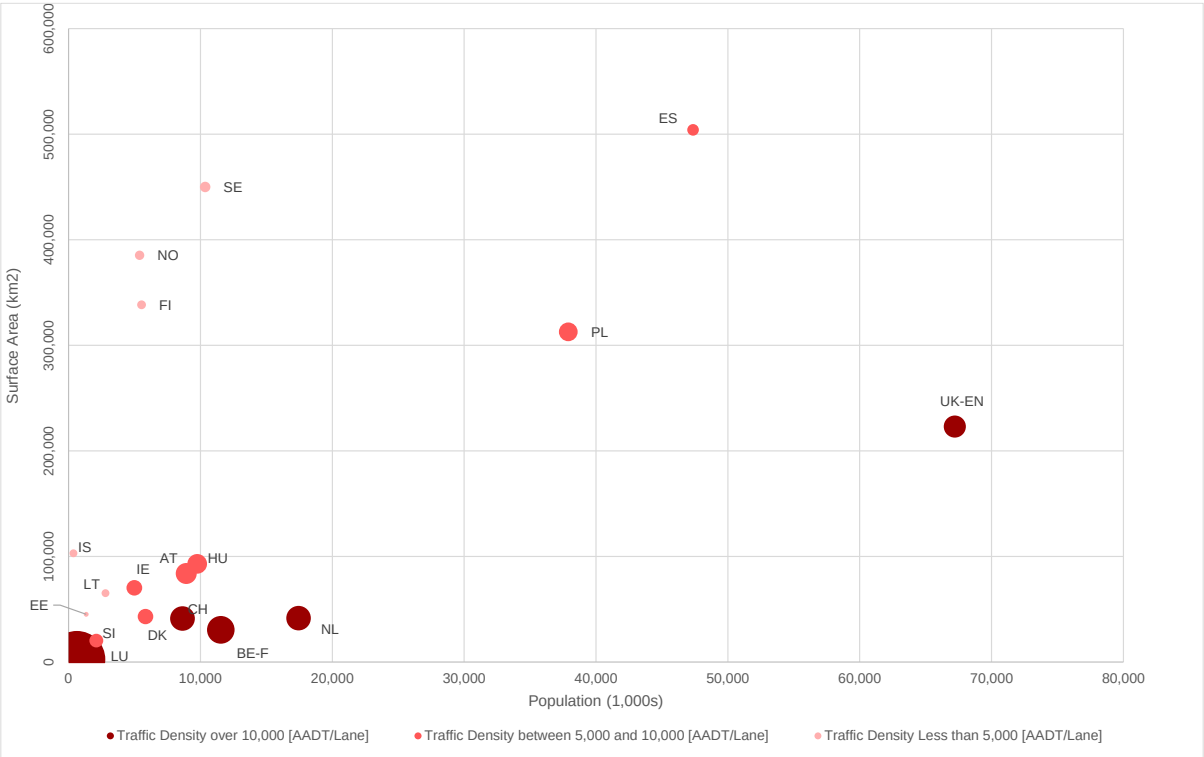


Figure 27: Traffic density vs. surface area and population

Figure 28 shows the overall distribution of Traffic Density on the Pan European Road Network. This shows that 33% of the Comprehensive Network carries more than 6,000 vehicles per day per lane and only 2% of the network carries more than 18,000 vehicles per day per lane.

On the Core Network however, 50% of the Core Network has a traffic density of more than 6,000 vehicles per day per lane and 4% carries more than 18,000 vehicles per day per lane. Whereas, only 23% of the Non-Core Network has a traffic density of more than 6,000 vehicles per day per lane, and 1% has a traffic density of more than 18,000 vehicles per day per lane.

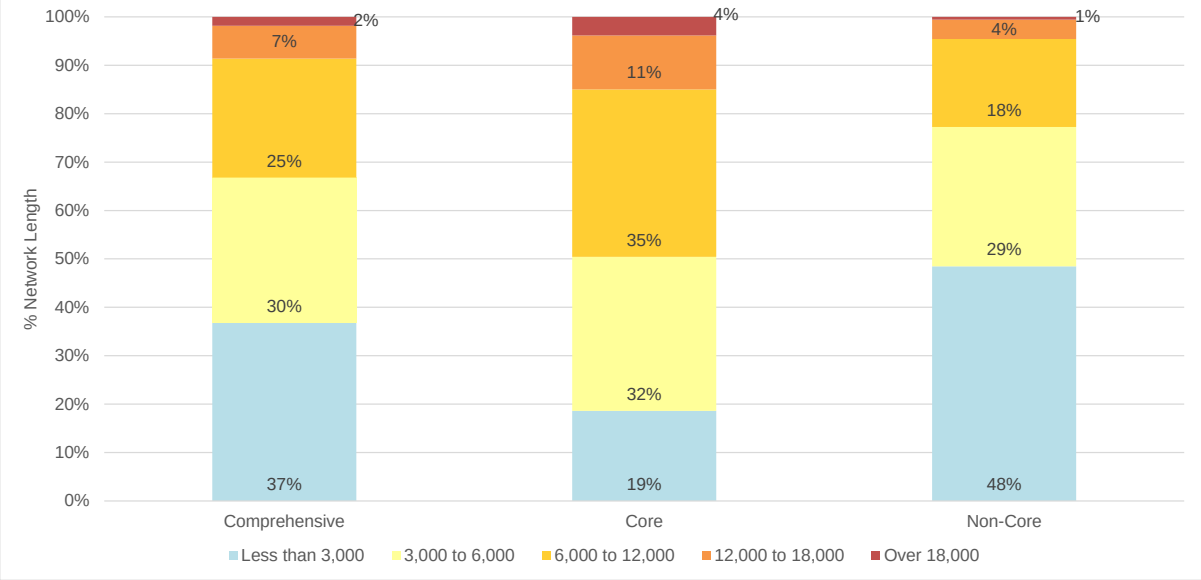


Figure 28 - Distribution of traffic density on the Core, Comprehensive and Non-Core networks

Figure 29 shows trends in traffic flow on the comprehensive network since 2011 for those 14 countries that have provided data for each of the six published reports since 2011[8]. This shows a steady increase in traffic density up to 2019 but a reduction between 2019 and 2021. This could be because of the travel restrictions introduced in response to the Covid-19 pandemic in 2020 and 2021.

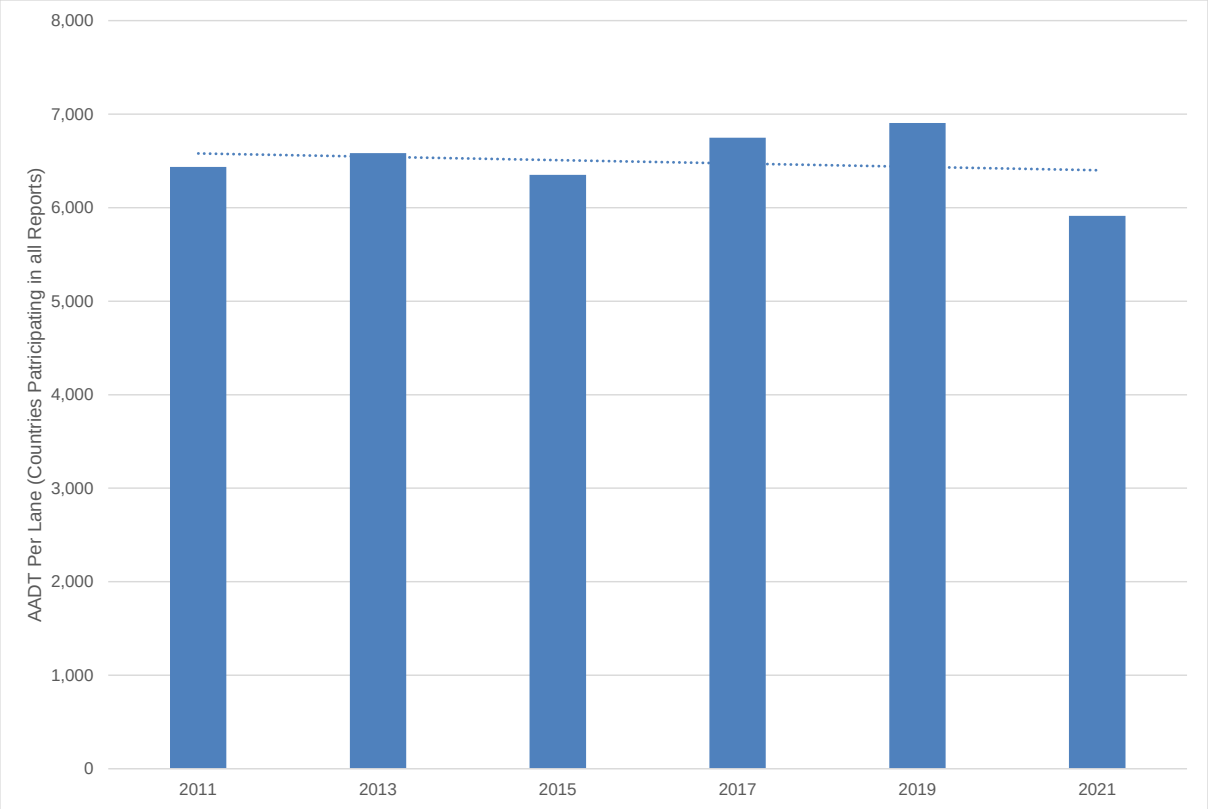


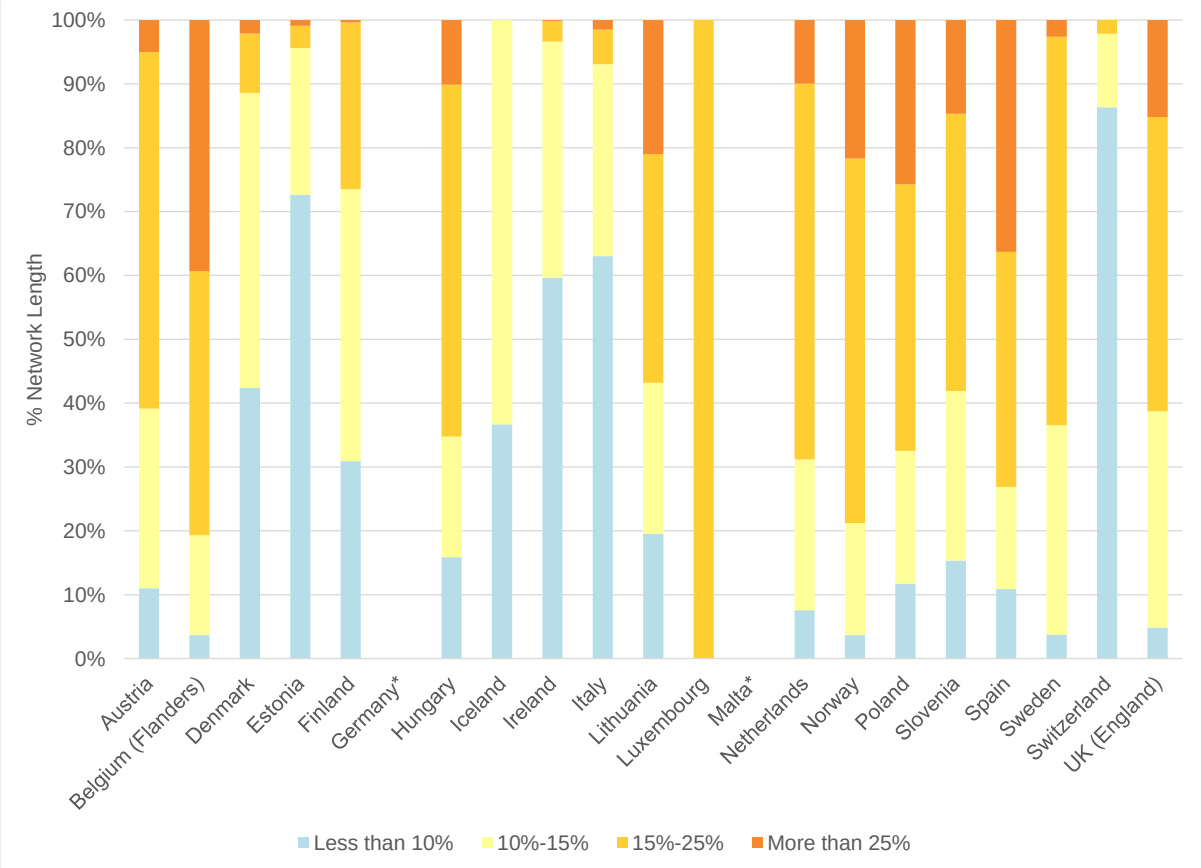
Figure 29 - Trends in traffic density on the Pan European Road Network since 2011 (only countries participating in all six reports)

[8] That is Austria, Denmark, Estonia, Finland, Iceland, Ireland, Italy, Lithuania, Luxembourg, Norway, Slovenia, Spain, Sweden, and the UK.

5.3 Proportion of Heavy Good Vehicles

Figure 30 shows the proportion of traffic comprising heavy goods vehicles (HGVs) on the Pan European Road Network in each of the participating countries.

This shows that countries with the highest proportion of HGVs on the Pan European Road Network are Spain, Belgium (Flanders) and Poland, Hungary, and the UK who each have more than 25% HGVs on at least 25% of the network. Conversely, the countries with the lowest proportion of HGVs on the Pan European Road Network are Switzerland[9], Estonia, Ireland, and Italy where HGVs make up less than 10% of traffic on at least 60% of the network.



* - No Data

Figure 30 – National distribution of HGV traffic proportions on Pan European roads

[9] The figures for Switzerland reflect the policy of transporting goods and goods-vehicles by train.

Figure 31 shows the overall proportion of HGV traffic on the Pan European Road Network where data is available. It shows that HGVs make up less than 10% of total traffic on 21.2% of the Comprehensive Network and on 15.5% of the network do HGVs make up more than 25% of all traffic.

On the Core Network, 25% or more of the traffic are HGVs on 21.8% of the network compared to 11.5% on the Non-Core network.

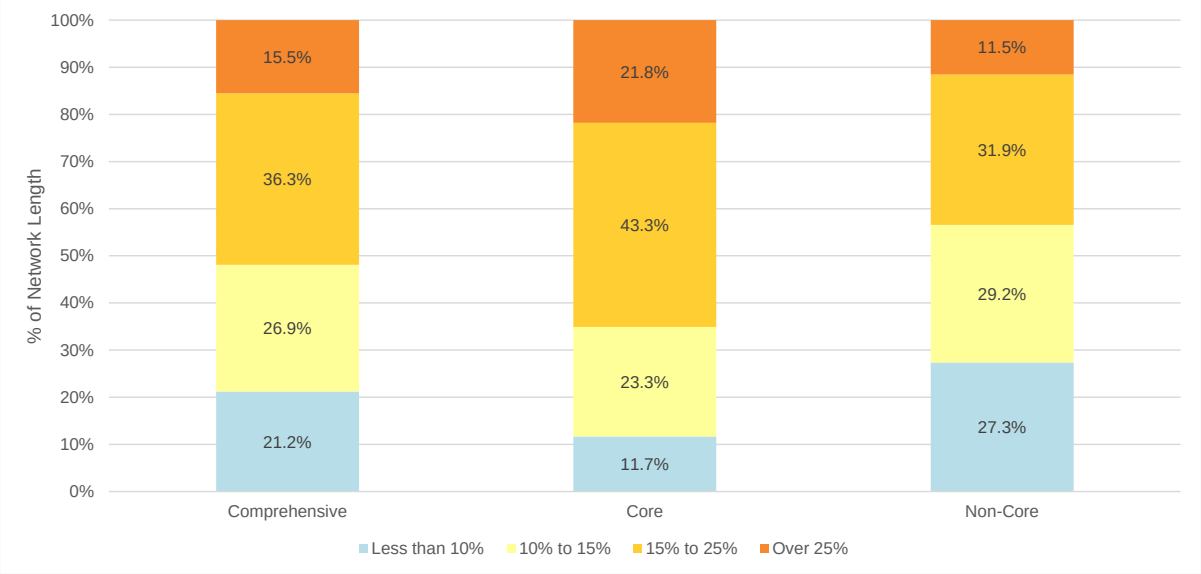
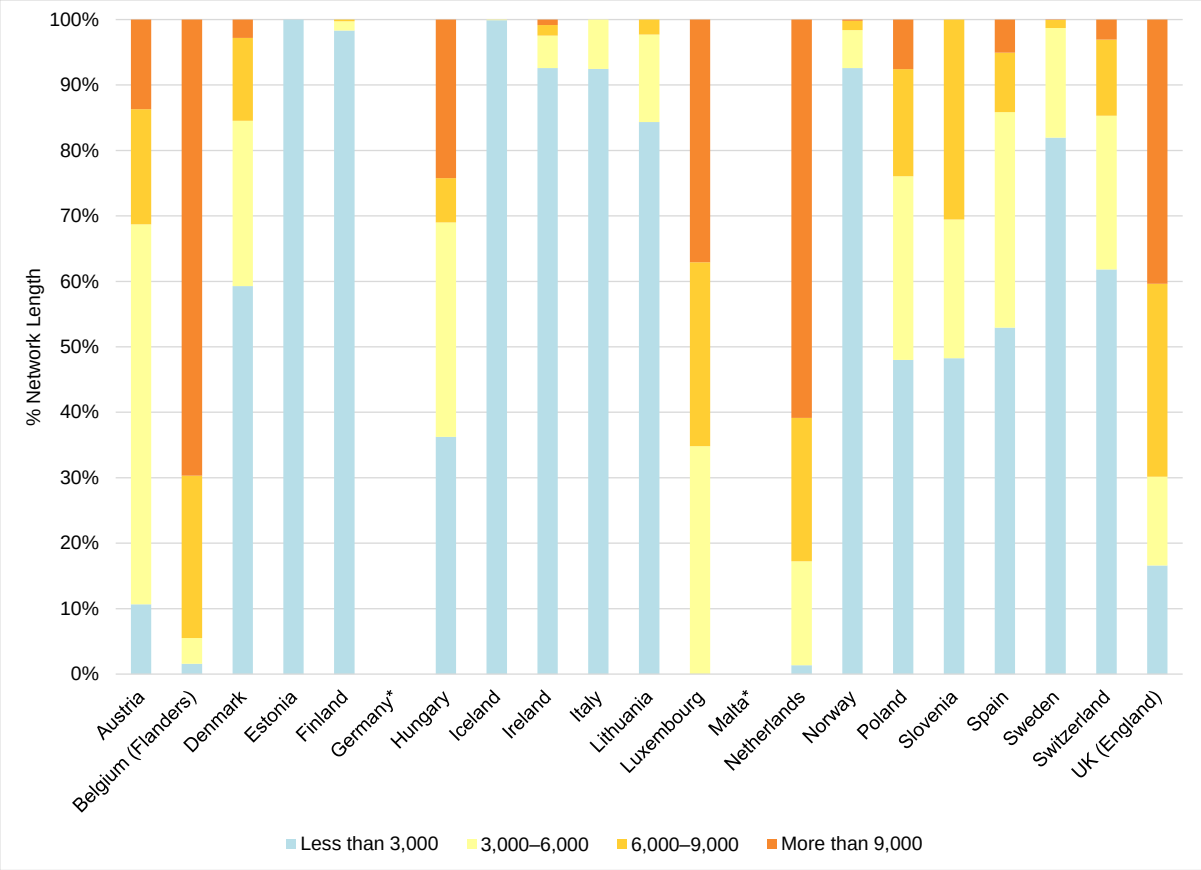


Figure 31 - Comparison of HGV proportions on the Comprehensive, Core and Non-Core networks

5.4 Heavy Goods Vehicle Traffic Flow

Figure 29 shows the distribution of HGV traffic flow in bands as a proportion of network length. These figures were obtained by multiplying the number of total vehicles with the percentage of HGVs.



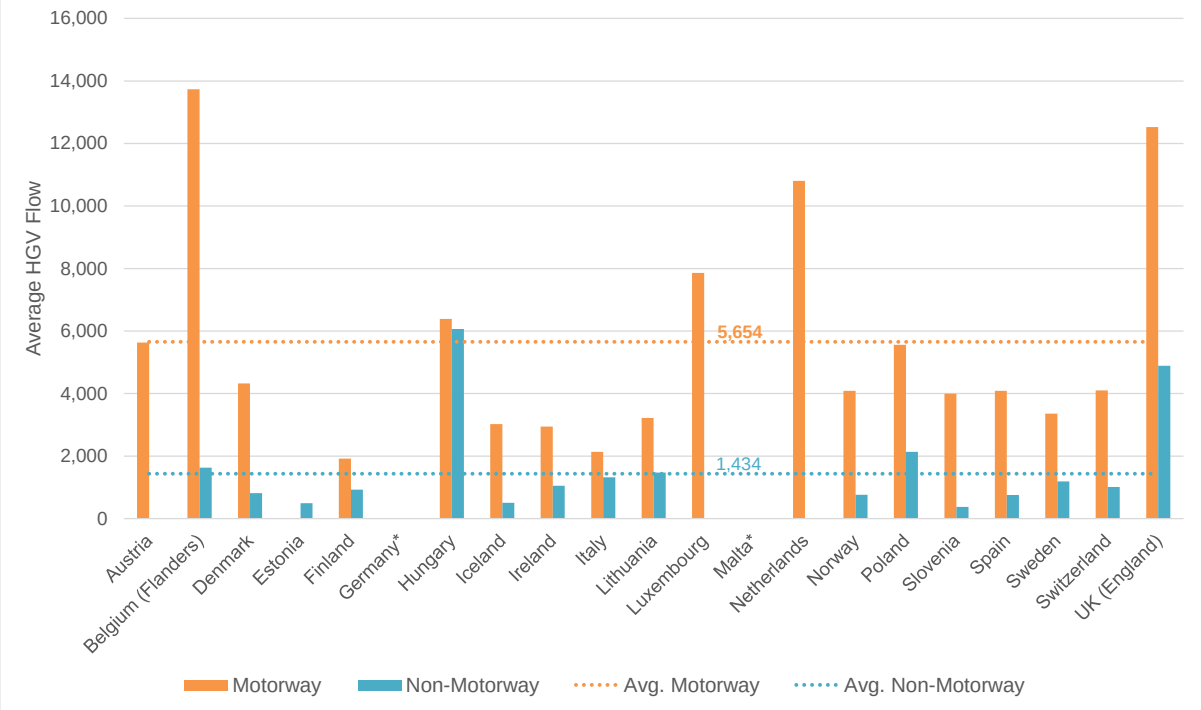
* - No Data

Figure 32 – National distribution of HGV traffic flow on Pan European roads

This shows that the countries with the highest volume of HGV traffic are Netherlands, Belgium (Flanders), the UK and Luxembourg in each of which more than 30% of the network carries more than 9,000 HGVs per day. Conversely the countries that carry the lowest volume of HGVs are Estonia, Finland, Iceland, Ireland, Italy, and Norway in each of which more than 90% of the network carries fewer than 3,000 HGVs per day.

Figure 30 shows the weighted average values for Heavy Goods Vehicles traffic on the Comprehensive network. This shows that, in all countries, HGV traffic on motorways is higher than HGV traffic on non- motorway roads and motorways carry on average 5,650 HGVs per day compared to 1,435 vehicles per day on non-motorway roads.

There is a wide variation between individual countries with the highest average levels of HGV traffic on motorways in Belgium (Flanders) at 13,734 vehicles per day, UK at 12,523 vehicles per day and Netherlands at 10,805 vehicles per day. On non-motorway roads, Hungary carries the most HGVs at 6,063 vehicles per day on average which is slightly lower than the average on motorways (6,386 HGVs per day), the UK non-motorway network carries on average 4,886 HGVs per day.



* - No Data *Figure 33 – National average HGV traffic flow by road type on Pan European roads*

(The network in Austria, Luxembourg and Netherlands consists only of motorways. The network in Estonia and Malta consists only of non-motorway roads.)

Figure 31 shows the overall distribution of HGV traffic on the Pan European Road Network. This shows that the majority (55.9%) carries fewer than 3,000 HGVs per day, 22.1% carries between 3,000 and 9,000 vehicles per day and 7.1% carries more than 9,000 per day. There is a significant difference between the Core and Non-Core networks with 13.2% of the Core Network carrying more than 9,000 HGVs per day compared to just 2.7% of the Non-Core network.

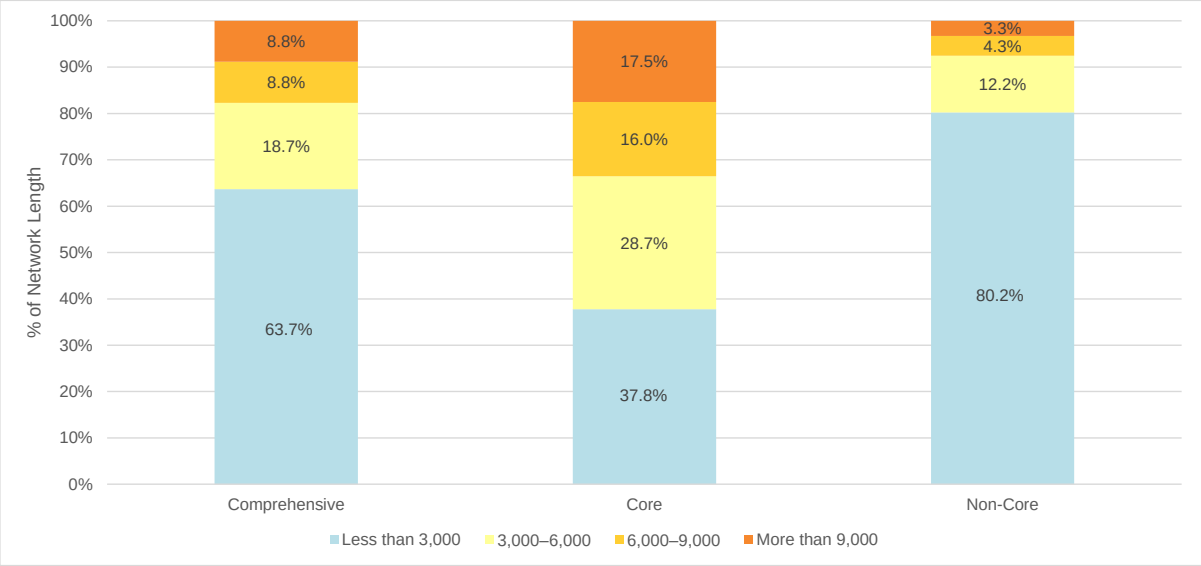


Figure 34 - Comparison of HGV flows on the Comprehensive, Core, Non-Core, and Corridor networks

Figure 32 shows trends in the average HGV traffic per lane since 2011 for those 14 countries that have provided data for each of the six published reports since 2011[10] . This shows a gradual decline in HGV traffic over the period.

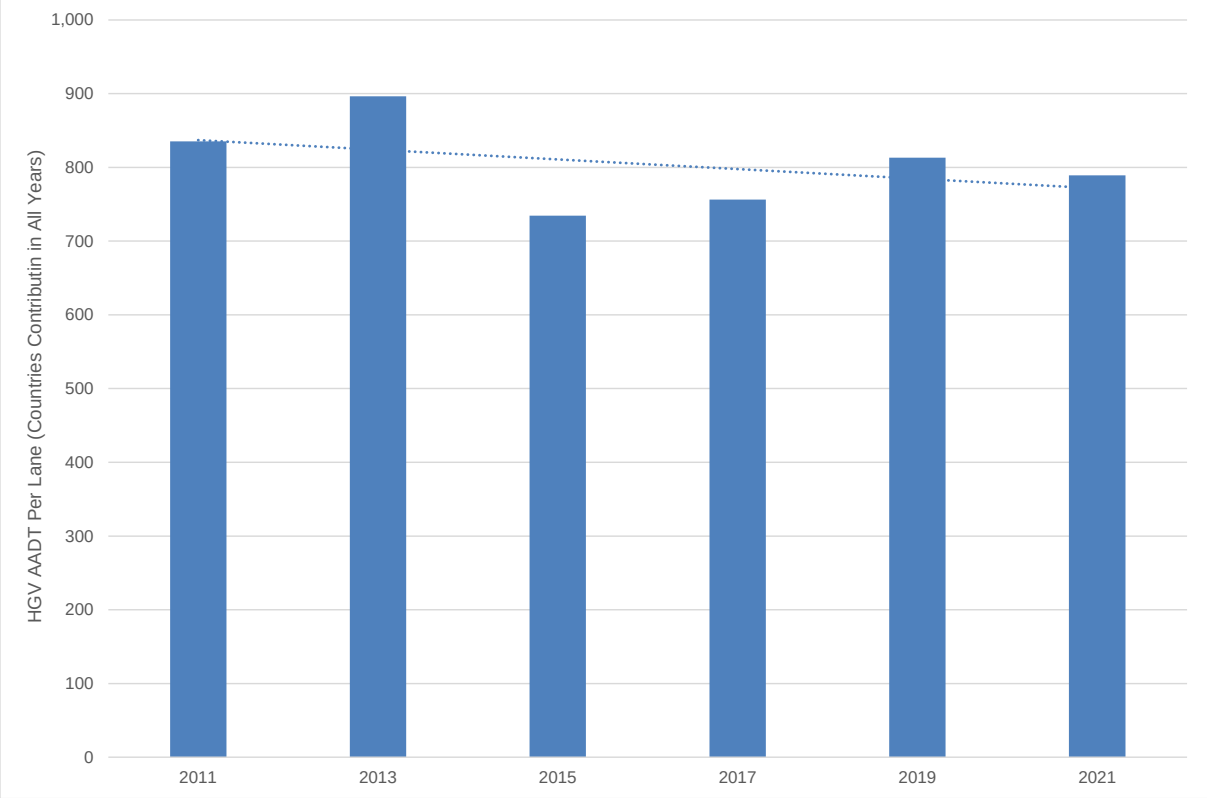


Figure 35 - Trends in HGV traffic on the Pan European Road Network since 2011 (only countries participating in all six reports)

[10] That is Austria, Denmark, Estonia, Finland, Iceland, Ireland, Italy, Lithuania, Luxembourg, Norway, Slovenia, Spain, Sweden, and the UK.

Figure 33 compares the trends in traffic flow per lane between HGVs and all traffic since 2011 for those countries that have participated in all six reports[10]. This shows that while the overall traffic demand has slightly increased up until 2019 where it reduced sharply, the HGV traffic flow per lane has remained relatively stable.

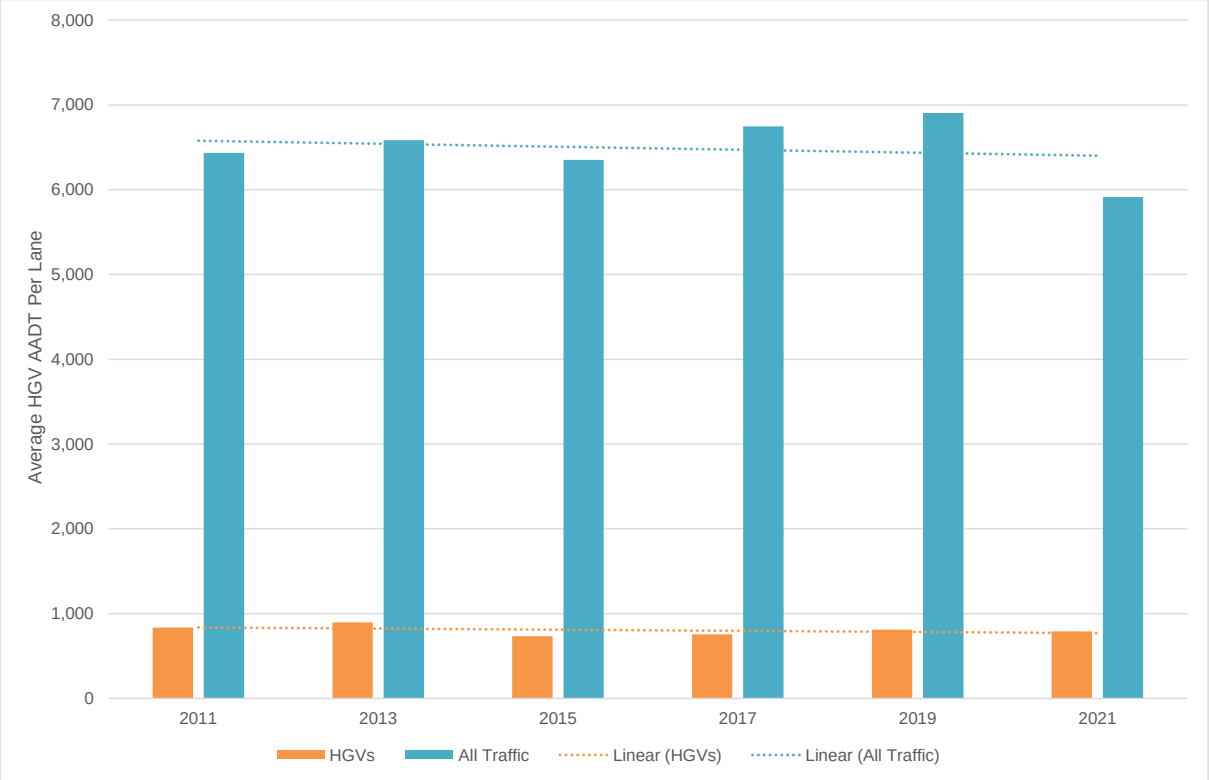
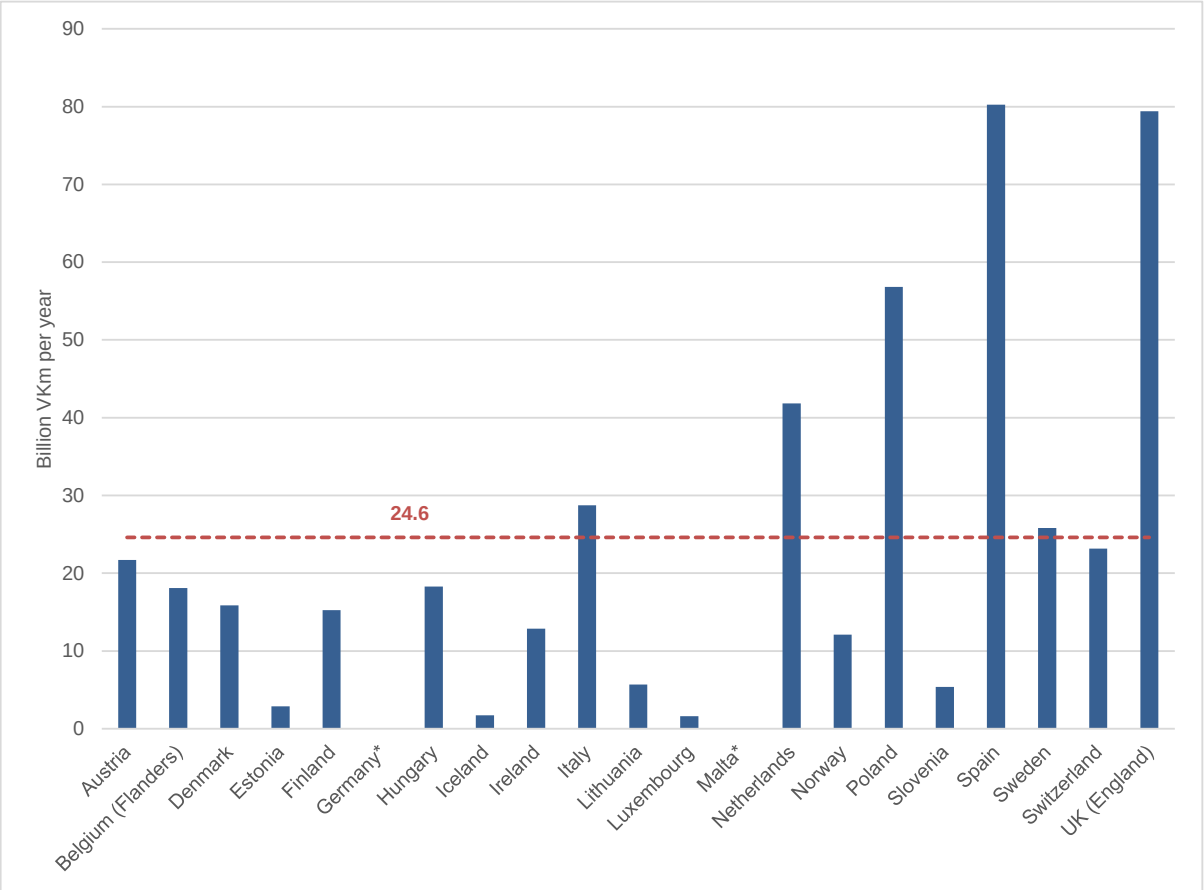


Figure 36 - Trends in HGV and All traffic on the Pan European Road Network since 2011 (only countries participating in all six reports)

5.5 Road Transport Mileage

Road Transport Mileage shows the mileage travelled every year on the Pan European Road Network (expressed in terms of total vehicle kilometres per year) and provides a measure of the intensity of total transport activity. It is calculated by multiplying the Average Daily Traffic Flow value along a logical section by the length in km of the section.

Figure 33 shows the road transport mileage on the Pan European Road Network in each participating country. The average road transport mileage is 24.6 Billion VehKm.



* - No Data

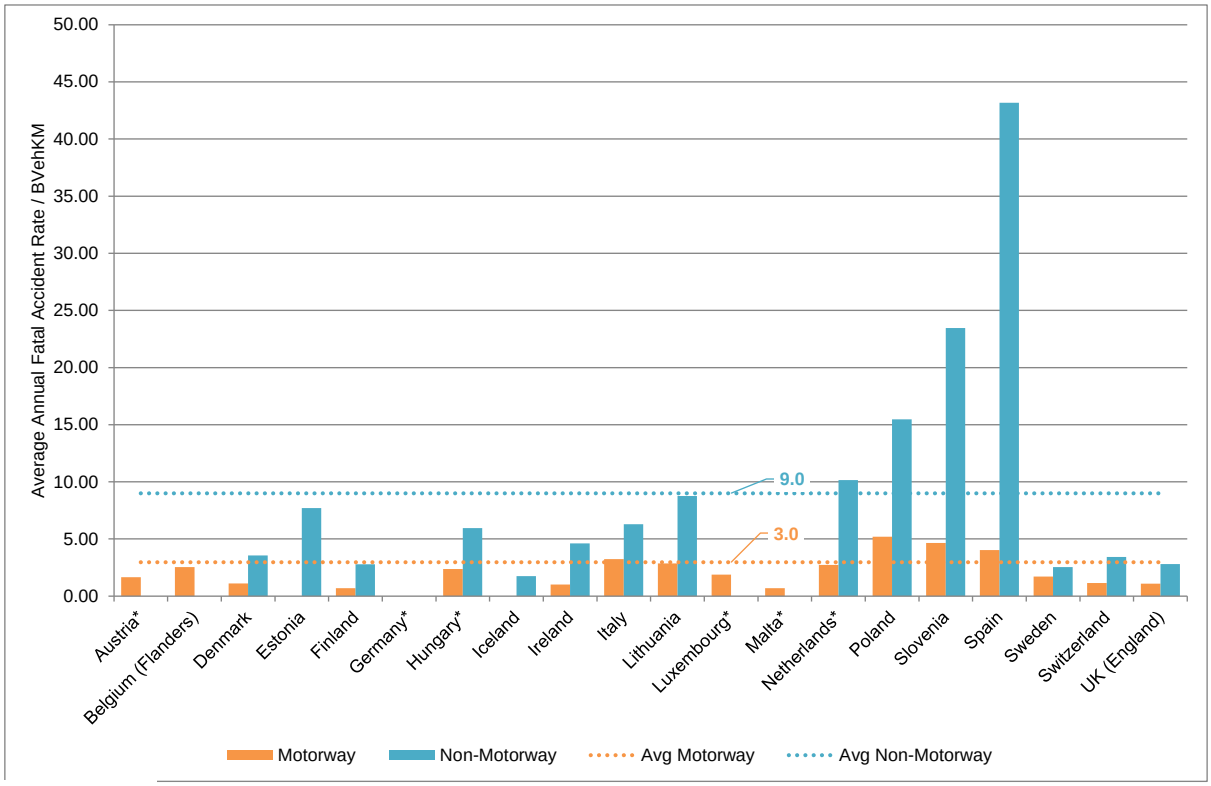
Figure 37 – National road transport mileage on Pan European roads

The countries with the highest figures are Spain and the UK (both with approximately 80 Billion VehKm). The countries with the lowest figures are Luxembourg and Iceland (both with less than 2 Billion VehKm). However, as with other indicators, these figures depend on the characteristics of the sections selected to be part of the Pan European Road Network and on the size of the country.

5.6 Fatal Accident Rate

This indicator shows the annual average rate of fatal accidents over the five years 2017 to 2021 based on the road transport mileage (i.e. expressed as the number per Billion VehKm). It should be noted that there is a relatively small number of accidents on the Pan European Road Network each year which makes this indicator sensitive to changes in traffic flow.

Figure 35 shows the distribution of Average Annual Fatal Accident Rate by country and road type. This shows that the average fatal accident on Motorways is 3.0 per Billion VehKm which rises to 9.0 per Billion VehKm on non-motorways.



* - No Data

Figure 38 – National annual average fatal accident rate on Pan European roads

(The network in Austria, Luxembourg and Netherlands consists only of motorways. The network in Estonia and Malta consists only of non-motorway roads.)

There is also significant variation between individual countries which, on motorways, ranged between 5.2 per Billion VehKm in Poland and zero per Billion VehKm in Iceland[11]. On non-motorway roads, the national figures ranged between 43.18 per Billion VehKm in Spain to zero per Billion VehKm in Belgium (Flanders)[12].

[11] It should be noted that only 3km of the Pan European Road Network in Iceland comprises motorways.

[12] It should be noted that only 128km of the Pan European Road Network in Belgium (Flanders) comprises non-motorways.

Figure 36 compares the Average Fatal Accident Rates on the Comprehensive, Core and, Non- Core networks. This shows that the fatal accident rate on motorways is consistent between the Core and Non-Core networks reflecting the consistent design standards for motorways whereas the fatal accident rate on non-motorway roads is significantly higher on the Non-Core network (9.7 per Billion VehKm) compared to the Core network (6.3 per Billion VehKm) reflecting the more diverse characteristics of these roads.

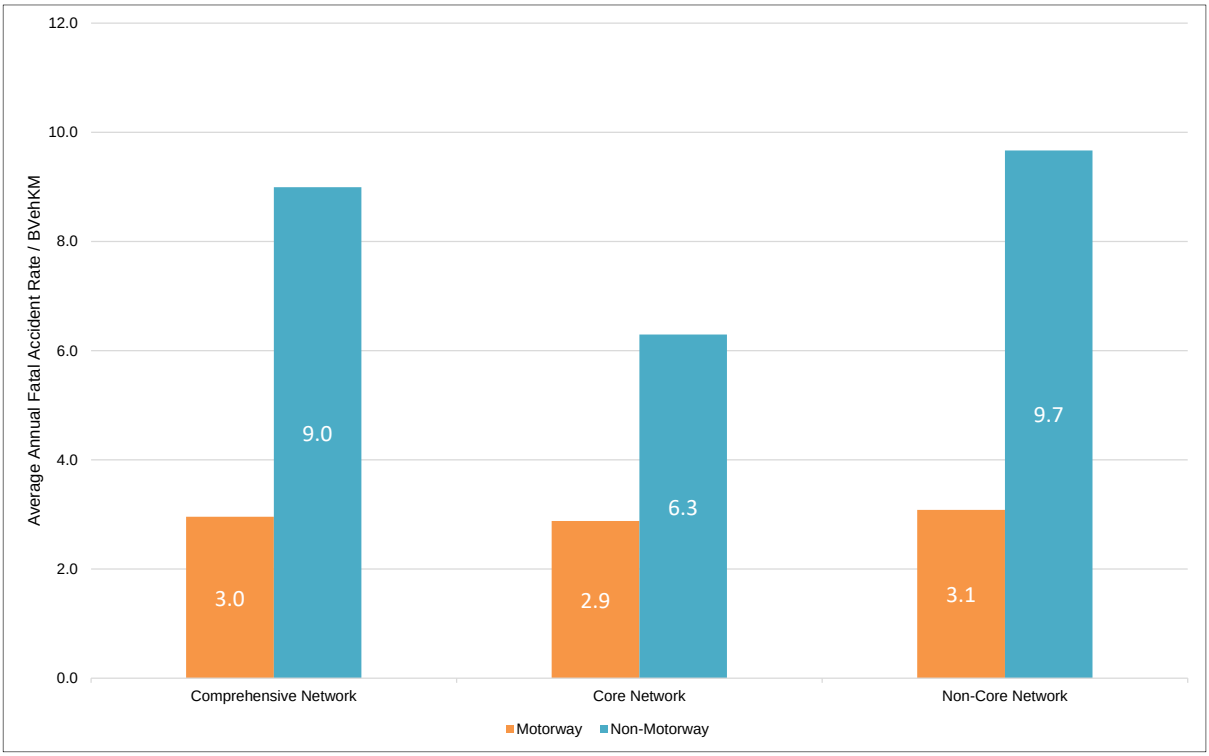


Figure 39 - Comparison of fatal accident rates on the Comprehensive, Core, Non-Core, and Corridor networks

Figure 37 shows trends in Annual Average Accident Rate on the comprehensive network since 2011 for those 14 countries that have provided data for all six reports[13]. This shows that before 2015 the average annual accident rate for all road types was approximately 8.2 per Billion VehKm, but since 2015 has been gradually reducing to approximately 3 per Billion VehKm on this subset of roads. The reason for the step change between 2013 and 2015 is unclear but it should be noted that these are small numbers that are very sensitive to changes.

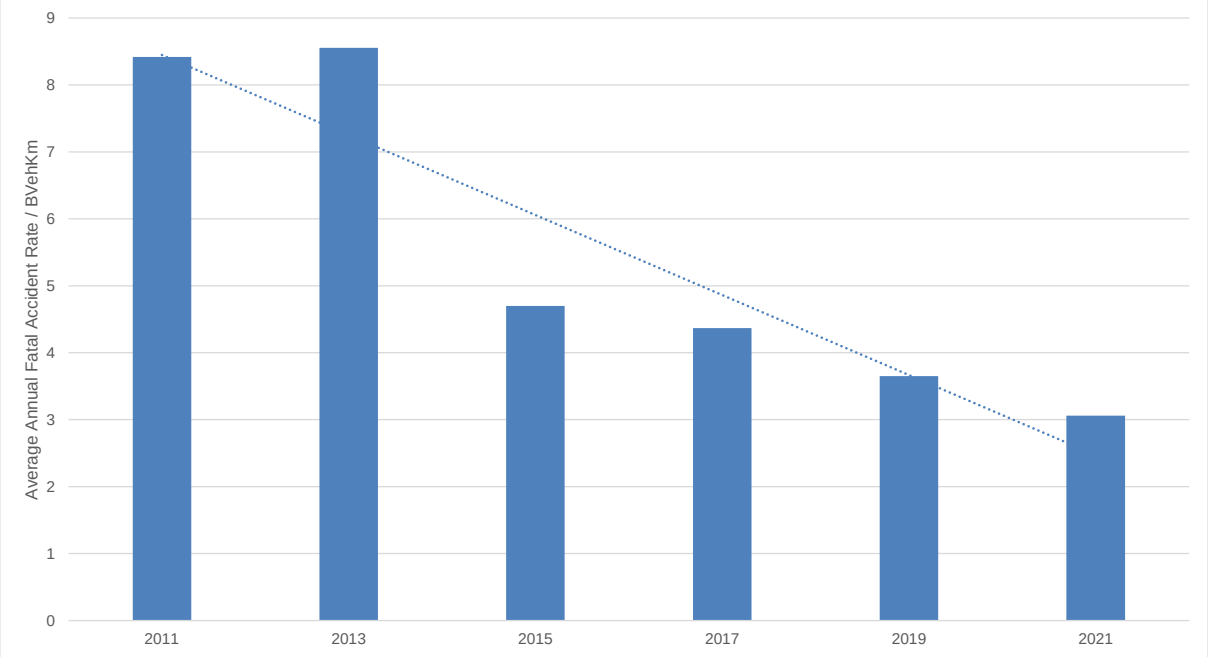


Figure 40 -Trends in fatal accident rate on the Pan European Road Network since 2011 (only countries participating in all six reports)

[13] That is Austria, Denmark, Estonia, Finland, Iceland, Ireland, Italy, Lithuania, Luxembourg, Norway, Slovenia, Spain, Sweden, and the UK.

6 SUMMARY AND CONCLUSIONS

This is the seventh biennial report that CEDR has published on the performance of the Pan European Road Network since 2011. The 2021 report includes data from 21 of CEDR's 28 members and covers more than 71,000km of the Pan European Road Network which represents approximately 82% of the total network.

6.1 Summary of Key Findings

Section 2 of the report contains information on the general characteristics of the Pan European Road Network as based on the TEN-T. This shows that 61% of the TEN-T Comprehensive network and 86% of the Core network comprises motorways and 90% of the network is rural. In terms of network capacity, 75% of the network has more than two lanes whereas 90% of the Core network has more than two lanes and 6% has more than six lanes. All NRAs plan to be increased the capacity of their networks and 31% of the of sections that make up the Pan European Road Network are planned to receive capacity improvements.

Section 3 covers network infrastructure and services. This shows that approximately 2% of the network consists of bridges more than 100m in length and that unsurprisingly these are predominantly in alpine countries. Similarly, approximately 2% of the network comprises tunnels more than 300m in length and, again, these are predominantly in alpine counties and Norway.

The report looks at the extent and maturity of ITS on the network this shows that 60% of the network is covered by Level 2 ITS (i.e. traffic information systems) and 25% is Level 3 (i.e. actively managed), while just 7% of the network has no ITS at all. Currently, less than 0.5% has Level 4 (i.e. cooperative ITS).

The report also looks at the services and facilities provided to users. This includes rest areas with facilities for truck drivers and different types of refuelling or recharging facilities. Although further work is needed to refine the definition of these indicators, they indicate that there are on average 5.3 rest areas per 100km on the Pan European Road Network. There are on average 3.6 rest areas with facilities for truck drivers per 100km on the network as a whole: exceeding the guidance on having one safe and secure rest area for truck drivers approximately every 100km. There are on average 2.7 rest areas per 100km with charging facilities for electric vehicles and 2.1 rest areas per 100 km with refuelling facilities for Liquefied Petroleum Gas (LPG) and other alternative fuels.

Section 4 compares the performance of the Core Network Corridors in terms of traffic flow, proportion of HGVs and rate of fatal accidents.

The North Sea – Mediterranean corridor has the highest average traffic flow at 75,367 vehicles per day while the Atlantic corridor (25,794). The average for the corridors is 58,952 46,694 vehicles per day.

The North Sea – Baltic corridor has the greatest percentage of HGVs (21%) while the Rhine – Alpine corridor has the smallest proportion of HGVs (14%). The average figure for the corridors is 18% HGVs.

Regarding fatal accident rate, the Baltic-Adriatic corridor has the highest rate (1.7 per Billion VehKm) while the Orient/East-Med corridor has the lowest (0.5 per Billion VehKm). The average figure for the corridors is 1.0 per Billion VehKm.

Section 5 looks at the performance of the network in detail. In terms of traffic flow, 65% of the network carries less than 20,000 vehicles per day and 19% of the network carries between 20,000 and 40,000 vehicles per day. 12.9% of the network carries between 40,000 and 80,000 vehicles per day and just 2.7% carries more than 80,000 vehicles per day.

Traffic density on the network is expressed as average annual daily traffic per lane. This shows that on 67% of the network, the traffic density is less than 6,000 vehicles per day per lane, 25% of the network has a density of between 6,000 and 18,000 vehicles per day per lane while, at the top end, 9% of the network has a traffic density of more than 18,000 vehicles per day per lane. Meanwhile, 50% of the Core Network has a traffic density of more than 6,000 vehicles per day per lane and 4% has more than 18,000 vehicles per day per lane. Looking at trends in traffic density amongst the 15 countries that have provided data for all six reports shows a steady increase in traffic density up to 2019 with a noticeable reduction between 2019 and 2021. This reduction could be because of the travel restrictions introduced in response to the Covid-19 pandemic in 2020 and 2021.

Considering the number of HGVs on the network shows that 64% of the network carries fewer than 3,000 HGVs per day, 28% carries between 3,000 and 9,000 vehicles per day and 9% carries more than 9,000 HGVs per day. Looking at trends in HGV traffic amongst the 15 countries that have provided data for all six reports shows a gradual decline in HGV traffic since 2011.

Road Transport Mileage shows the mileage travelled every year on the Pan European Road Network. The average figure is 24.6 Billion VehKm per year.

Finally, the report considers annual average accident rate per Billion VehKm. This shows that on the network, there are on average 3.0 fatal accidents per Billion VehKm on motorways compared to 9.0 per Billion VehKm on non-motorways.

Looking at trends in Annual Average Accident Rate on the comprehensive network since 2011 for those countries that have provided data for all six reports shows that, before 2015, the average annual accident rate for all road types was approximately 6.2 per Billion VehKm, but since 2015 has gradually reduced to approximately 3 per Billion VehKm.

6.2 Conclusions

The continued support from CEDR members, and interest from third parties, shows that the Pan European Road Network Performance Report continues to provide a useful analysis of the network at a European and national level. Furthermore, the performance report continues to evolve with new indicators being developed that look at safe and secure rest areas for truck drivers and the availability of facilities for charging electric vehicles and alternative fuels.

Other significant developments include the planned introduction of a high-level summary report that considers the performance of individual national road administrations through new KPIs covering safety, congestion, environment, finance, and asset condition.

The 2021 report shows that, over the long-term, there is an increasing demand on the network in terms of general traffic flow – although traffic levels reduced in 2019 and 2021 in response to the Covid-19 pandemic – but that the number of HGVs using the network has gradually declined. In response, national road administrations are planning to increase capacity and are deploying ITS solutions to actively manage traffic demand. Accident rates on the network remain low and appear to have remained steady since 2015.

7 FUTURE DEVELOPMENTS

7.1 New KPI Report

The key development is the planned development of a new report that describes the performance of individual NRAs based on information provided by the organisations themselves via an online data collection tool.

The report will contain KPIs, supported by detailed performance indicators, covering:

- Safety
- Congestion
- Environment
- Finance
- Asset Condition
- Customer Satisfaction

It is intended that the new report will supplement the Pan European Road Network Performance Report and Web GIS map tool and will allow NRAs to compare their performance and share good practice, thus supporting CEDR's mission to promote excellence in the management of roads.

7.2 Continued Development of the Report

Work will continue to develop and refine the Pan European Road Network Performance Report. Which may include:

- Further refinement of rest area definitions
- Decarbonisation measures
- Completeness of the network
- Accessibility
- Toll charges
- Maintenance backlog
- Accidents at road works
- Energy efficiency
- Progress with electrification and static/dynamic charging facilities
- Active travel infrastructure
- Other environmental measures (e.g. biodiversity)

In addition, the Web GIS tool will continue to be developed to reflect the development of new indicators as well as to provide improved functionality.

ANNEX 1: METHODOLOGY AND DATA VALIDITY

Methodology

The Pan European Road Network Performance Report is based on a common location referencing model and common data definitions that have been developed by practitioners with an understanding of the data.

Data is provided directly by NRAs and is processed centrally to produce this report and the accompanying maps as described below:

1. Individual countries referenced their local networks into Logical Nodes and Sections using the Pan European Road Network Location Referencing System developed by CEDR Planning Working Group in 2008.
2. They then submitted their network and performance base data (including the geographical coordinates of each node) using a standard Excel spreadsheet and a set of base data definitions (see Annex 2) that they were provided with.
3. Once received, the data was checked, and errors were corrected in consultation with the individual countries.
4. The data was then systematised into a single Excel database and used for:
   - the analysis and the production of charts and tables; and
   - the production of maps in GIS ShapeFile format.

As this is now the fifth biennial report that CEDR has produced, the participating countries are familiar with the requirements and the process and data quality has improved.

Table 4 shows the coverage of the information provided by the NRAs based on the number of sections per country.

.

Table 4: 2021 Data Coverage

Name	No of Sections	Road Type	Section Length	No of Lanes	AADT	Percent HGV	Fatal Accidents	Length of Bridges	Length of Tunnels	Env'ment	Core Network	Planned Upgrade	Rest Area	Truck Parking Areas	EV Station	Alt' Fuel Station
Austria	80	80	80	80	78	78	80	80	80	80	80	80	80	80	80	80
Belgium (Flanders)	61	61	61	61	52	52	52	61	61	61	61	13	61	61	61	61
Denmark	74	74	74	74	74	74	74	26	3	74	74	74	74	74	74	-
Estonia	45	45	45	38	38	38	25	9	45	45	45	44	27	16	45	-
Finland	176	176	176	176	176	176	176	176	6	176	176	176	176	176	176	176
Germany	366	366	366	366	-	-	-	332	362	366	366	-	-	-	366	-
Hungary	49	49	49	49	49	49	49	49	1	49	49	49	37	11	49	12
Iceland	78	78	78	78	78	78	78	78	78	78	78	78	-	78	78	78
Ireland	58	58	58	58	57	58	58	58	58	58	58	58	15	15	58	-
Italy	101	101	101	101	94	95	95	101	101	101	101	101	27	26	101	26
Lithuania	127	127	127	123	122	122	122	127	127	127	127	127	78	19	127	-
Luxembourg	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Malta	47	47	47	47	-	-	-	19	5	47	47	47	-	-	47	47
Netherlands	119	119	119	118	118	119	118	119	119	119	119	-	-	-	119	-
Norway	206	206	206	206	206	206	67	206	206	206	206	206	206	206	206	206
Poland	585	585	585	585	585	585	585	585	584	585	585	585	585	585	585	585
Slovenia	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
Spain	440	440	440	440	436	434	352	364	374	440	440	440	440	-	440	440
Sweden	119	119	119	119	119	119	119	119	119	119	119	119	-	-	119	70
Switzerland	111	111	111	111	111	111	109	111	111	111	111	111	111	111	111	-
UK (England)	120	120	120	120	119	119	119	119	119	120	118	119	42	82	120	43
TOTAL	3042	3042	3042	3030	2592	2593	2358	2819	2639	3042	3040	2507	2039	1620	3042	1904

ANNEX 2: BASE DATA DEFINITIONS

Network

Title	Road Type
Definition	The predominant Road Type along a Logical Section
Permitted values	Motorway or Non-motorway
Definitions	A **motorway** is a road that is part of the Pan European Road Network that comprises two carriageways, separated by a physical barrier for most of its length. All crossings are normally grade separated. No stopping and usually a minimum speed. Access is generally restricted to certain types of vehicle. A **non-motorway** is a road that is not a motorway but is still a strategic road and is part of the Pan European Road Network.

Title	Section Length
Definition	The route length of a Logical Section in kilometres
Permitted values	Integer
Definitions	The route length of a section is the distance from the start node to the end node of a Logical Section, measured in one direction only. This means that, for dual carriageways, the length is included once only and is the average of the distances on each carriageway. The route length should be rounded to the nearest kilometre.

Title	Core
Definition	An indication of whether or not the logical section forms part of the Core Network.
Permitted values	Yes or No
Definitions	The Pan European Road Network consists of a Comprehensive Network covering all European regions, and the Core Network consisting of the highest strategic connections within the Comprehensive Network linking the most important nodes. The requirements of the Core and Comprehensive Networks are defined in Regulation (EU) No 1315/2013 of the European Parliament and of the Council on Union Guidelines for the Development of the Trans-European Transport Network.

Title	Physical Environment
Definition	An indication of the predominant physical environment along a Logical Section.
Permitted values	Urban or Rural
Definitions	**Urban:** more than 50% by length of the Logical Section passes through built-up areas. **Rural:** more than 50% by length of the Logical Section passes through non built-up areas.

Title	Number of Lanes
Definition	The average number of lanes along a Logical Section
Permitted values	Real number to one decimal place (e.g. 4.2)
Definitions	The length-weighted average number of permanent lanes in both directions along a Logical Section, including crawler lanes and bus lanes. The Number of Lanes should be calculated as the length-weighted average number of lanes in one direction plus the length-weighted average number of lanes in the other direction. For example, if a Logical Section has 2 lanes for 25% of its length and 1 lane for 75% of its length in one direction, and has 1 lane for 100% of its length in the other direction, then its length-weighted average number of lanes is: (25% x 2 + 75% x 1) + (100% x 1) = 2.25 This Logical Section will therefore be recorded as having 2.3 lanes.

Title	Planned Capacity Improvements
Definition	An indication that capacity improvements are planned on the Logical Section
Permitted values	Yes or No
Definitions	Capacity improvements that are planned for all or part of the Logical Section within the organisation's existing long-term investment plans. The need for capacity improvements is deemed to indicate that the Logical Section currently experiences traffic congestion, i.e. it is a bottleneck.

Infrastructure and Services

Title	Length of Bridges
Definition	The total length of bridges along a Logical Section in kilometres
Permitted values	Real number to one decimal place
Definitions	The total Length of Bridges along a section is the total length of road that crosses bridges within that Logical Section, measured in one direction only. This means that, for dual carriageways, the length is included once only and is the average of the total length of bridges on each carriageway. Only road-carrying bridges that have a length greater than 0.1 km should be reported. The total Length of Bridges along a Logical Section should be rounded to the nearest 0.1 km. For example, on a 2-km Logical Section which has two bridges, one 0.5 km long and one 0.075 km long, the total Length of Bridges for that Logical Section would be reported as 0.5 km.

Title	Length of Tunnels
Definition	The total Length of Tunnels along a Logical Section in kilometres
Permitted values	Real number to one decimal place
Definitions	The Length of Tunnels along a section is the total length of road that passes through tunnels within that Logical Section, measured in one direction only. This means that, for dual carriageways, the length is included once only and is the average of the total length of tunnels on each carriageway. Only tunnels that have a length greater than 0.3 km should be reported. The total Length of Tunnels along a Logical Section should be rounded to the nearest 0.1 km. For example, on a 2-km Logical Section which has two tunnels, one 0.5 km long and one 0.2 km long, the total Length of Tunnels for that Logical Section would be reported as 0.5 km.

Title	Intelligent Transport Systems
Definition	An indication of the type of Intelligent Transport System (ITS) in place on the Logical Section.
Permitted values	0, 1, 2, 3, or 4
Definitions	Level 0 None Level 1 Monitoring system (e.g. real-time data about traffic/weather conditions is collected by the road administration) Level 2 Traffic information system (road administration passively manages the network e.g. information about traffic/weather conditions is provided to road users) Level 3 Traffic management system (road administration actively manages the network e.g. variable speed limits, dynamic lane management, ramp metering) Level 4 Cooperative ITS (i.e. vehicle-to-vehicle or infrastructure-to-vehicle information) The types of ITS are based on the EasyWay Deployment Guidelines[14]

Title	Rest Areas
Definition	Number of rest area locations along a logical section.
Permitted values	Integer
Definitions	Number of rest areas on, or adjacent to, the road network (i.e. public facilities at which drivers and passengers can rest, eat, or refuel without exiting onto secondary roads) Rest areas that are split across different sides of a carriageway should be considered a single rest area location. Similarly, rest areas that are accessible from more than one logical section should be counted against each section. Examples are given in the Appendix.

[14] https://dg.its-platform.eu/DGs2012

Title	Parking Areas for Truck Drivers
Definition	Number of rest area locations along a logical section that have dedicated parking areas for truck drivers.
Permitted values	Integer
Definitions	Number of rest areas on, or adjacent to, the road network with dedicated parking areas for truck drivers, i.e. parking areas which enable HGV drivers to meet the rest times required by EU law and to benefit from safe and secure parking conditions. Rest areas that are split across different sides of a carriageway should be considered a single rest area location. Similarly, rest areas that are accessible from more than one logical section should be counted against each section. Examples are given in the Appendix.

Title	Electric Vehicle Charging Stations
Definition	Number of rest area locations along a logical section that have charging facilities for electric vehicles.
Permitted values	Integer
Definitions	Number of rest areas on, or adjacent to, the road network with one or more charging points for electric vehicles. Rest areas that are split across different sides of a carriageway should be considered a single rest area location. Similarly, rest areas that are accessible from more than one logical section should be counted against each section. Examples are given in the Appendix.

Title	Green Refuelling Stations
Definition	Number of rest area locations along a logical section that have alternative refuelling facilities.
Permitted values	Integer
Definitions	Number of rest areas on, or adjacent to, the road network with CNG (Compressed Natural Gas) and/or LPG (Liquefied Petroleum Gas) refuelling facilities. Rest areas that are split across different sides of a carriageway should be considered a single rest area location. Similarly, rest areas that are accessible from more than one logical section should be counted against each section. Examples are given in the Appendix.

Performance

Title	Traffic Flow
Definition	The annual average daily traffic along a Logical Section
Permitted values	Integer
Definitions	The length-weighted Average Annual Daily Traffic (AADT) along a Logical Section, in both directions, rounded to the nearest integer. This includes all vehicle types. The Traffic Flow should be calculated as the length-weighted AADT in one direction plus the length-weighted AADT in the other direction. See Number of Lanes for a description of length weighting. If traffic count data is not available, estimated values can be used.

Title	Source of Traffic Data
Definition	An indication of whether the traffic data for the logical section is estimated or based on actual traffic counts.
Permitted values	Actual or Estimate
Definitions	This supports and provides context to the reported Traffic Flow data.

Title	Proportion of Heavy Goods Vehicles
Definition	The proportion of annual average daily traffic along a Logical Section that comprises Heavy Goods Vehicles (HGVs)
Permitted values	Percentage to one decimal place
Definitions	The proportion of length-weighted average annual daily traffic (AADT) along a Logical Section, in both directions, that comprises Heavy Goods Vehicles, expressed as a percentage. See Number of Lanes for a description of length weighting. HGVs are goods vehicles weighing in excess of 3.5 tonnes.

Title	Fatal Accidents	
Definition	The total number of fatal accidents that occurred along the Logical Section over the last five calendar years	
Permitted values	Fatal Accidents	Integer
	Number of Years (if <5)	Integer
Definitions	The aggregated number of fatal accidents that occurred on the section over the last five years. Any accidents that occurred at a Logical Node should be allocated to a single Logical Section as appropriate. If data is not available for the last five years, the number of years that the number of accidents is aggregated over should be provided.	

ANNEX 3: NATIONAL PERFORMANCE DATA

Road Type

Table 5: Length of Pan European Roads by Road Type

Country	Network Length (km)	No of Sections	Road Type			
			Motorway		Non-Motorway	
			Length (km)	%	Length (km)	%
Austria	1,740	80	1,740	100.0%	-	0.0%
Belgium (Flanders)	948	61	820	86.5%	128	13.5%
Denmark	1,559	74	1,175	75.4%	384	24.6%
Estonia	1,581	45	-	0.0%	1,581	100.0%
Finland	5,217	176	878	16.8%	4,339	83.2%
Germany	10,767	366	10,402	96.6%	365	3.4%
Hungary	1,463	49	1,165	79.6%	298	20.4%
Iceland	1,786	78	3	0.2%	1,783	99.8%
Ireland	2,163	58	990	45.8%	1,172	54.2%
Italy	4,514	101	2,654	58.8%	1,860	41.2%
Lithuania	1,652	127	440	26.6%	1,212	73.4%
Luxembourg	89	28	89	100.0%	-	0.0%
Malta	114	47	-	0.0%	114	100.0%
Netherlands	1,886	119	1,886	100.0%	-	0.0%
Norway	4,790	206	794	16.6%	3,996	83.4%
Poland	7,301	585	4,169	57.1%	3,132	42.9%
Slovenia	599	52	556	92.8%	43	7.2%
Spain	12,348	440	10,919	88.4%	1,429	11.6%
Sweden	6,417	119	1,913	29.8%	4,504	70.2%
Switzerland	1,333	111	1,122	84.2%	211	15.8%
UK (England)	4,441	120	2,729	61.5%	1,712	38.5%
TOTAL	72,707	3,042	44,445	61.1%	28,262	38.9%

Physical Environment

Table 6: Length of Pan European Roads by Physical Environment

Country	Network Length (km)	Rural		Urban		No Data	
		Length (km)	%	Length (km)	%	Length (km)	%
Austria	1,740	1,540	88.5%	200	11.5%	0	0.0%
Belgium (Flanders)	948	792	83.5%	156	16.5%	0	0.0%
Denmark	1,559	1,514	97.1%	45	2.9%	0	0.0%
Estonia	1,581	1,515	95.8%	66	4.2%	0	0.0%
Finland	5,217	5,076	97.3%	141	2.7%	0	0.0%
Germany	10,767	9,881	91.8%	886	8.2%	0	0.0%
Hungary	1,463	1,387	94.8%	77	5.2%	0	0.0%
Iceland	1,786	1,715	96.0%	71	4.0%	0	0.0%
Ireland	2,163	1,979	91.5%	184	8.5%	0	0.0%
Italy	4,514	4,211	93.3%	303	6.7%	0	0.0%
Lithuania	1,652	1,551	93.9%	101	6.1%	0	0.0%
Luxembourg	89	89	100.0%		0.0%	0	0.0%
Malta	114	42	36.9%	72	63.1%	0	0.0%
Netherlands	1,886	1,439	76.3%	447	23.7%	0	0.0%
Norway	4,790	4,650	97.1%	139	2.9%	0	0.0%
Poland	7,301	6,345	86.9%	956	13.1%	0	0.0%
Slovenia	599	552	92.2%	47	7.8%	0	0.0%
Spain	12,348	9,917	80.3%	2,431	19.7%	0	0.0%
Sweden	6,417	5,844	91.1%	573	8.9%	0	0.0%
Switzerland	1,333	694	52.1%	639	47.9%	0	0.0%
UK (England)	4,441	4,425	99.6%	16	0.4%	0	0.0%
TOTAL	72,707	65,157	89.6%	7,550	10.4%	0	0.0%

Number of Lanes

Table 7: Length of Pan European Road Network by Number of Lanes

Country	Total Length (km)	2 Lanes or Less		More than 2, up to 4 Lanes		More than 4, up to 6 Lanes		More than 6 Lanes		No Data	
		Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%
Austria	1,740	16	0.9%	795	45.7%	879	50.5%	50	2.9%	0	0.0%
Belgium (Flanders)	948	0	0.0%	545	57.5%	360	38.0%	43	4.5%	0	0.0%
Denmark	1,559	170	10.9%	1,052	67.5%	287	18.4%	50	3.2%	0	0.0%
Estonia	1,581	687	43.5%	812	51.4%	34	2.2%	0	0.0%	48	3.0%
Finland	5,217	1,996	38.3%	3,062	58.7%	159	3.0%	0	0.0%	0	0.0%
Germany	10,767	36	0.3%	5,391	50.1%	5,044	46.8%	296	2.7%	0	0.0%
Hungary	1,463	45	3.1%	1,313	89.7%	105	7.2%	0	0.0%	0	0.0%
Iceland	1,786	1,682	94.2%	95	5.3%	9	0.5%	0	0.0%	0	0.0%
Ireland	2,163	1,107	51.2%	968	44.8%	87	4.0%	0	0.0%	0	0.0%
Italy	4,514	651	14.4%	3,626	80.3%	238	5.3%	0	0.0%	0	0.0%
Lithuania	1,652	1,002	60.7%	624	37.8%	0	0.0%	0	0.0%	26	1.6%
Luxembourg	89	89	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Malta	114	38	33.8%	69	61.2%	3	3.1%	2	2.0%	0	0.0%
Netherlands	1,886	0	0.0%	8	0.4%	1,305	69.2%	566	30.0%	7	0.4%
Norway	4,790	3,304	69.0%	1,381	28.8%	96	2.0%	9	0.2%	0	0.0%
Poland	7,301	3,795	52.0%	3,462	47.4%	44	0.6%	0	0.0%	0	0.0%
Slovenia	599	43	7.2%	377	62.9%	179	29.9%	0	0.0%	0	0.0%
Spain	12,348	979	7.9%	6,428	52.1%	4,554	36.9%	387	3.1%	0	0.0%
Sweden	6,417	2,944	45.9%	3,399	53.0%	74	1.2%	0	0.0%	0	0.0%
Switzerland	1,333	80	6.0%	931	69.8%	251	18.8%	71	5.3%	0	0.0%
UK (England)	4,441	0	0.0%	1,552	34.9%	1,892	42.6%	997	22.5%	0	0.0%
TOTAL	72,707	18,664	25.7%	35,890	49.4%	15,599	21.5%	2,472	3.4%	81	0.1%

Planned Capacity Improvements

Table 8: Number of Pan European Road Network Sections with Planned Capacity Improvements

Country	Total Sections	Yes		No		No Data	
		No of Sections	%	No of Sections	%	No of Sections	%
Austria	80	10	12.5%	70	87.5%	0	0.0%
Belgium (Flanders)	61	13	21.3%	0	0.0%	48	78.7%
Denmark	74	16	21.6%	58	78.4%	0	0.0%
Estonia	45	15	33.3%	29	64.4%	1	2.2%
Finland	176	43	24.4%	133	75.6%	0	0.0%
Germany	366	0	0.0%	0	0.0%	366	100.0%
Hungary	49	4	8.2%	45	91.8%	0	0.0%
Iceland	78	13	16.7%	65	83.3%	0	0.0%
Ireland	60	4	6.7%	56	93.3%	0	0.0%
Italy	101	48	47.5%	53	52.5%	0	0.0%
Lithuania	127	31	24.4%	96	75.6%	0	0.0%
Luxembourg	28	4	14.3%	24	85.7%	0	0.0%
Malta	47	18	38.3%	29	61.7%	0	0.0%
Netherlands	119	0	0.0%	0	0.0%	119	100.0%
Norway	206	52	25.2%	154	74.8%	0	0.0%
Poland	592	296	50.0%	296	50.0%	0	0.0%
Slovenia	52	1	1.9%	51	98.1%	0	0.0%
Spain	442	45	10.2%	397	89.8%	0	0.0%
Sweden	119	40	33.6%	79	66.4%	0	0.0%
Switzerland	111	58	52.3%	53	47.7%	0	0.0%
UK (England)	120	57	47.5%	62	51.7%	1	0.8%
Total	3,053	768	25.2%	1,750	57.3%	535	17.5%

Length of Bridges

Table 9: Length of Pan European Roads Comprising Bridges

Country	Network Length with Bridge Data (km)	Length of Bridges (km)					
		All Roads	%	Motorway	%	Non-Motorway	%
Austria	1,740	104	6.0%	104	6.0%	0	0.0%
Belgium (Flanders)	948	21	2.2%	19	2.0%	2	0.2%
Denmark	809	32	3.9%	28	3.5%	4	0.5%
Estonia	432	2	0.4%	0	0.0%	2	0.4%
Finland	5,217	19	0.4%	10	0.2%	9	0.2%
Germany	9,511	265	2.8%	260	2.7%	5	0.1%
Hungary	1,463	21	1.5%	16	1.1%	6	0.4%
Iceland	1,786	5	0.3%	0	0.0%	5	0.3%
Ireland	2,163	5	0.2%	3	0.1%	2	0.1%
Italy	4,514	243	5.4%	191	4.2%	52	1.2%
Lithuania	1,652	4	0.2%	1	0.0%	3	0.2%
Luxembourg	89	3	3.6%	3	3.6%	0	0.0%
Malta	64	1	1.4%	0	0.0%	1	1.4%
Netherlands	1,886	24	1.3%	24	1.3%	0	0.0%
Norway	4,790	261	5.4%	122	2.5%	139	2.9%
Poland	7,301	85	1.2%	76	1.0%	10	0.1%
Slovenia	599	24	4.0%	24	4.0%	0	0.0%
Spain	10,683	237	2.2%	229	2.1%	7	0.1%
Sweden	6,417	53	0.8%	30	0.5%	23	0.4%
Switzerland	1,333	103	7.7%	92	6.9%	11	0.8%
UK (England)	4,437	36	0.8%	29	0.6%	7	0.2%
TOTAL	67,834	1,546	2.3%	1,258	1.9%	288	0.4%

Length of Tunnels

Table 10: Length of Pan European Roads Comprising Tunnels

Country	Network Length with Tunnel Data (km)	Length of Tunnels (km)					
		All Roads	%	Motorway	%	Non-Motorway	%
Austria	1,740	169	9.7%	169	9.7%	0	0.0%
Belgium (Flanders)	948	10	1.1%	10	1.1%	0	0.0%
Denmark	55	5	8.4%	5	8.4%	0	0.0%
Estonia	1,581	0	0.0%	0	0.0%	0	0.0%
Finland	198	9	4.4%	6	3.0%	3	1.5%
Germany	10,640	54	0.5%	54	0.5%	0	0.0%
Hungary	48	3	6.2%	3	6.2%	0	0.0%
Iceland	1,786	21	1.1%	0	0.0%	21	1.1%
Ireland	2,163	6	0.3%	6	0.3%	1	0.0%
Italy	4,514	165	3.7%	153	3.4%	13	0.3%
Lithuania	1,652	0	0.0%	0	0.0%	0	0.0%
Luxembourg	89	3	3.4%	3	3.4%	0	0.0%
Malta	13	1	8.4%	0	0.0%	1	8.4%
Netherlands	1,886	17	0.9%	17	0.9%	0	0.0%
Norway	4,790	426	8.9%	102	2.1%	324	6.8%
Poland	7,295	0	0.0%	0	0.0%	0	0.0%
Slovenia	599	20	3.3%	20	3.3%	0	0.0%
Spain	10,992	107	1.0%	91	0.8%	15	0.1%
Sweden	6,417	9	0.1%	7	0.1%	2	0.0%
Switzerland	1,333	147	11.0%	94	7.0%	53	4.0%
UK (England)	4,437	3	0.1%	3	0.1%	0	0.0%
TOTAL	63,176	1,174	1.9%	741	1.2%	433	0.7%

Intelligent Transport Systems

Table 11: Length of the Pan European Road Network Featuring Different Levels of ITS

Country	Network length (KM)	Level 0		Level 1		Level 2		Level 3		Level 4		Level 5	
		Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%
Austria	1,740	0	0.0%	0	0.0%	1,454	83.6%	261	15.0%	25	1.4%	0	0.0%
Belgium (Flanders)	948	0	0.0%	0	0.0%	325	34.3%	623	65.7%	0	0.0%	0	0.0%
Denmark	1,559	0	0.0%	0	0.0%	1,461	93.7%	49	3.1%	0	0.0%	49	3.1%
Estonia	1,581	0	0.0%	0	0.0%	1,116	70.6%	465	29.4%	0	0.0%	0	0.0%
Finland	5,217	0	0.0%	0	0.0%	3,939	75.5%	1,278	24.5%	0	0.0%	0	0.0%
Germany	10,767	0	0.0%	0	0.0%	5,225	48.5%	5,415	50.3%	0	0.0%	127	1.2%
Hungary	1,463	41	2.8%	91	6.2%	1,019	69.7%	167	11.4%	144	9.9%	0	0.0%
Iceland	1,786	0	0.0%	0	0.0%	1,786	100.0%	0	0.0%	0	0.0%	0	0.0%
Ireland	2,163	166	7.7%	1,015	46.9%	868	40.1%	108	5.0%	0	0.0%	6	0.3%
Italy	4,514	0	0.0%	2,255	50.0%	2,009	44.5%	0	0.0%	148	3.3%	102	2.3%
Lithuania	1,652	0	0.0%	0	0.0%	1,568	94.9%	84	5.1%	0	0.0%	0	0.0%
Luxembourg	89	0	0.0%	0	0.0%	0	0.0%	89	100.0%	0	0.0%	0	0.0%
Malta	114	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	114	100.0%
Netherlands	1,886	0	0.0%	146	7.7%	125	6.6%	1,615	85.6%	0	0.0%	0	0.0%
Norway	4,790	0	0.0%	0	0.0%	1,389	29.0%	3,380	70.6%	21	0.4%	0	0.0%
Poland	7,301	4,958	67.9%	1,024	14.0%	1,319	18.1%	0	0.0%	0	0.0%	0	0.0%
Slovenia	599	0	0.0%	0	0.0%	275	45.9%	324	54.1%	0	0.0%	0	0.0%
Spain	12,348	0	0.0%	1,429	11.6%	10,880	88.1%	39	0.3%	0	0.0%	0	0.0%
Sweden	6,417	0	0.0%	0	0.0%	5,927	92.4%	490	7.6%	0	0.0%	0	0.0%
Switzerland	1,333	0	0.0%	0	0.0%	72	5.4%	1,261	94.6%	0	0.0%	0	0.0%
UK (England)	4,441	0	0.0%	0	0.0%	2,278	51.3%	2,159	48.6%	0	0.0%	3	0.1%
TOTAL	72,707	5,165	7.1%	5,960	8.2%	43,036	59.2%	17,807	24.5%	339	0.5%	401	0.6%

Frequency of Rest Areas

Table 12: Frequency of Rest Areas on the Pan European Road Network

Country	Total No. of Rest Areas	Total Network Length (km)	Network Length with Rest Area Data	Rest Areas per 100 km Network Length	Rest Areas per 100 km Network Length with Data
Austria	288	1,740	1,740	16.6	16.6
Belgium (Flanders)*	-	948	-	-	-
Denmark	53	1,559	1,559	3.4	3.4
Estonia*	-	1,581	-	-	-
Finland	89	5,217	5,217	1.7	1.7
Germany*	-	10,767	-	-	-
Hungary	96	1,463	1,351	6.6	7.1
Iceland	86	1,786	1,786	4.8	4.8
Ireland	22	2,163	782	1.0	2.8
Italy	40	4,514	993	0.9	4.0
Lithuania	114	1,652	1,035	6.9	11.0
Luxembourg	5	89	89	5.6	5.6
Malta*	-	114	-	-	-
Netherlands*	-	1,886	-	-	-
Norway	335	4,790	4,790	7.0	7.0
Poland	411	7,301	7,301	5.6	5.6
Slovenia	36	599	599	6.0	6.0
Spain	511	12,348	12,348	4.1	4.1
Sweden*	-	6,417	-	-	-
Switzerland	105	1,333	1,333	7.9	7.9
UK (England)	75	4,441	2,148	1.7	3.5
TOTAL	2,266	72,707	42,289	3.1	5.3

* - No Data Provided

Frequency of Rest Areas with Parking for Truck Drivers

Table 13: Frequency of Rest Areas on the Pan European Road Network with Parking for Truck Drivers

Country	Total No. of Rest Areas with Truck Parking	Total Network Length (km)	Network Length with Rest Area Data	Rest Areas with Truck Parking per 100 km Network Length	Rest Areas with Truck Parking per 100 km Network Length with Data
Austria	288	1,740	1,740	16.6	16.6
Belgium (Flanders)	70	948	948	7.4	7.4
Denmark	53	1,559	1,559	3.4	3.4
Estonia	59	1,581	1,079	3.7	5.5
Finland	93	5,217	5,217	1.8	1.8
Germany*	-	10,767	-	-	-
Hungary	96	1,463	1,351	6.6	7.1
Iceland*	-	1,786	-	-	-
Ireland	22	2,163	782	1.0	2.8
Italy	40	4,514	993	0.9	4.0
Lithuania	152	1,652	1,160	9.2	13.1
Luxembourg	5	89	89	5.6	5.6
Malta*	-	114	-	-	-
Netherlands*	-	1,886	-	-	-
Norway	51	4,790	4,790	1.1	1.1
Poland	406	7,301	7,301	5.6	5.6
Slovenia	36	599	599	6.0	6.0
Spain	31	12,348	12,348	0.3	0.3
Sweden*	-	6,417	-	-	-
Switzerland	105	1,333	1,333	7.9	7.9
UK (England)	58	4,441	2,238	1.3	2.6
TOTAL	1,565	72,707	43,527	2.2	3.6

* - No Data Provided

Frequency of Rest Areas with Charging Facilities for Electric Vehicles

Table 14: Frequency of Rest Areas on the Pan European Road Network with EV Charging Facilities

Country	Total No. of Rest Areas with EV Charging	Total Network Length (km)	Network Length with EV Charging Data	Rest Areas with EV Charging per 100 km Network Length	Rest Areas with EV Charging per 100 km Network Length with Data
Austria	54	1,740	1,740	3.1	3.1
Belgium (Flanders)	28	948	948	3.0	3.0
Denmark	18	1,559	1,559	1.2	1.2
Estonia	37	1,581	842	2.3	4.4
Finland	129	5,217	5,217	2.5	2.5
Germany*	-	10,767	-	-	-
Hungary	16	1,463	491	1.1	3.3
Iceland	62	1,786	1,786	3.5	3.5
Ireland	20	2,163	782	0.9	2.6
Italy	2	4,514	991	0.0	0.2
Lithuania	25	1,652	371	1.5	6.7
Luxembourg	0	89	89	0.0	0.0
Malta*	-	114	-	-	-
Netherlands*	-	1,886	-	-	-
Norway	37	4,790	4,790	0.8	0.8
Poland	185	7,301	7,301	2.5	2.5
Slovenia	30	599	599	5.0	5.0
Spain*	-	12,348	-	-	-
Sweden*	-	6,417	-	-	-
Switzerland	45	1,333	1,333	3.4	3.4
UK (England)	207	4,441	3,722	4.7	5.6
TOTAL	895	72,707	32,560	1.2	2.7

* - No Data Provided

Frequency of Rest Areas with Alternative Fuel Facilities

Table 15: Frequency of Rest Areas on the Pan European Road Network with Alternative Fuel Facilities

Country	Total No. of Rest Areas with Alt. Fuel	Total Network Length (km)	Network Length with Alt. Fuel Data	Rest Areas with Alt. Fuel per 100 km Network Length	Rest Areas with Alt. Fuel per 100 km Network Length with Data
Austria	18	1,740	1,740	1.0	1.0
Belgium (Flanders)	39	948	948	4.1	4.1
Denmark*	-	1,559	-	-	-
Estonia*	-	1,581	-	-	-
Finland	15	5,217	5,217	0.3	0.3
Germany*	-	10,767	-	-	-
Hungary	18	1,463	1,463	1.2	1.2
Iceland	71	1,786	1,786	4.0	4.0
Ireland*	-	2,163	-	-	-
Italy	27	4,514	4,514	0.6	0.6
Lithuania*	-	1,652	-	-	-
Luxembourg	1	89	89	1.1	1.1
Malta	1	114	114	0.9	0.9
Netherlands*	-	1,886	-	-	-
Norway	27	4,790	4,790	0.6	0.6
Poland	406	7,301	7,301	5.6	5.6
Slovenia	24	599	599	4.0	4.0
Spain	83	12,348	12,348	0.7	0.7
Sweden	136	6,417	6,417	2.1	2.1
Switzerland*	-	1,333	-	-	-
UK (England)	68	4,441	4,441	1.5	1.5
TOTAL	932	72,707	51,563	1.3	1.8

* - No Data Provided

Traffic Flow

Table 16: Length of the Pan European Road Network by Traffic Flow Bands

Country	Network Length (km)	Annual Average Daily Traffic Flow [AADT]													
		Less than 5,000		5,000–20,000		20,000–40,000		40,000–80,000		80,000–100,000		More than 100,000		No Data	
		Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%
Austria	1,740	0	0.0%	391	22.5%	790	45.4%	472	27.1%	10	0.6%	25	1.4%	52	3.0%
Belgium (Flanders)	948	0	0.0%	11	1.2%	191	20.1%	448	47.3%	109	11.5%	59	6.2%	130	13.7%
Denmark	1,559	43	2.8%	619	39.7%	542	34.8%	314	20.1%	12	0.8%	29	1.9%	0	0.0%
Estonia	1,581	734	46.4%	799	50.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	48	3.0%
Finland	5,217	2,242	43.0%	2,520	48.3%	327	6.3%	128	2.5%	0	0.0%	0	0.0%	0	0.0%
Germany*	10,767	-	-	-	-	-	-	-	-	-	-	-	-	10,767	100.0%
Hungary	1,463	40	2.8%	509	34.8%	375	25.6%	487	33.3%	52	3.6%	0	0.0%	0	0.0%
Iceland	1,786	1,608	90.0%	121	6.8%	38	2.1%	17	1.0%	2	0.1%	0	0.0%	0	0.0%
Ireland	2,163	129	5.9%	1,645	76.1%	274	12.7%	94	4.3%	0	0.0%	20	0.9%	1	0.0%
Italy	4,514	115	2.5%	2,968	65.8%	993	22.0%	103	2.3%	7	0.2%	67	1.5%	262	5.8%
Lithuania	1,652	597	36.1%	856	51.8%	144	8.7%	24	1.5%	0	0.0%	0	0.0%	31	1.9%
Luxembourg	89	0	0.0%	0	0.0%	31	34.8%	48	53.9%	10	11.2%	0	0.0%	0	0.0%
Malta*	114	-	-	-	-	-	-	-	-	-	-	-	-	114	100.0%
Netherlands	1,886	0	0.0%	51	2.7%	351	18.6%	1,079	57.2%	212	11.2%	186	9.8%	7	0.4%
Norway	4,790	3,073	64.1%	1,340	28.0%	255	5.3%	122	2.6%	0	0.0%	0	0.0%	0	0.0%
Poland	7,301	415	5.7%	3,738	51.2%	2,330	31.9%	731	10.0%	52	0.7%	35	0.5%	0	0.0%
Slovenia	599	33	5.5%	211	35.2%	273	45.6%	82	13.7%	0	0.0%	0	0.0%	0	0.0%
Spain	12,348	1,373	11.1%	7,807	63.2%	2,086	16.9%	793	6.4%	179	1.4%	43	0.3%	67	0.5%
Sweden	6,417	2,650	41.3%	2,729	42.5%	806	12.6%	195	3.0%	34	0.5%	3	0.0%	0	0.0%
Switzerland	1,333	43	3.2%	233	17.5%	323	24.2%	534	40.1%	127	9.5%	73	5.5%	0	0.0%
UK (England)	4,441	0	0.0%	367	8.3%	1,473	33.2%	2,254	50.8%	0	4.4%	147	3.3%	3	0.1%
TOTAL	72,707	13,094	18.0%	26,915	37.0%	11,601	16.0%	7,925	10.9%	1,003	1.4%	686	0.9%	11,482	15.8%

* - No Data Provided

Traffic Density

Table 17: Length of the Pan European Road Network by Traffic Density Bands (Calculated)

Country	Network Length (km)	Traffic Density (AADT/Lane)											
		Less than 3,000		3,000–6,000		6,000–12,000		12,000–18,000		More than 18,000		No Data	
		Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%
Austria	1,740	25	1.4%	577	33.2%	984	56.6%	88	5.1%	14	0.8%	52	3.0%
Belgium (Flanders)	948	0	0.0%	25	2.6%	304	32.1%	430	45.4%	59	6.2%	130	13.7%
Denmark	1,559	74	4.7%	767	49.2%	639	41.0%	79	5.1%	0	0.0%	0	0.0%
Estonia	1,581	1,269	80.3%	264	16.7%	0	0.0%	0	0.0%	0	0.0%	48	3.0%
Finland	5,217	3,637	69.7%	1,214	23.3%	351	6.7%	15	0.3%	0	0.0%	0	0.0%
Germany*	10,767	-	-	-	-	-	-	-	-	-	-	10,767	100.0%
Hungary	1,463	169	11.5%	451	30.9%	518	35.4%	288	19.7%	38	2.6%	0	0.0%
Iceland	1,786	1,632	91.4%	95	5.3%	52	2.9%	7	0.4%	0	0.0%	0	0.0%
Ireland	2,163	489	22.6%	1,077	49.8%	498	23.0%	73	3.4%	26	1.2%	1	0.0%
Italy	4,514	739	16.4%	2,605	57.7%	765	16.9%	89	2.0%	55	1.2%	262	5.8%
Lithuania	1,652	883	53.5%	552	33.4%	173	10.5%	13	0.8%	0	0.0%	31	1.9%
Luxembourg	89	0	0.0%	0	0.0%	0	0.0%	27	30.3%	62	69.7%	0	0.0%
Malta*	114	-	-	-	-	-	-	-	-	-	-	114	100.0%
Netherlands	1,886	0	0.0%	149	7.9%	994	52.7%	736	39.0%	0	0.0%	7	0.4%
Norway	4,790	3,525	73.6%	741	15.5%	469	9.8%	55	1.1%	0	0.0%	0	0.0%
Poland	7,301	882	12.1%	2,610	35.7%	2,539	34.8%	686	9.4%	584	8.0%	0	0.0%
Slovenia	599	122	20.4%	206	34.4%	237	39.6%	34	5.7%	0	0.0%	0	0.0%
Spain	12,348	5,462	44.2%	4,401	35.6%	2,014	16.3%	351	2.8%	53	0.4%	67	0.5%
Sweden	6,417	3,572	55.7%	1,911	29.8%	858	13.4%	73	1.1%	3	0.0%	0	0.0%
Switzerland	1,333	68	5.1%	214	16.1%	440	33.0%	418	31.4%	193	14.5%	0	0.0%
UK (England)	4,441	0	0.0%	483	10.9%	3,226	72.6%	694	15.6%	35	0.8%	3	0.1%
TOTAL	72,707	22,547	31.0%	18,341	25.2%	15,060	20.7%	4,155	5.7%	1,122	1.5%	11,482	15.8%

* - No Data Provided

Transport Mileage

Table 18: Road Transport Mileage on the Pan European Road Network, All Traffic (Calculated)

Country	Billion VKm per Year					% Share				
	Total	Motorway	Non-Motorway	Core	Non-Core	Total	Motorway	Non-Motorway	Core	Non-Core
Austria	21.7	21.7	-	16.1	5.6	4.6%	100.0%	-	74.1%	25.9%
Belgium (Flanders)	18.1	18.0	0.1	14.5	3.6	3.9%	99.3%	0.7%	79.9%	20.1%
Denmark	15.8	14.7	1.1	10.4	5.5	3.4%	92.8%	7.2%	65.3%	34.7%
Estonia	2.9		2.9	1.3	1.6	0.6%	0.0%	100.0%	45.3%	54.7%
Finland	15.3	6.7	8.5	5.5	9.7	3.3%	44.1%	55.9%	36.1%	63.9%
Germany*	-	-	-	-	-	-	-	-	-	-
Hungary	18.3	15.1	3.2	16.0	2.3	3.9%	82.5%	17.5%	87.5%	12.5%
Iceland	1.7	0.1	1.7	0.5	1.3	0.4%	5.2%	94.8%	27.4%	72.6%
Ireland	12.9	8.2	4.6	4.9	7.9	2.8%	63.9%	36.1%	38.3%	61.7%
Italy	28.7	20.9	7.9	10.0	18.7	6.1%	72.7%	27.3%	34.8%	65.2%
Lithuania	5.7	2.6	3.1	3.2	2.5	1.2%	46.4%	53.6%	55.4%	44.6%
Luxembourg	1.6	1.6	-	1.6	0.0	0.3%	100.0%	-	100.0%	0.0%
Malta*	-	-	-	-	-	-	-	-	-	-
Netherlands	41.8	41.8	-	16.3	25.5	8.9%	100.0%	-	39.0%	61.0%
Norway	12.1	6.8	5.3	1.7	10.4	2.6%	56.5%	43.5%	14.2%	85.8%
Poland	56.8	43.3	13.5	37.9	19.0	12.2%	76.2%	23.8%	66.6%	33.4%
Slovenia	5.4	5.3	0.1	4.7	0.7	1.1%	98.6%	1.4%	87.5%	12.5%
Spain	80.3	78.0	2.3	49.7	30.6	17.2%	97.1%	2.9%	61.9%	38.1%
Sweden	25.8	17.5	8.3	17.3	8.5	5.5%	67.7%	32.3%	67.1%	32.9%
Switzerland	23.2	22.3	0.9	5.3	17.9	5.0%	96.2%	3.8%	22.9%	77.1%
UK (England)	79.4	61.1	18.3	47.8	31.6	17.0%	77.0%	23.0%	60.2%	39.8%
TOTAL	467.5	385.8	81.8	264.6	203.0	100.0%	82.5%	17.5%	56.6%	43.4%

* - No Data Provided

Proportion of Heavy Goods Vehicles

Table 19: Length of the Pan European Road Network by proportion of Heavy Goods Vehicles

Country	Network Length (km)	Proportion of Total Traffic Comprising HGVs									
		Less than 10%		10%-15%		15%-25%		More than 25%		No Data	
		Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%
Austria	1,740	186	10.7%	475	27.3%	942	54.1%	85	4.9%	52	3.0%
Belgium (Flanders)	948	30	3.2%	128	13.5%	338	35.7%	322	34.0%	130	13.7%
Denmark	1,559	661	42.4%	720	46.2%	145	9.3%	33	2.1%	0	0.0%
Estonia	1,581	1,113	70.4%	353	22.3%	53	3.4%	14	0.9%	48	3.0%
Finland	5,217	1,614	30.9%	2,220	42.6%	1,363	26.1%	20	0.4%	0	0.0%
Germany*	10,767	-	-	-	-	-	-	-	-	10,767	100.0%
Hungary	1,463	233	15.9%	276	18.9%	807	55.1%	148	10.1%	0	0.0%
Iceland	1,786	655	36.7%	1,131	63.3%	0	0.0%	0	0.0%	0	0.0%
Ireland	2,163	1,289	59.6%	799	36.9%	70	3.2%	4	0.2%	1	0.0%
Italy	4,514	2,689	59.6%	1,282	28.4%	232	5.1%	64	1.4%	248	5.5%
Lithuania	1,652	317	19.2%	383	23.2%	580	35.1%	341	20.6%	31	1.9%
Luxembourg	89	0	0.0%	0	0.0%	89	100.0%	0	0.0%	0	0.0%
Malta*	114	-	-	-	-	-	-	-	-	114	100.0%
Netherlands	1,886	142	7.6%	444	23.5%	1,105	58.6%	187	9.9%	7	0.4%
Norway	4,790	176	3.7%	841	17.6%	2,733	57.1%	1,039	21.7%	0	0.0%
Poland	7,301	855	11.7%	1,522	20.8%	3,046	41.7%	1,878	25.7%	0	0.0%
Slovenia	599	92	15.4%	159	26.5%	260	43.4%	88	14.7%	0	0.0%
Spain	12,348	1,334	10.8%	1,960	15.9%	4,512	36.5%	4,450	36.0%	92	0.7%
Sweden	6,417	241	3.8%	2,105	32.8%	3,902	60.8%	169	2.6%	0	0.0%
Switzerland	1,333	1,151	86.3%	153	11.5%	29	2.2%	0	0.0%	0	0.0%
UK (England)	4,441	216	4.9%	1,503	33.8%	2,044	46.0%	674	15.2%	3	0.1%
TOTAL	72,707	12,994	17.9%	16,454	22.6%	22,251	30.6%	9,516	13.1%	11,493	15.8%

* - No Data Provided

Heavy Goods Vehicle Traffic Flow

Table 20: Length of the Pan European Road Network by Heavy Goods Vehicle Traffic Flow (Calculated)

Country	Network Length (km)	HGV Traffic Flow									
		Less than 3,000		3,000–6,000		6,000–9,000		More than 9,000		No Data	
		Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%	Length (km)	%
Austria	1,740	180	10.3%	980	56.3%	297	17.1%	231	13%	52	3.0%
Belgium (Flanders)	948	13	1.4%	32	3.4%	203	21.4%	570	60%	130	13.7%
Denmark	1,559	924	59.3%	394	25.3%	197	12.6%	44	3%	0	0.0%
Estonia	1,581	1,533	97.0%	0	0.0%	0	0.0%	0	0%	48	3.0%
Finland	5,217	5,129	98.3%	75	1.4%	13	0.2%	0	0%	0	0.0%
Germany*	10,767	-	-	-	-	-	-	-	-	10,767	100.0%
Hungary	1,463	530	36.2%	480	32.8%	99	6.8%	354	24%	0	0.0%
Iceland	1,786	1,784	99.9%	2	0.1%	0	0.0%	0	0%	0	0.0%
Ireland	2,163	2,002	92.6%	107	4.9%	35	1.6%	18	1%	1	0.0%
Italy	4,514	3,931	87.1%	321	7.1%	0	0.0%	0	0%	262	5.8%
Lithuania	1,652	1,367	82.7%	217	13.1%	37	2.2%	0	0%	31	1.9%
Luxembourg	89	0	0.0%	31	34.8%	25	28.1%	33	37%	0	0.0%
Malta*	114	-	-	-	-	-	-	-	-	114	100.0%
Netherlands	1,886	25	1.3%	299	15.8%	411	21.8%	1,144	61%	7	0.4%
Norway	4,790	4,435	92.6%	277	5.8%	69	1.4%	9	0%	0	0.0%
Poland	7,301	3,505	48.0%	2,048	28.1%	1,194	16.4%	554	8%	0	0.0%
Slovenia	599	289	48.2%	127	21.2%	183	30.6%	0	0%	0	0.0%
Spain	12,348	6,489	52.6%	4,035	32.7%	1,110	9.0%	622	5%	92	0.7%
Sweden	6,417	5,259	82.0%	1,075	16.8%	79	1.2%	4	0%	0	0.0%
Switzerland	1,333	824	61.8%	313	23.5%	155	11.6%	41	3%	0	0.0%
UK (England)	4,441	737	16.6%	602	13.6%	1,307	29.4%	1,791	40%	3	0.1%
TOTAL	72,707	38,956	53.6%	11,414	15.7%	5,414	7.4%	5,416	7.4%	11,507	15.8%

* - No Data Provided

Fatal Accident Rate

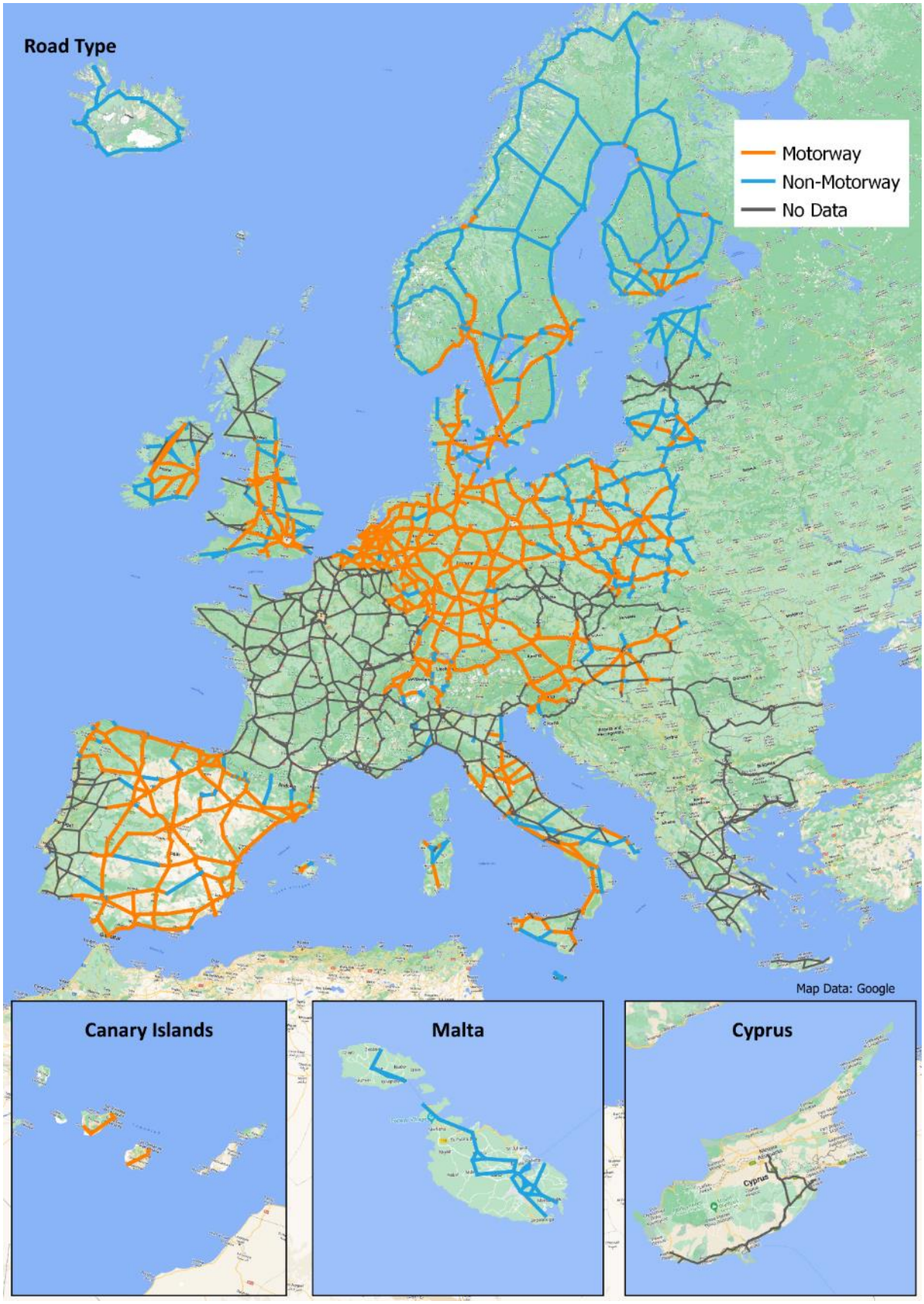
Table 21: Average Annual Fatal Accident Rate on Pan European Road Network

Country	Average Annual Fatal Accident Rate [Fatal Accidents/BVehKm per section]	
	Motorway	Non-Motorway
Austria	1.7	-
Belgium (Flanders)	2.5	0.0
Denmark	1.1	3.6
Estonia	-	7.7
Finland	0.7	2.8
Germany*	-	-
Hungary*	-	-
Iceland	0.0	1.7
Ireland	1.0	4.6
Italy	3.2	6.3
Lithuania	2.9	8.8
Luxembourg	1.9	-
Malta*	-	-
Netherlands	0.7	-
Poland	5.2	15.5
Slovenia	4.6	23.5
Spain*	-	-
Sweden	1.7	2.5
Switzerland	1.2	3.4
UK (England)	1.1	2.8
AVERAGE	2.8	7.8

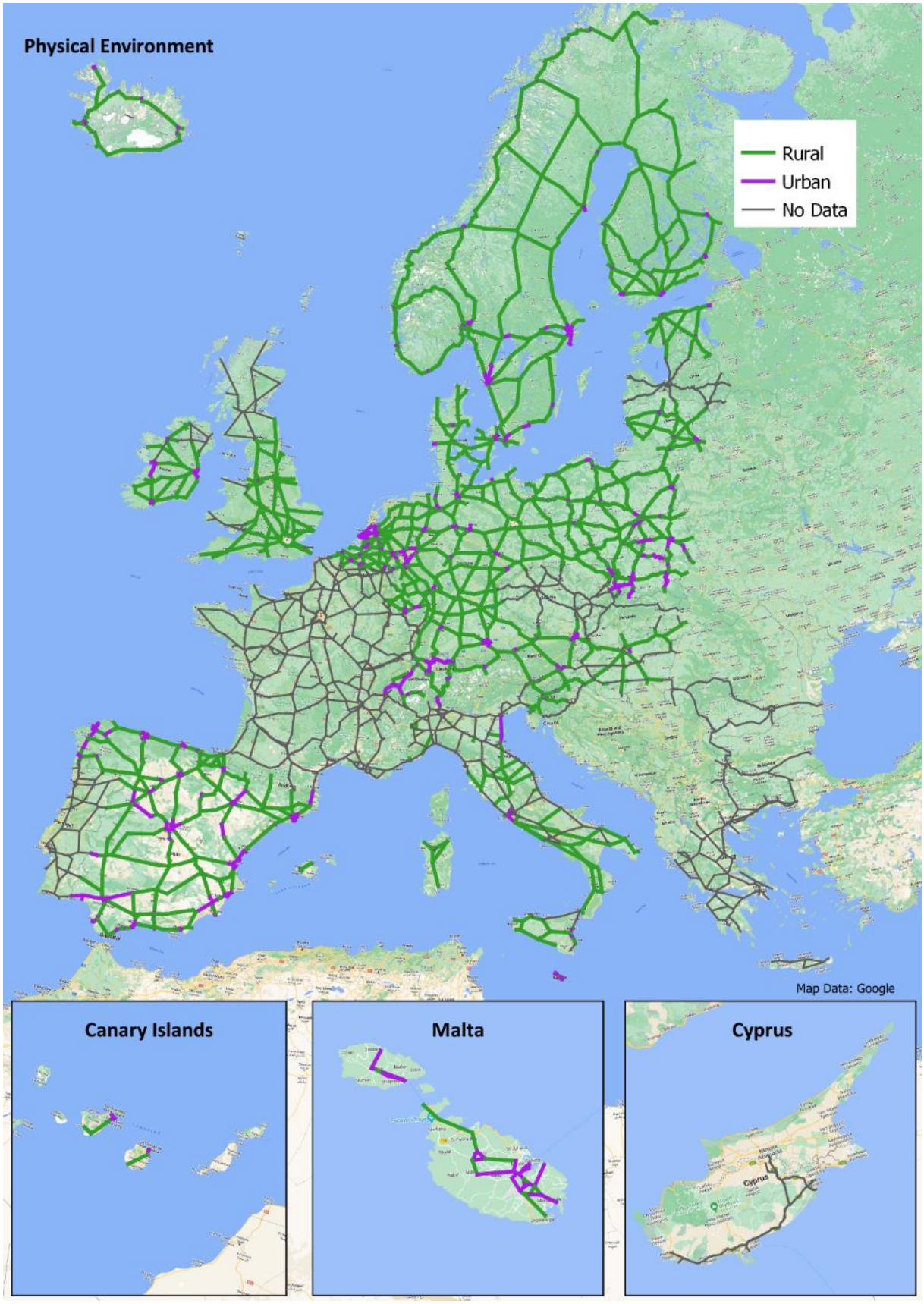
* - No Data Provided

ANNEX 4: THEMATIC MAPS

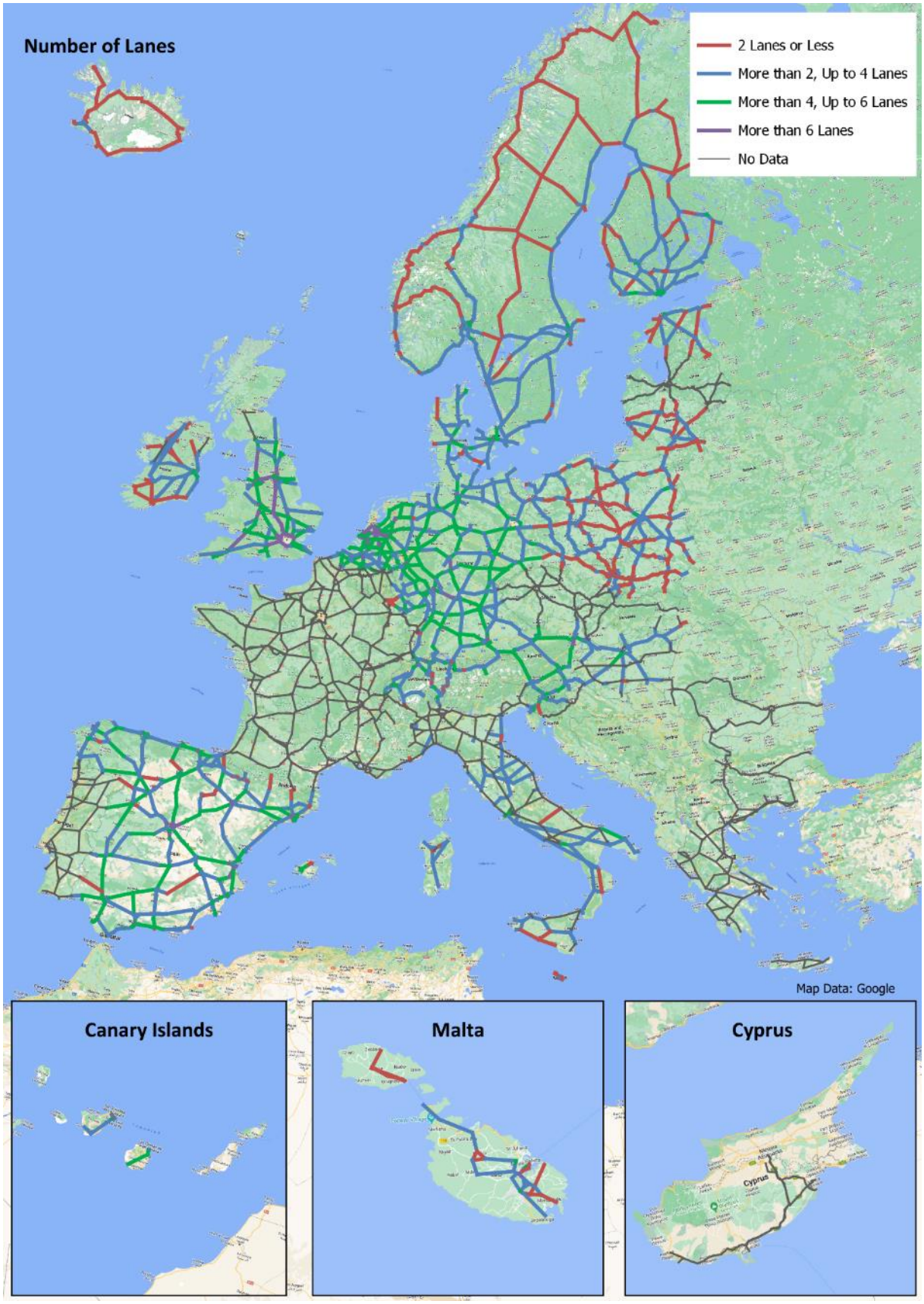
Road Type


Road Type
Motorway
Non-Motorway
No Data
Map Data: Google
Canary Islands
Malta
Cyprus

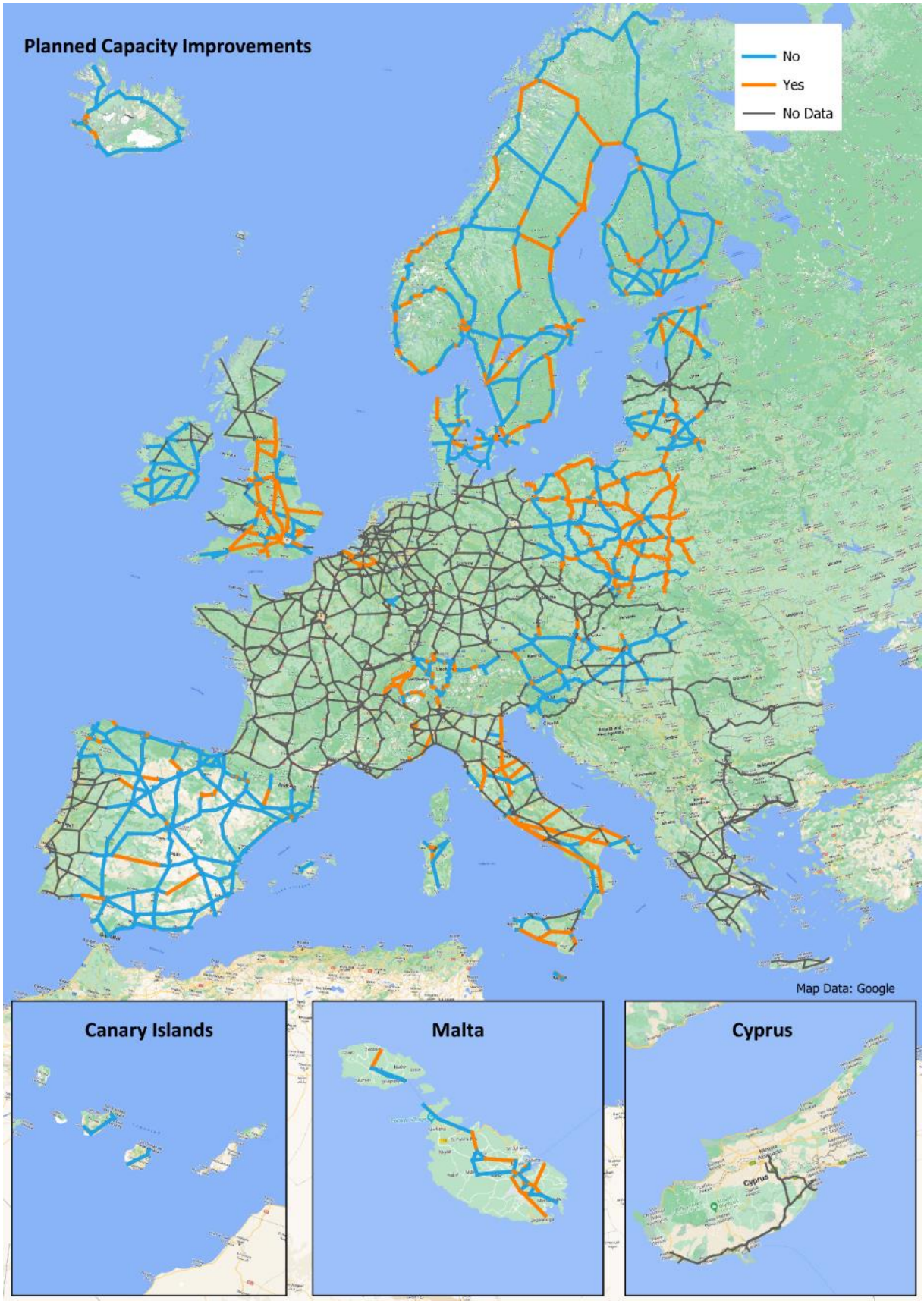
Physical Environment



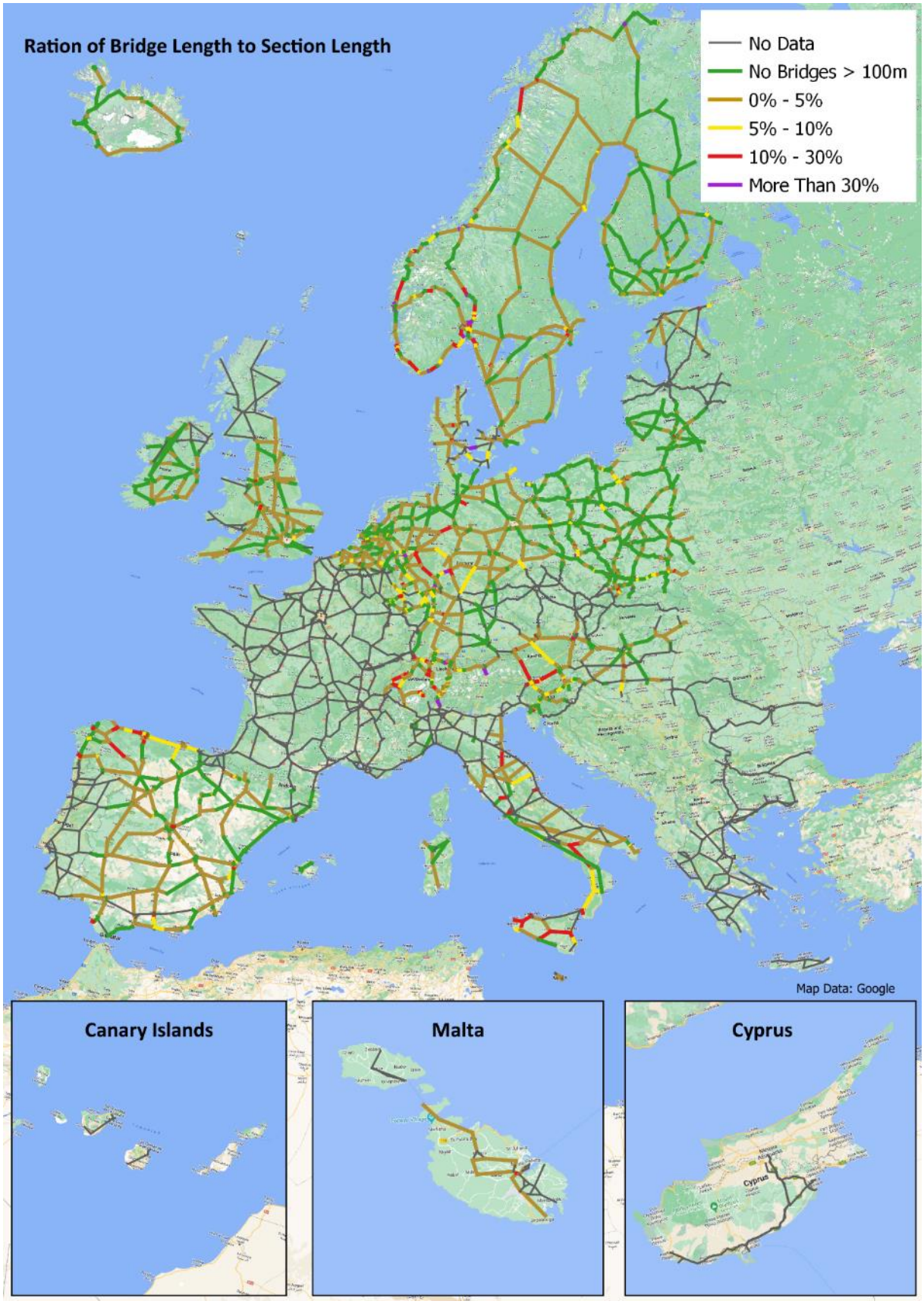
Number of Lanes



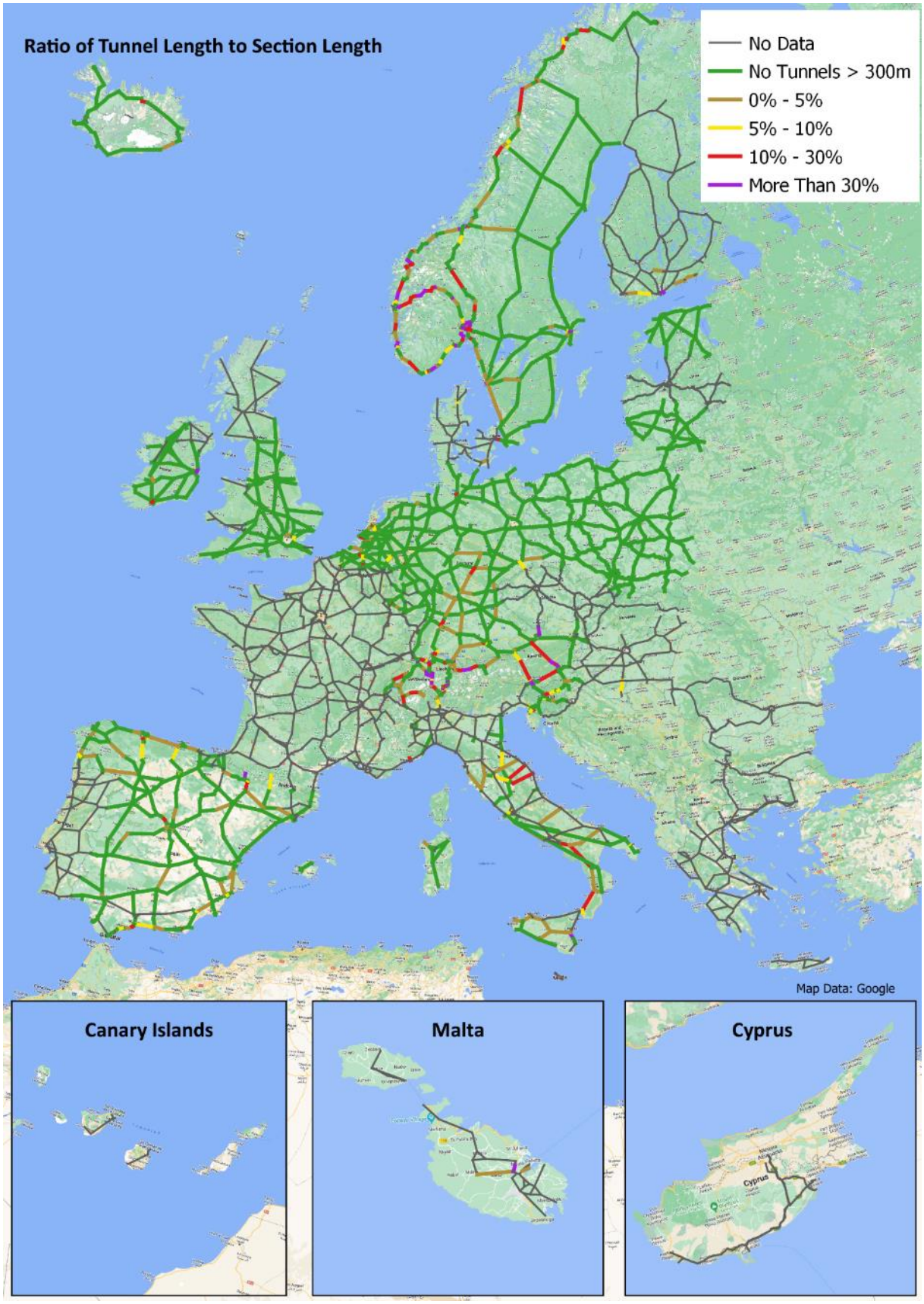
Planned Capacity Improvements



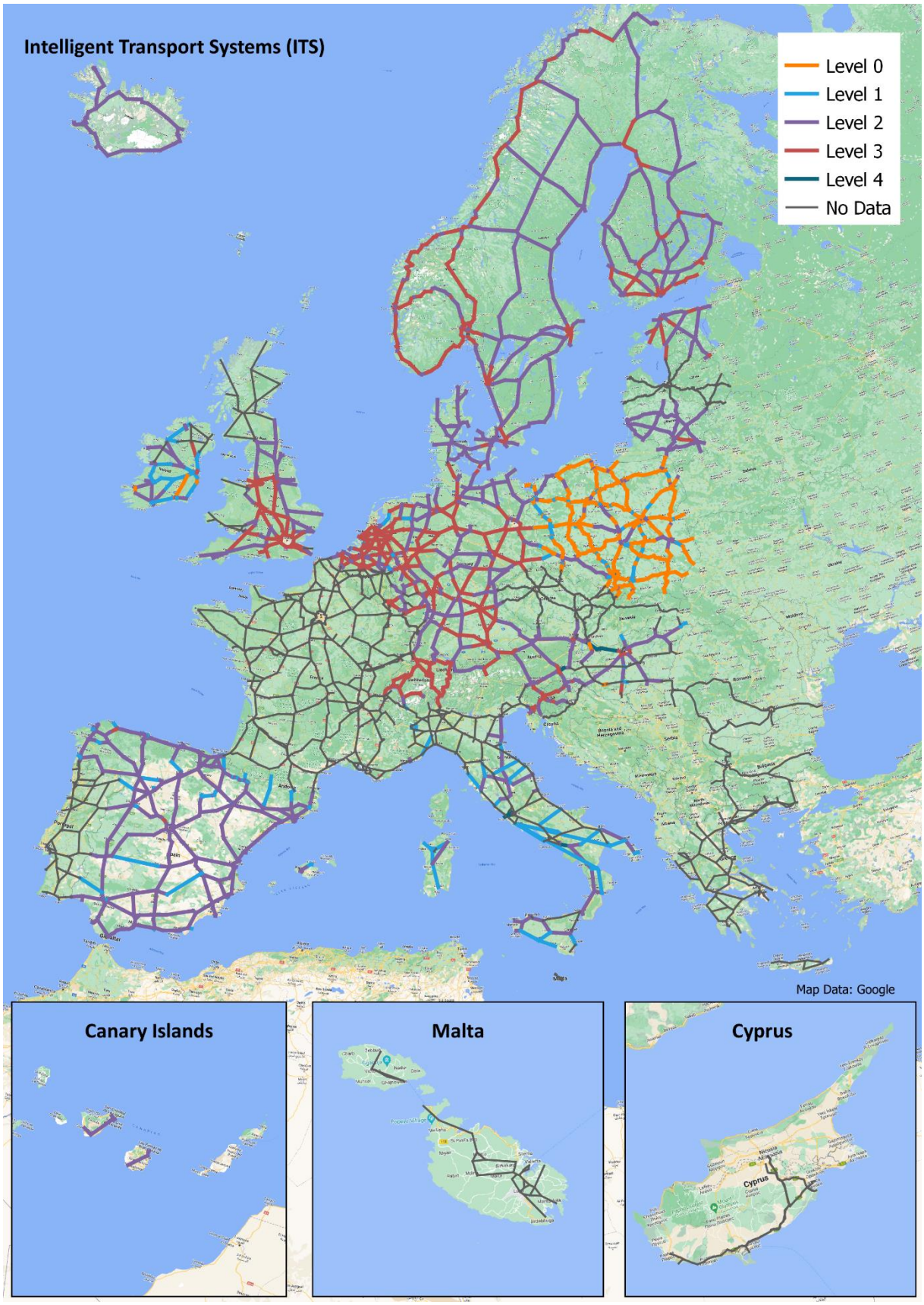
Length of Bridges



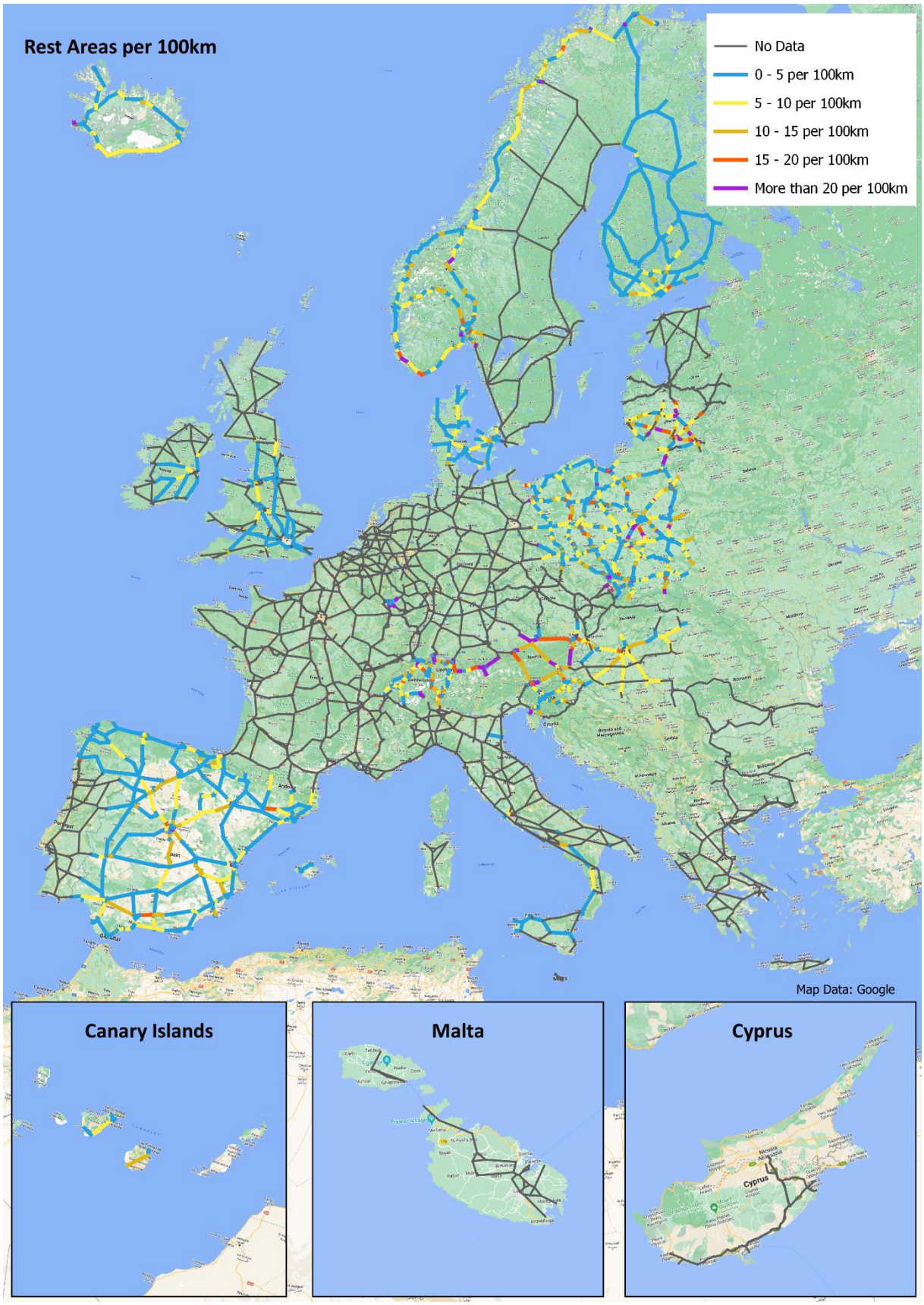
Length of Tunnels



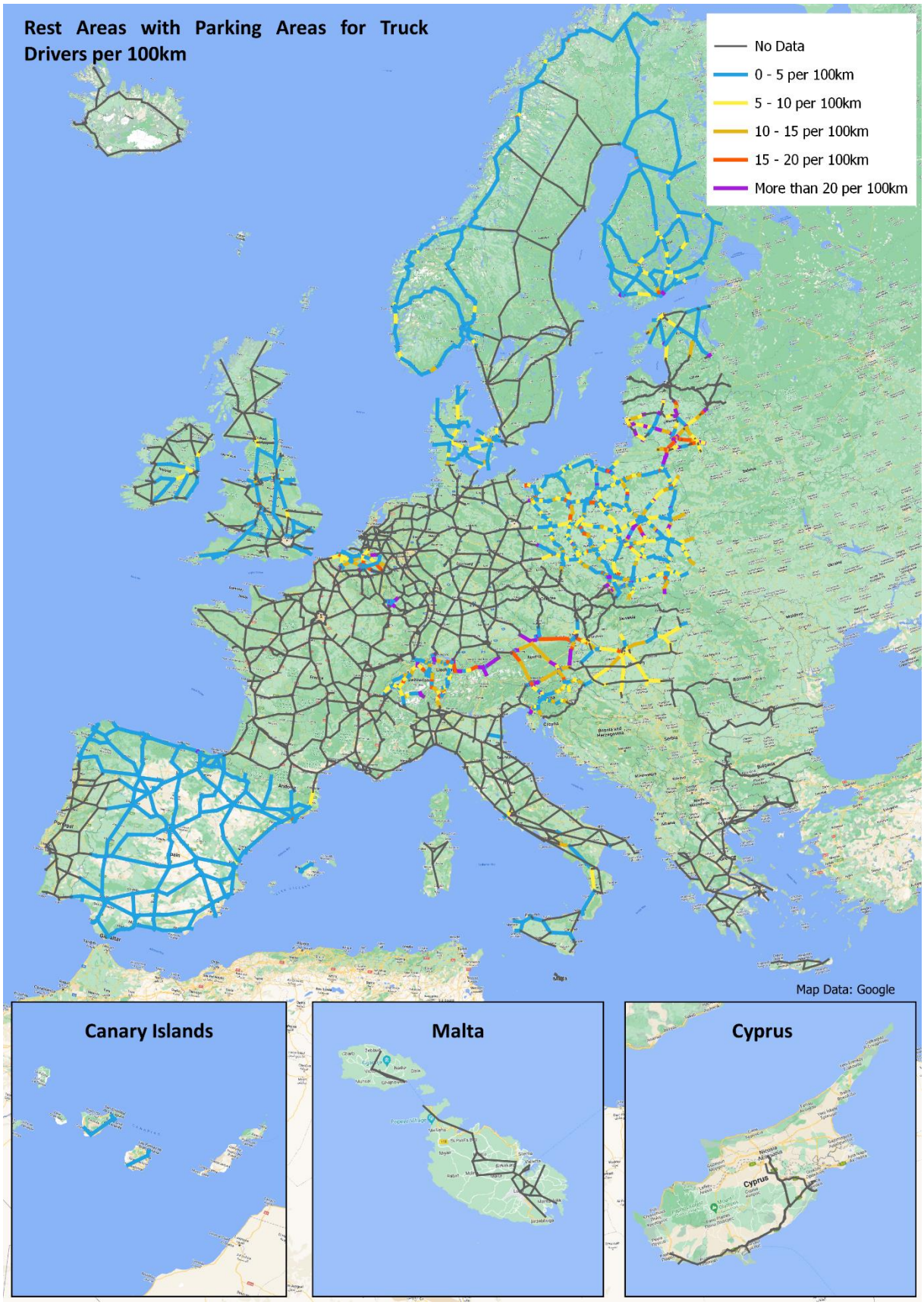
Intelligent Transport Systems (ITS)



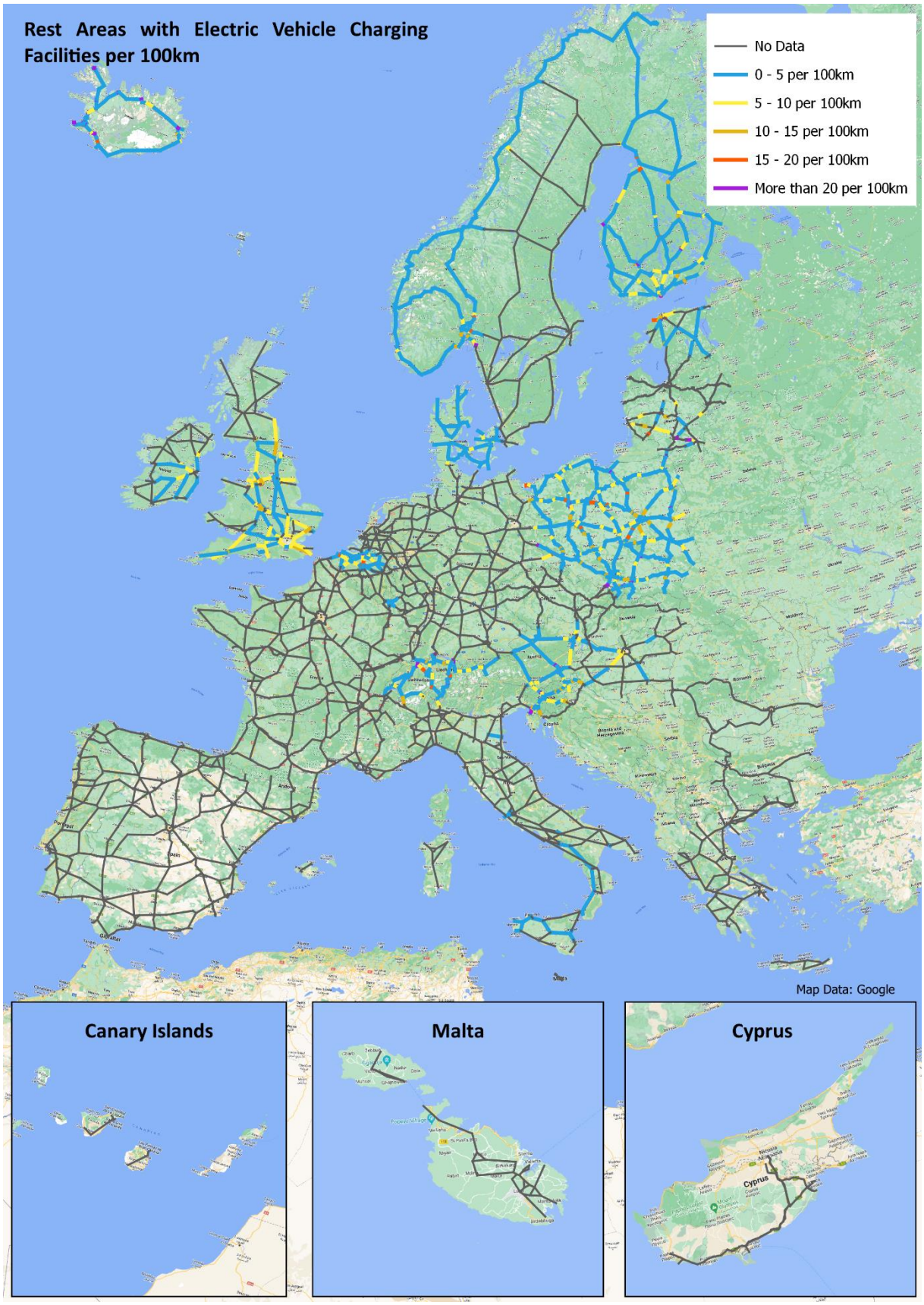
Frequency of Rest Areas



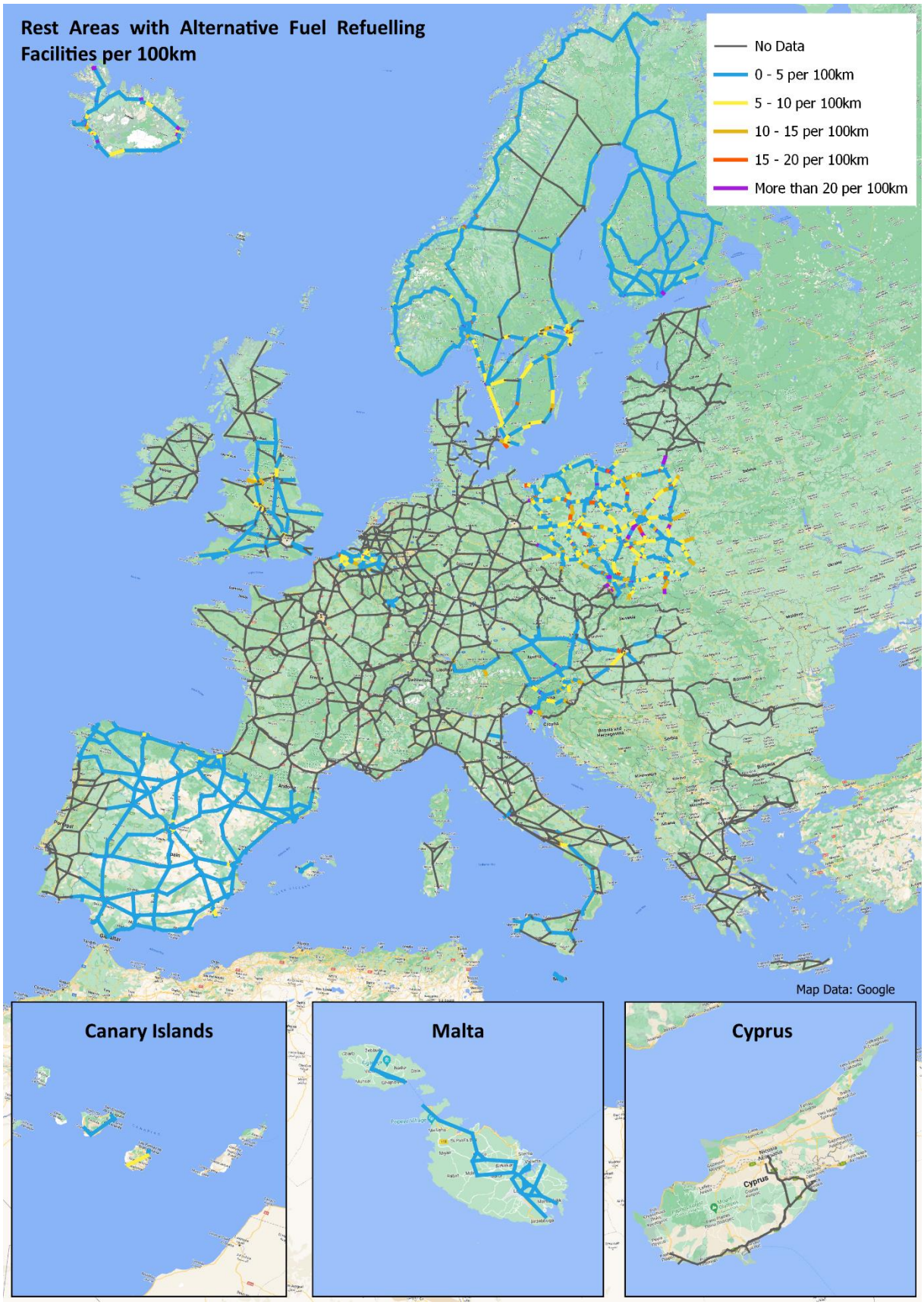
Frequency of Rest Areas with Parking Facilities for Truck Drivers



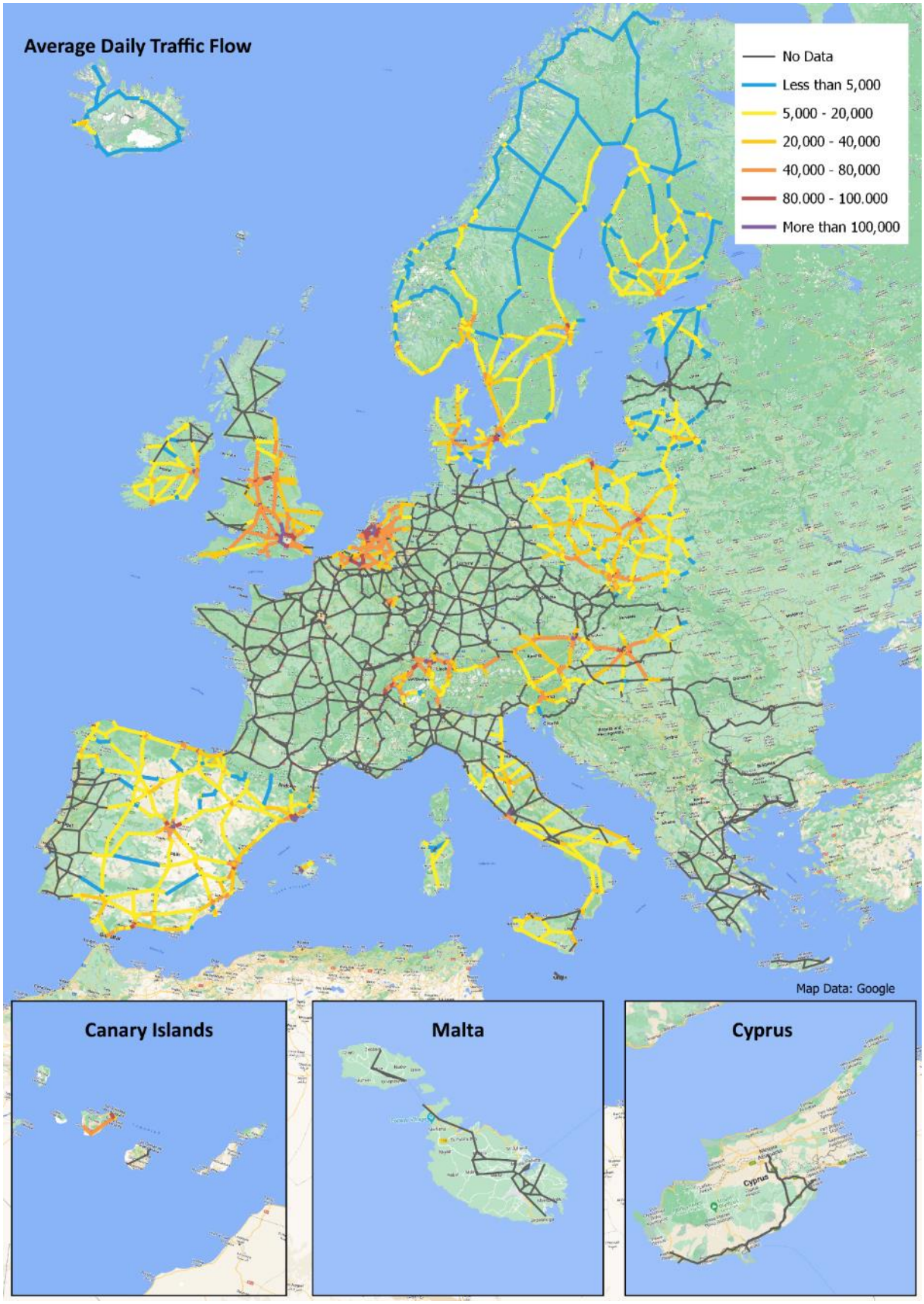
Frequency of Rest Areas with Charging Facilities for Electric Vehicles



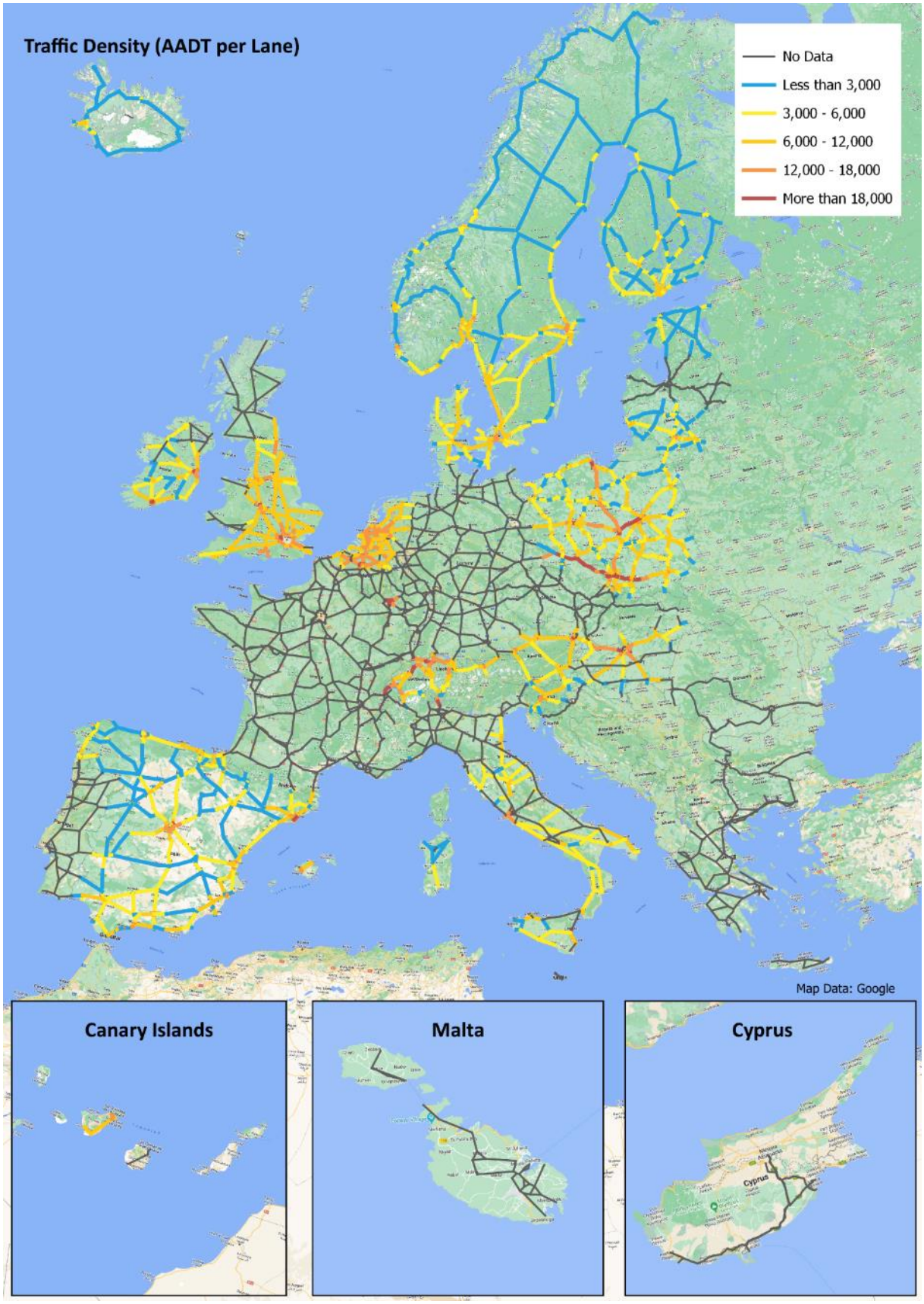
Frequency of Rest Areas with Alternative Fuel Facilities



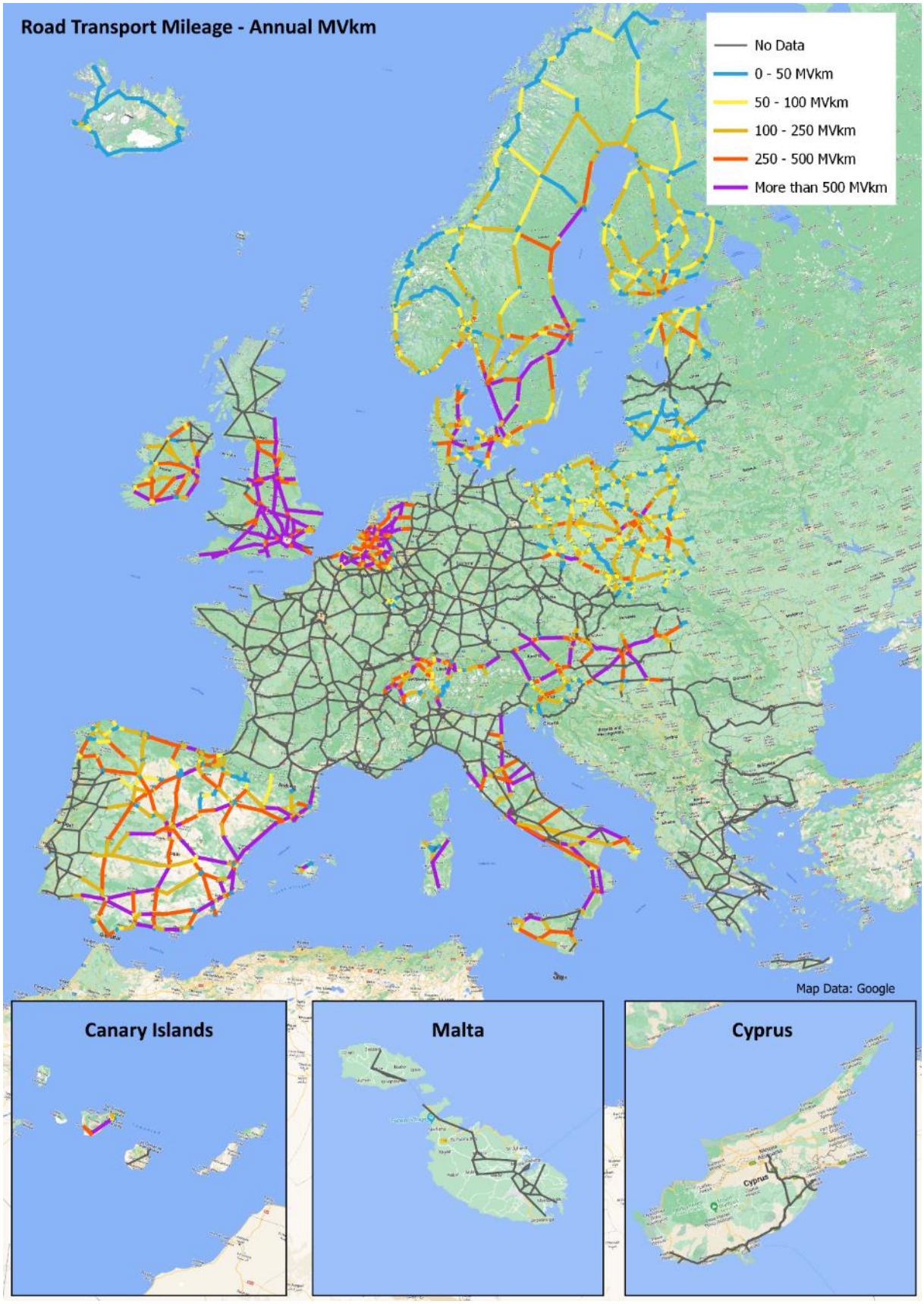
Traffic Flow



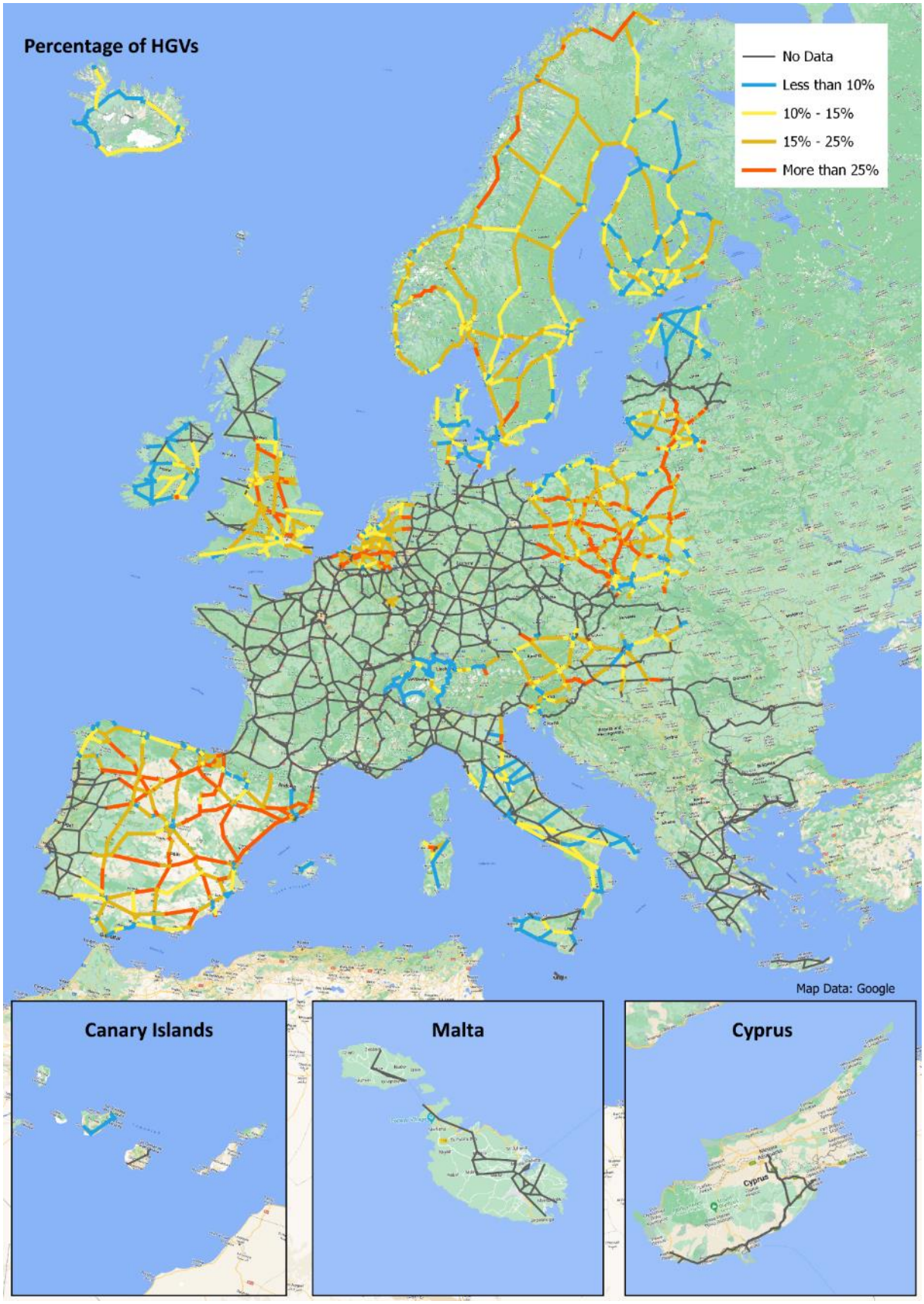
Traffic Density



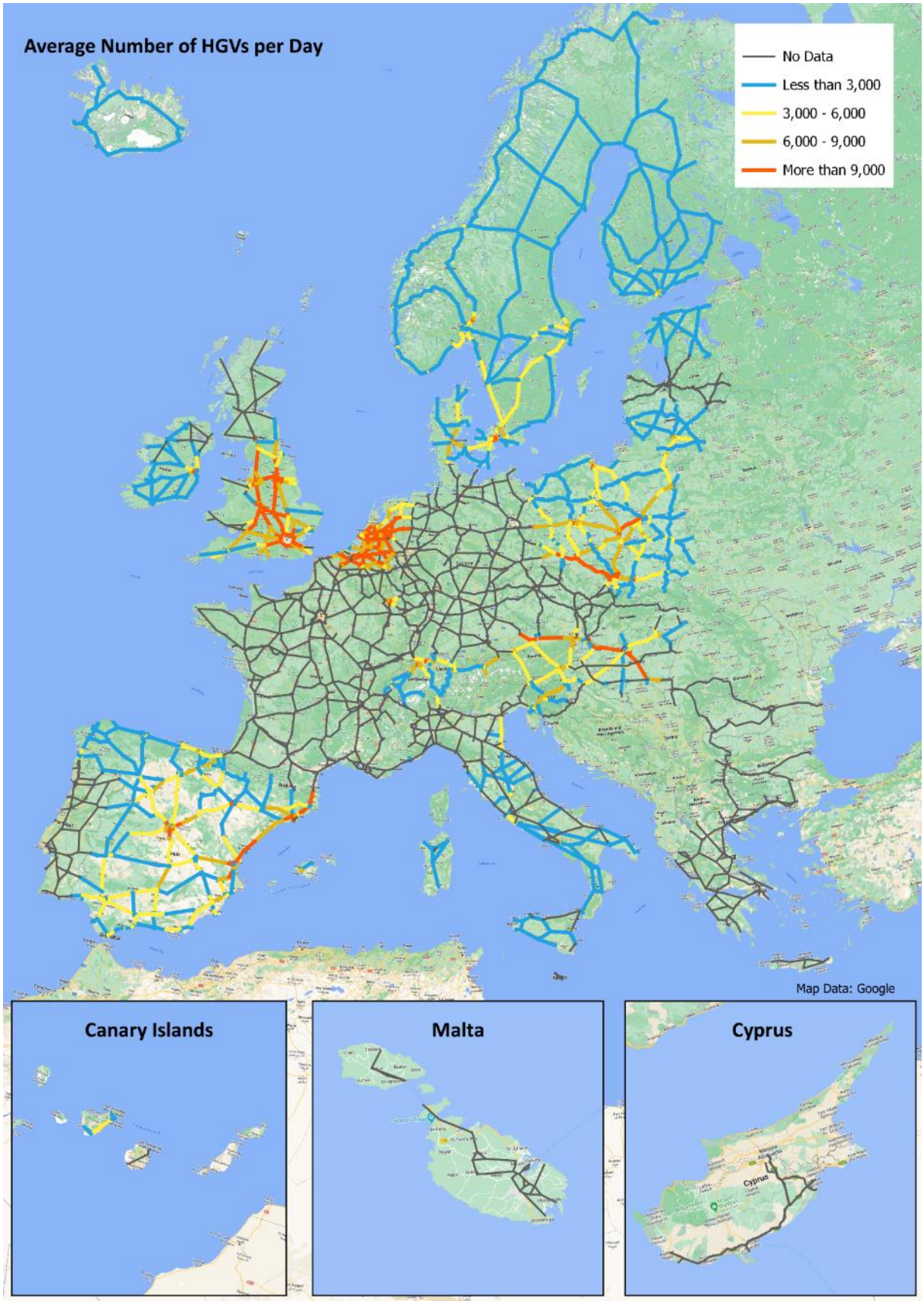
Transport Mileage



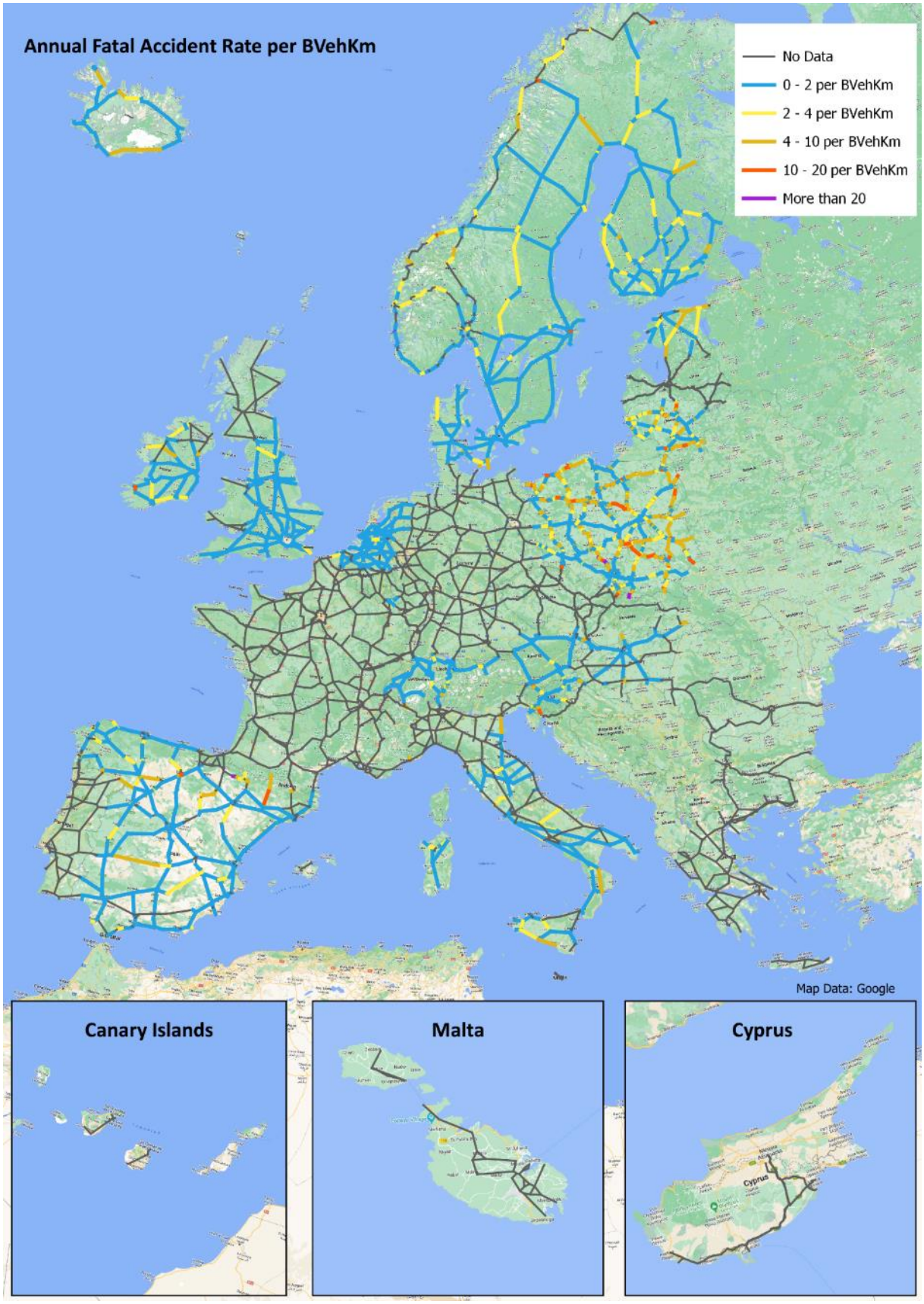
Proportion of Heavy Goods Vehicles



Heavy Goods Vehicle Traffic Flow

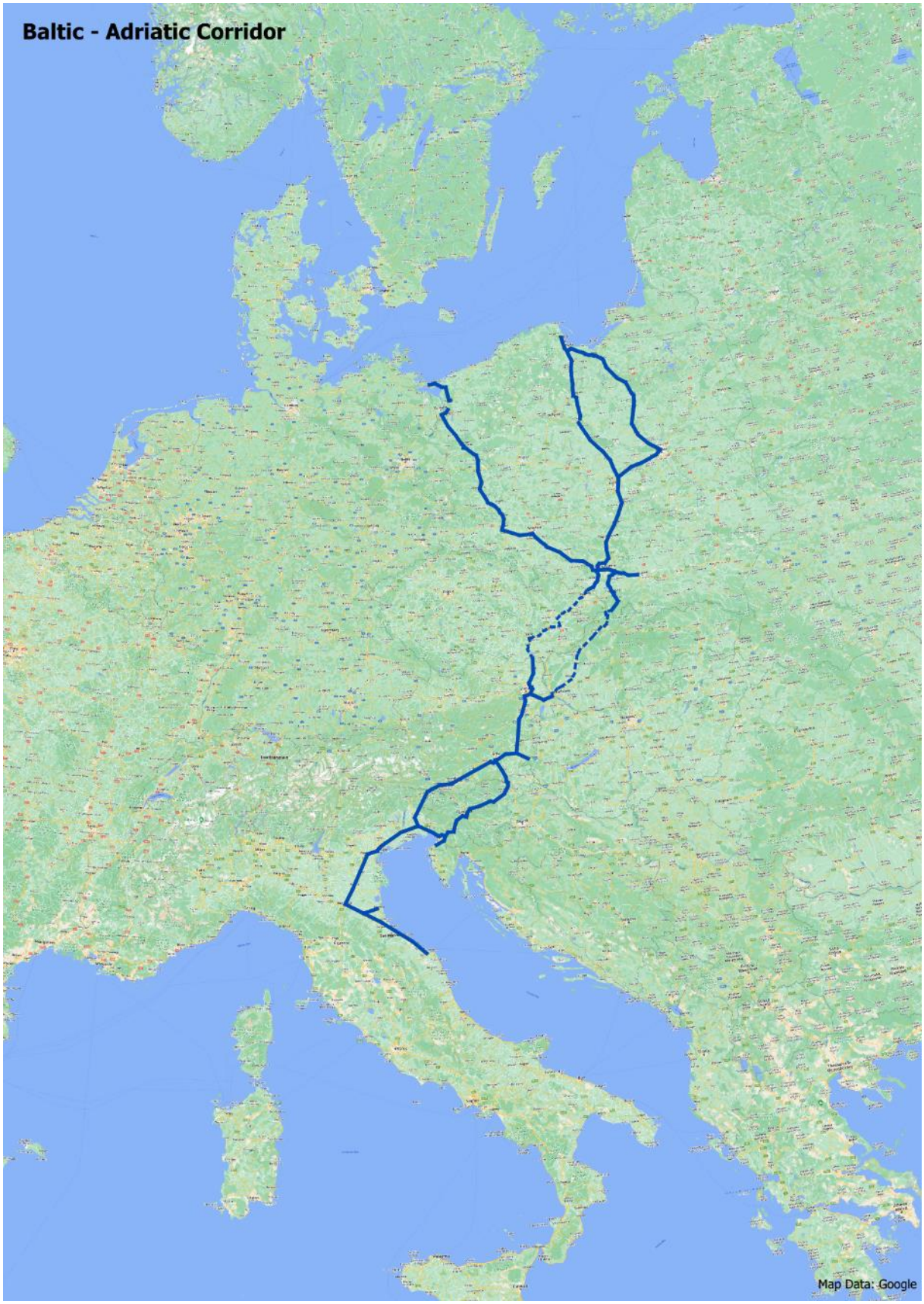


Annual Average Fatal Accident Rate



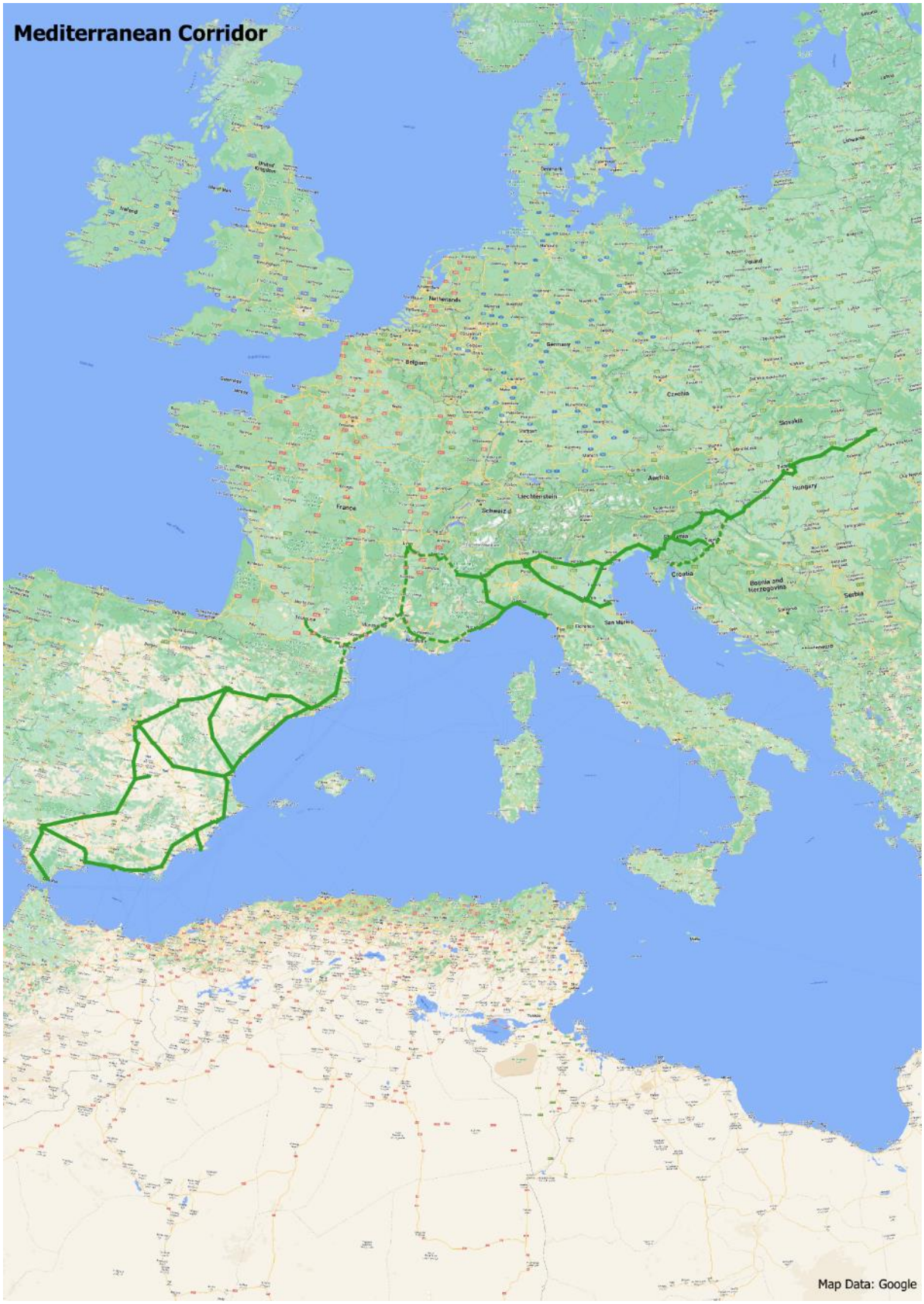
ANNEX 5: CORRIDOR MAPS

Baltic – Adriatic Road Corridor

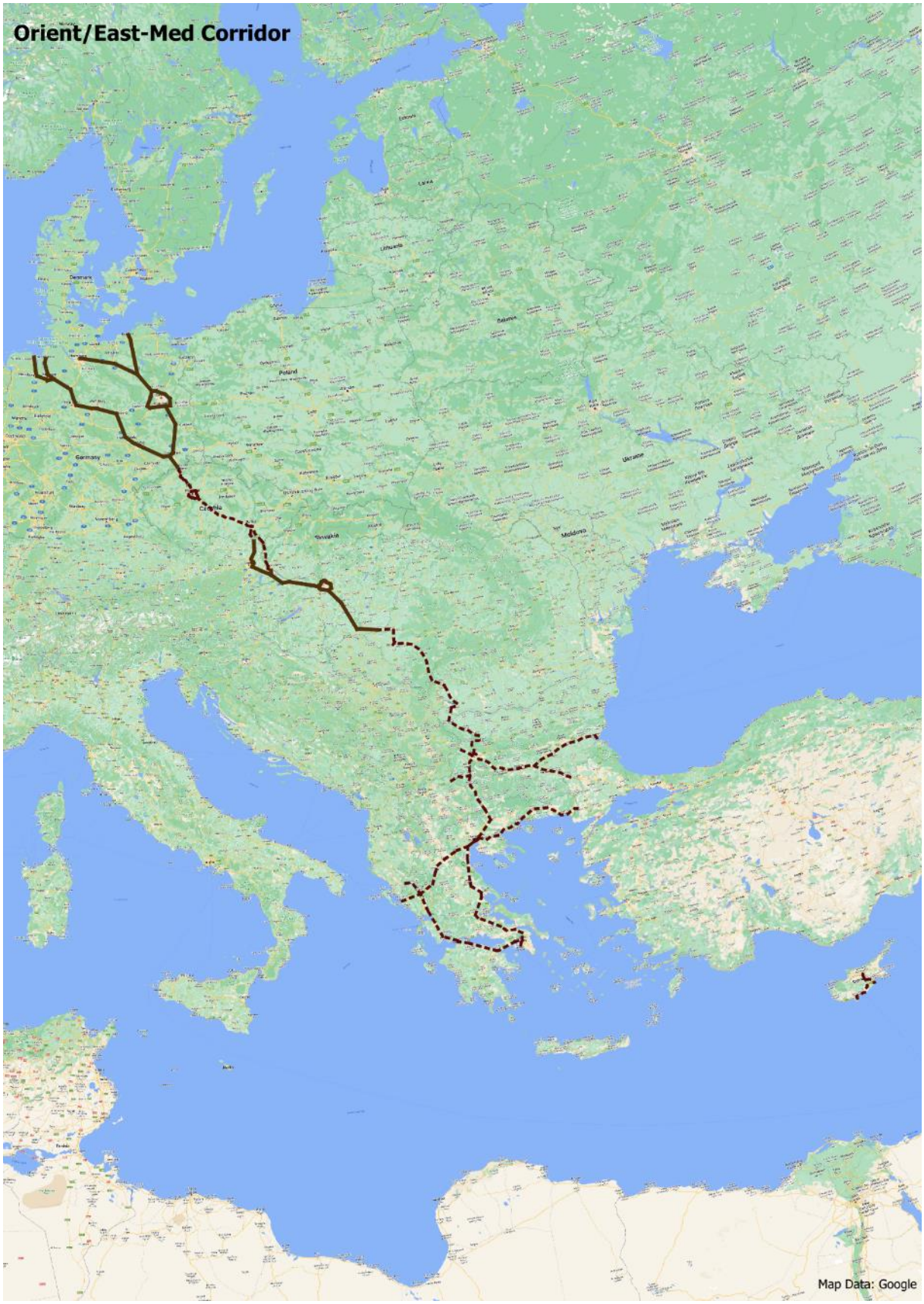


North Sea – Baltic Road Corridor

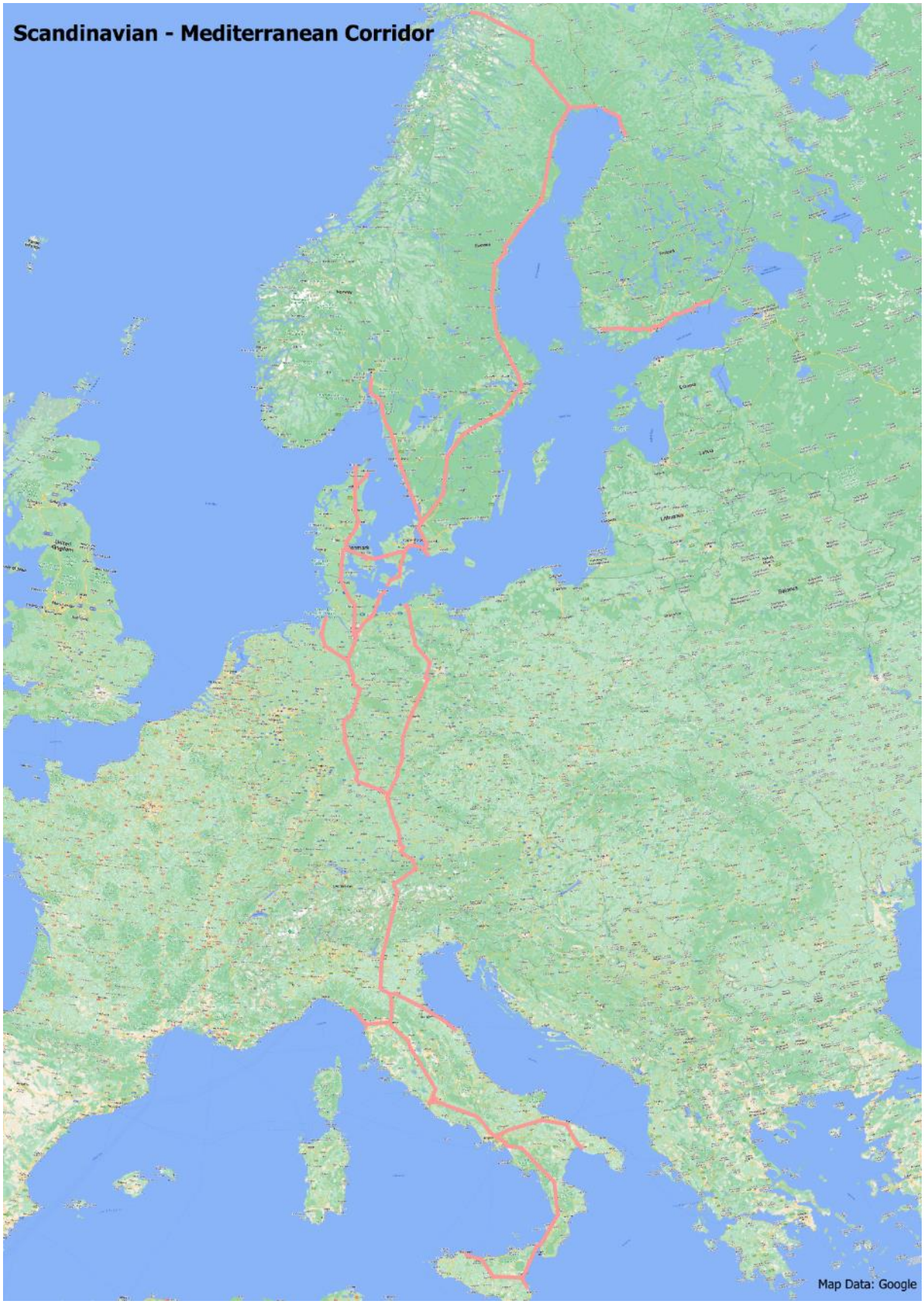
Mediterranean Road Corridor



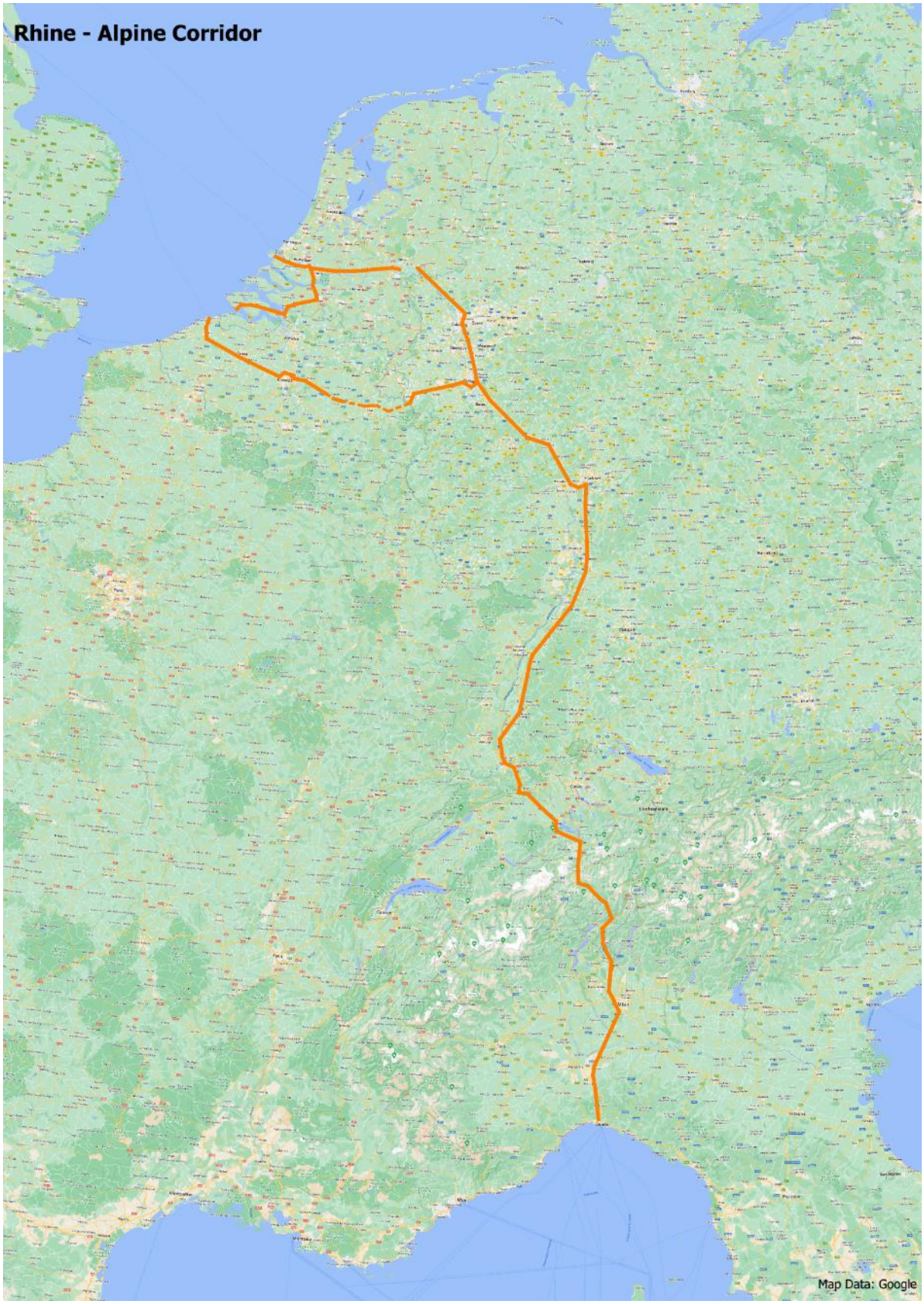
Orient/East-Med Road Corridor



Scandinavian – Mediterranean Road Corridor



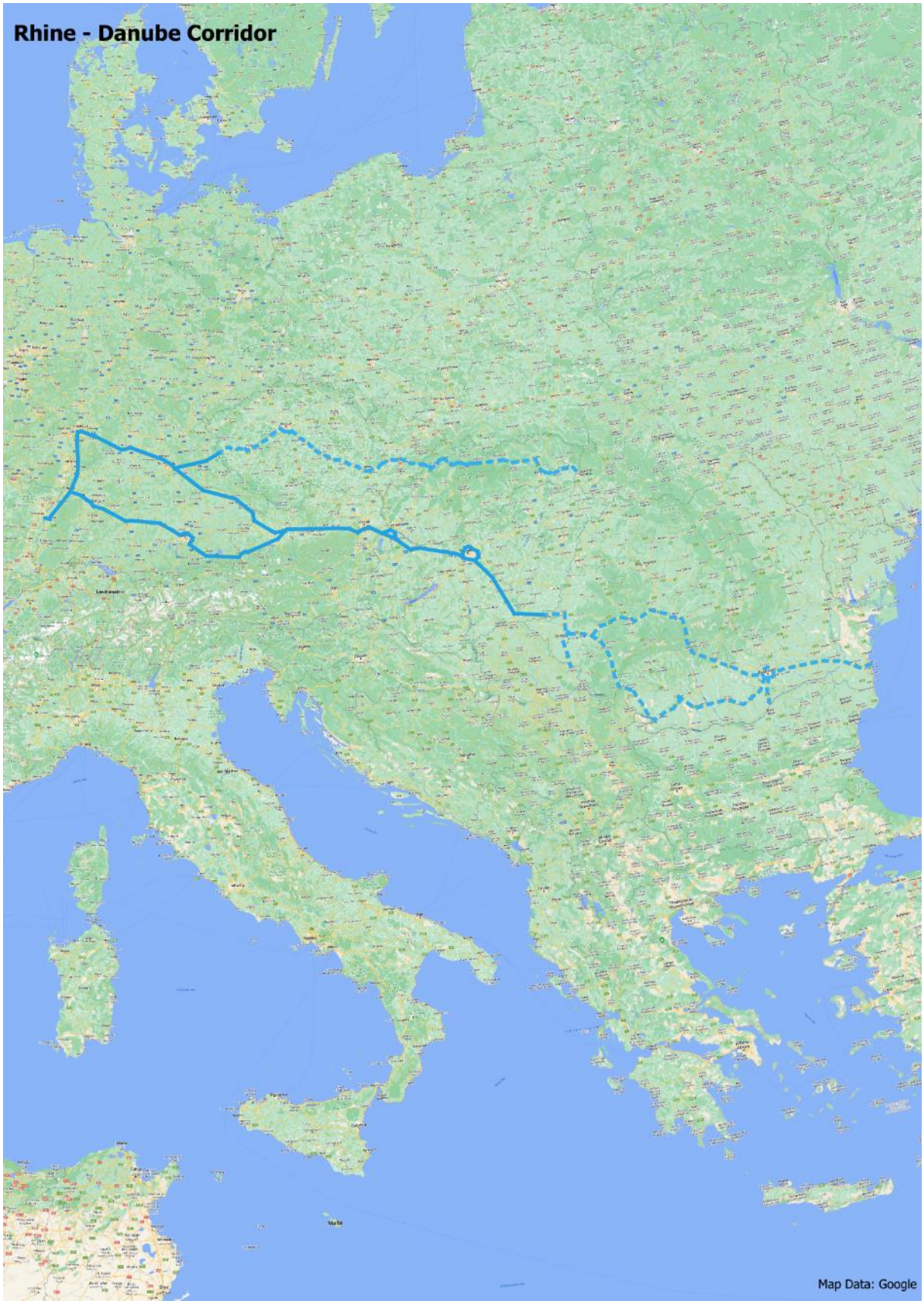
Rhine – Alpine Road Corridor



Atlantic Road Corridor

North Sea – Mediterranean Road Corridor

Rhine – Danube Road Corridor



ANNEX 6: COUNTRY BACKGROUND INFORMATION

National Statistics

Table 22 shows the length and performance of the Pan European Road Network calculated for the 21 participating countries based on the data delivered.

Table 22: Length and performance of the Pan European Road Network

Country	National statistics		Network length (km)[15]					Average Traffic		
	Population [1,000s][16]	Total area [km²]	Comprehensive	Core	Non-Core	Motorway	Non-motorway	Traffic Flow [AADT]	Traffic Density [AADT/Lane]	HGV [%]
AT	8,917	83,872	1,740	1,105	635	1,740	0	48,582	9,677	14.1%
BE (F)	11,544	30,510	948	604	344	820	128	67,896	12,757	21.6%
CH	8,637	41,290	1,333	299	1,034	1,122	211	51,776	11,367	7.3%
DE*	83,161	357,021	10,767	6,365	4,402	10,402	365	-	-	-
DK	5,831	43,098	1,559	764	795	1,175	384	31,222	7,116	10.8%
EE	1,329	45,228	1,581	602	979	0	1,581	5,785	2,231	7.9%
ES	47,363	504,030	12,348	5,966	6,382	10,919	1,429	25,744	5,405	16.7%
FI	5,530	338,424	5,217	1,097	4,120	878	4,339	13,811	4,057	10.8%
HU	9,750	93030	1,463	1,060	403	1,165	298	37,471	9,115	17.5%
IE	4,986	70,280	2,163	499	1,664	990	1,172	25,847	7,196	8.4%
IS	366	103,001	1,786	54	1,732	3	1,783	13,231	3,668	7.1%
IT	59,450	301,338	4,514	1,107	3,407	2,654	1,860	25,586	6,254	9.1%
LT	2,795	65,200	1,652	597	1,055	440	1,212	10,855	3,614	19.7%
LU	630	2,586	89	89	0	89	0	52,377	26,188	15.0%
MT*	515	320	114	17	96	0	114	-	-	-
NL	17,442	41,543	1,886	643	1,243	1,886	0	69,374	11,351	17.0%
NO	5,379	385,252	4,790	231	4,559	794	3,996	14,664	4,372	16.0%
PL	37,899	312,685	7,301	3,698	3,603	4,169	3,132	23,936	8,611	19.0%
SE	10,353	449,964	6,417	3,012	3,405	1,913	4,504	17,771	4,839	14.4%
SL	2,102	20,273	599	471	128	556	43	25,704	6,367	17.1%
UK (E)	67,215	223,010	4,441	2,113	2,328	2,729	1,712	56,491	10,207	18.4%
TOTAL / AVG	391,196	3,511,955	72,707	30,393	42,314	44,445	28,262	32,533	8,126	13%

Source: Eurostat, CEDR data on Pan European Road Network

** - No Traffic Data Provided*

[16] Population as at 1 January 2020 from Eurostat.

National Road Administration Profiles

The country factsheets provided below are based on information collected from different sources.

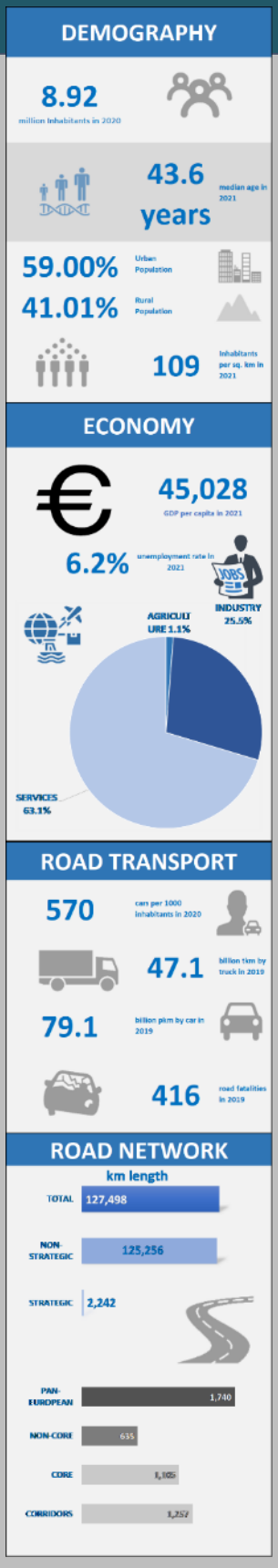
1. The description of the National Road Authorities has been provided by NRAs themselves to give an overview of their structure, responsibilities, and financing sources.
2. As far as possible, data provided in the infographics has been gleaned from centralised international data sources (i.e. EUROSTAT, World Bank) to get harmonised data for all member states and to avoid any problems regarding a lack of comparability.
3. Data on median age, GDP per capita, motorisation rate, road network length, road passengers' performance, road freight performance, and road fatalities have been sourced from EUROSTAT.
4. Data on total population, total area, urban and rural population and population ratio, population density, GDP composition and unemployment have been sourced from the World Bank.
5. Data on network length (Total, Non-Core, Core, Corridors) have been sourced from data provided by NRAs.

Table 23 gives detailed references and links to the sources of data.

Table 23: Data Sources for National Road Administration Profiles

Data Item	Year	Source
Total Population	2020	The World Bank
Total Area	2018	The World Bank
Median Age	2021	EuroStat (United Nations for UK)
Urban Population [1,000s]	2021	The World Bank
Urban Population Ratio (%)	2021	The World Bank
Rural Population [1,000s]	2021	The World Bank
Rural Population Ratio (%)	2021	The World Bank
Inhabitants per Sq.km	2021	The World Bank
GDP per Capita (€ per capita)	2021	The World Bank
% GDP by Sector	2020	The World Bank
Unemployment Rate	2021	The World Bank
Cars per 1000 Inhabitants	2020	EuroStat
Total Classified Road Length (km) (2017)	2021 (2017)	EuroStat (2017 data used for countries with no 2021 data)
Non-Strategic Length (km)	2021 (2017)	EuroStat (2017 data used for countries with no 2021 data)
Strategic Length (km)	2021 (2017)	EuroStat (2017 data used for countries with no 2021 data)
Network length (km)	2021	Network Data as supplied by NRAs
Non-Core Network (km)	2021	Network Data as supplied by NRAs
Core Network (km)	2021	Network Data as supplied by NRAs
TEN-T Core Network Corridor (km)	2021	Network Data as supplied by NRAs
Billion tkm by truck	2019	European Commission
Billion pkm by car	2019	European Commission
Road Fatalities	2019	European Commission

Austria



ASFINAG

General description

ASFINAG was founded in 1982 and is responsible for the management of the entire Austrian highway network. The network consists of 2,249 km of highways, more than 160 tunnels and nearly 5,800 bridges. ASFINAG's core tasks include highway operation, maintenance, construction management and toll collection as well as traffic management. ASFINAG and its 3,000 employees are committed to provide responsible and long-term solutions by using new technologies and innovations to make Austria's highways one of the safest and most modern in Europe. One of ASFINAG's top priorities is sustainable mobility, and this calls for continuous further development and innovation. For this reason, ASFINAG is involved in numerous research projects and is intensifying its cooperation with stakeholders on a national and international level. This involves a great variety of topics and challenges: From road automation and decarbonisation, to health and diversity, and on to climate protection and preserving biodiversity. For more information, visit www.asfinag.at/en

Responsibility

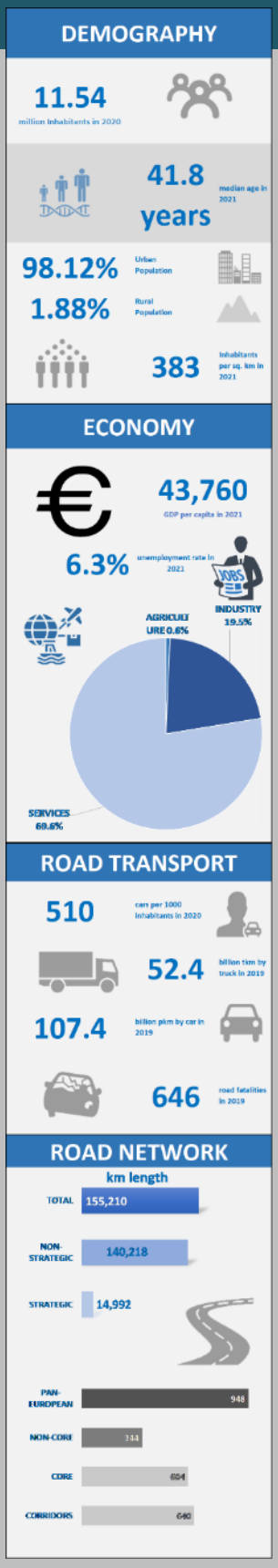
ASFINAG has a comprehensive area of responsibilities including:

- Operating, maintaining and expanding the existing network
- Fostering sustainable mobility and supporting the European Green Deal
- Managing traffic and ensuring safety on the roads
- Developing ITS and telematics services
- Tolling of motorways and expressways
- Funding of investments in the road network

Financing

In 2020 ASFINAG invested a total of EUR 1.07 billion in the maintenance and construction of the road network. ASFINAG is solely user-financed and does not receive any subsidies. Its primary source of revenues are tolls, time-based for light vehicles and distance-based for heavy vehicles. . Further, ASFINAG is a well-established issuer of bonds that is highly regarded on national and international financial markets. The bonds issued are provided with a guarantee by the Republic of Austria and receive the rating of Aa1/AA+ by rating agencies. International financing activities are based on the ASFINAG European Medium Term Note Programme (EMTN), which is updated regularly and constitutes the legal framework for issues.

Belgium (Flanders)



Agentschap Wegen en Verkeer (AWV)

General description

The Agency for Roads and Traffic (Agentschap Wegen en Verkeer/AWV) is the Flemish road authority responsible for Flemish motorways and regional roads. It operates about 7,000 km of roads and 7,700 km of cycling paths.

The agency's mission is to ensure safe, smooth, and sustainable mobility for all road users in Flanders.

In total, the agency employs about 1,300 people. AWV is divided into four horizontal and six territorial divisions. The horizontal knowledge domains (road construction, traffic engineering, Flemish traffic control centre, and planning & coordination) work in a matrix structure and run horizontally through the territorial departments.

Head offices are in Brussels, the six territorial departments are situated in Antwerp, Ghent, Leuven, Hasselt, and Bruges.

Responsibility

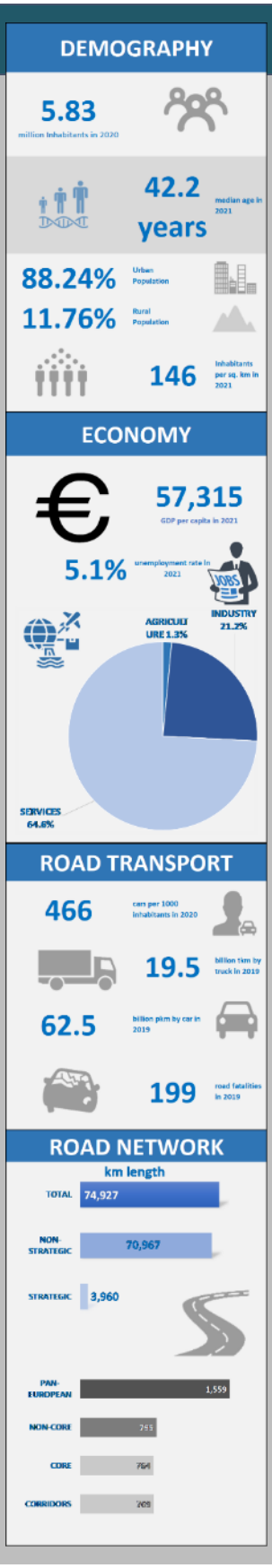
AWV is responsible for the design, construction, maintenance, and improvement of the road infrastructure (including bridges and electromechanics) that is assigned to it. AWV is also responsible for traffic management and the implementation of the mobility policy of the Flemish Government.

Financing

The total budget of AWV (€782 million) is distributed as follows: €470 million for investments, €170 million for maintenance, and the remainder for the cost of PPS constructions, operational costs, overheads, etc.

AWV is fully financed by the Flemish Government. €100 million of the total amount comes indirectly from road charging for lorries.

Denmark



Danish Road Directorate (DRD)

General description

The mission of the Danish Road Directorate is to be responsible for the national road network. The DRD promotes a coherent road and transportation system, taking the surroundings into account and striving to ensure that people and goods reach their destinations easily and safely.

DRD employed approx. 770 in 2021. Six service centres are located in Copenhagen, Fløng, Næstved, Middelfart, Skanderborg, and Aalborg.

Responsibility

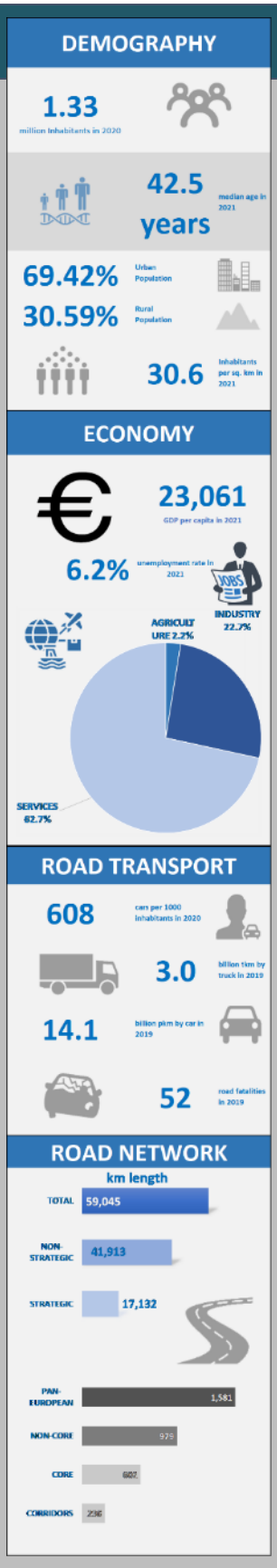
DRD is responsible for the national road network: Its main business areas are:

- Planning: the DRD conducts studies and plans in order to determine where new roads are to be built and where there is a need for increased traffic safety or capacity on the national road network;
- Design and construction: the DRD constructs new roads, roundabouts, cycle paths, and bridges, puts up noise barriers, and develops the existing road network;
- Traffic Management: the DRD guides road users through traffic, for example, in the event of accidents or road works via signposting, electronic information boards, and traffic information in various media;
- Maintenance: the DRD operates and maintains the roads and the surrounding areas by laying new asphalt, mowing the grass, and clearing snow from the roads.

Financing

With the exception of some minor business areas, the activities of the DRD are in general financed by national funding. Budget 2021: DKK 727 million for construction, DKK 1,269 million for maintenance, and DKK 421 for other services.

Estonia



Estonian Road Administration (ERA)

General description

The Estonian Road Administration (ERA) is a governmental agency who operates within the administrative area of the Ministry of Economic Affairs and Communications and executes state supervision, implements state policies and offers public services on the basis and to the extent prescribed by law. The governmental agency was established in 1918 and it has had several official names during more than 100 years.

Responsibility

The main responsibilities and functions of ERA are as follows:

- Road management and creation of conditions for safe traffic on national roads.
- Increasing traffic safety and reducing harmful environmental impact of vehicles.
- Management of road traffic and public transport.
- Organisation of state supervision over compliance with the requirements established by legislation regulating area of activity and applying enforcement powers of the state.
- Keeping state registers of roads, vehicles and public transport, maintaining the system of stationary automated speed cameras.
- Participation in development of legislation regulating area of activity and making proposals for amending and supplementing the legislation, participation in working out the terminology connected with area of activity.
- Participating in elaboration of policies, strategies and development plans and preparation and implementation of international projects in area of activity.
- Implementing state policies and development plans in area of activity

The management structure consists of 3 divisions:

- Division of Strategic Planning
- Division of Road Works
- Division of Traffic Safety and Public Transport

Approximately 530 employees work for ERA.

The Head Office is located in Tallinn. National road network is managed centrally by the Head Office though there are 4 state road regions in Estonia named by the weather arc: Northern, Eastern, Southern and Western region. A service bureau is located in each of 15 counties. The Traffic Management Centre is a unit of the entire organization and is located in Tallinn also.

ERA is a possessor of 16,608 km of national road network.

National road network includes 1 609 km (9.7%) of main roads, 2 405 km (14.5%) of basic roads, 12 480 km (75.1%) of secondary roads and 114 km (0.7%) of other connecting roads. 72% of those are paved roads and 28% gravel roads. The density of national roads is 366 km per 1,000 km²

Local governments are the owners of 24 000 km of local rural roads and streets.

Financing

The main sources for costs and investments for state roads and other areas of responsibility of ERA arise from state revenues and external resources.

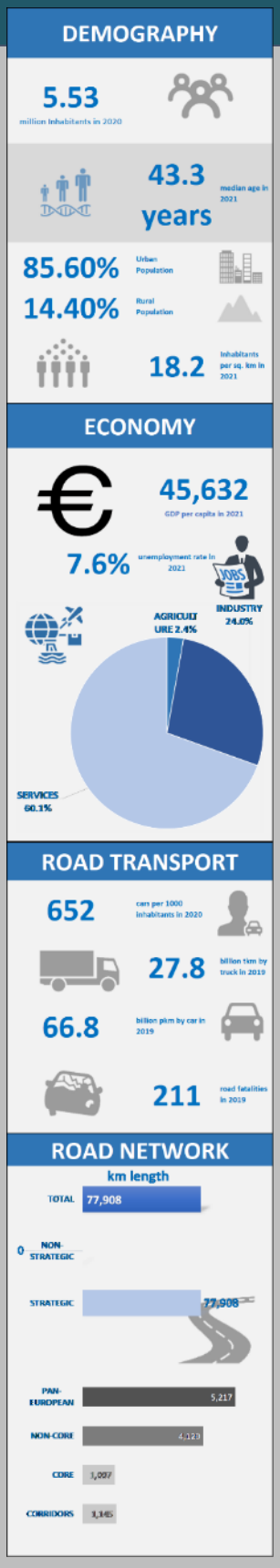
In 2018 the overall annual expenditure from the state budget was 300 million euros, including 65 million euros for operating costs, 179 million euros for investments and 56 million euros for public transport grants (bus, waterways and air).

External resources mainly consist of EU funds and revenues collected by ERA itself, which come from state fees and road user fees. 22 million euros from EU were invested into construction and reconstruction of national roads additionally to the state budget.

60%, i.e. 39 million euros of operating costs were used for maintenance of national roads.

In recent years ERA has made rather big investments to the e-service area in order to enhance efficiency and improve the quality of services.

Finland



Finnish Transport Infrastructure Agency (FTIA)

General description

Finnish Transport Infrastructure Agency (FTIA) is the Finnish Transport Administration, responsible for public roads, railways and waterways. The length of the public road network is about 83,000 km, including about 5,400 km of bicycle paths.

The mission of the FTIA is to make sure that the transport system works as a whole, which is a basic precondition for guaranteeing that society will function. The administration creates the prerequisites for ensuring that all transportation and travel is conducted in the best and safest way, regardless of where citizens live, with due consideration given to industries' needs, the environment and health.

The Finnish Transport Infrastructure Agency has approximately 850 employees, of which 420 work in the regional road centres. The Head Office is in Helsinki. There are nine regions for road keeping activities with regional centres (from south to north): Helsinki, Turku, Tampere, Kouvola, Kuopio, Jyväskylä, Vaasa, Oulu and Rovaniemi.

Responsibility

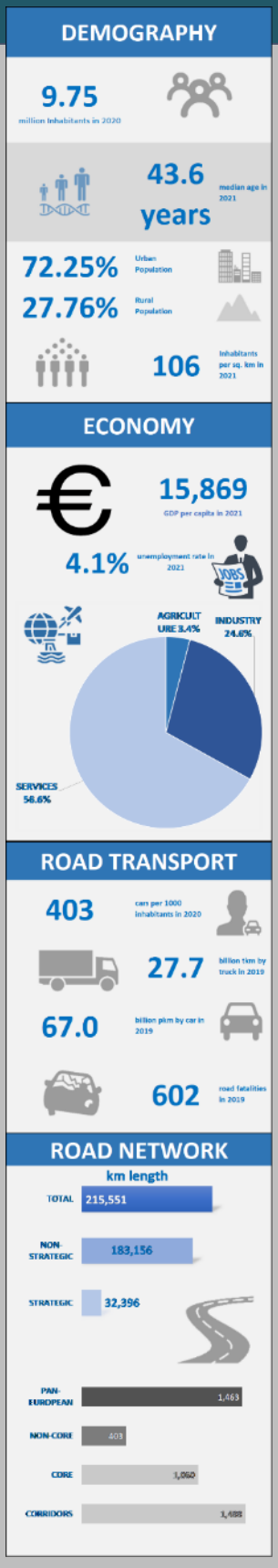
The main task of the Finnish Transport Infrastructure Agency is to be responsible for the long-term planning of the transport system for road, rail and waterways traffic, and for the construction, operation, and maintenance of state roads, waterways and railways.

The FTIA is a planning and procurement organisation, all road keeping and planning works, including traffic management have been outsourced to the private market since early 2000's.

Financing

Financing of FTIA activities is funded 100% from the state budget. The total budget in 2021 was 1,093 million euros in business volume, of which 278 million euros for investments and 815 million for operation, maintenance, and traffic control, including costs for the planning process, state joint-financing (e.g. for public transport), state subsidies for private roads, contracted traffic, and support for research and innovation in the transport area.

Hungary



Hungarian Public Roads

General description

Hungarian Public Roads is responsible for the operation and maintenance of more than 32,000 km of national roads and near 1,000 km bicycle roads. The company was established on 1 October 2005 by merging several individual road operator directorates at county level. Based on its 6,600 employees and economic indicators, the company is one of the first ten state-owned enterprises in Hungary. Road operations are carried out in 19 counties, at 95 maintenance centres, under the supervision of the headquarters in Budapest.

Responsibility

The activities of Hungarian Public Roads consist of the operation and performance of routine and preventive maintenance on the state-owned public road network, which includes expressways and motorways. In addition, Hungarian Public Roads is responsible for traffic management measures on the operated network, including dynamic traffic management and traffic lights, issuance of route permits for oversized vehicles, the control of trucks at weight control stations, the provision of training for professionals across the entire road sector, the operation of the Road User Information Services, the National Road Database, and the Road Museum in the municipality of Kiskőrös. It also plays a leading role in the renewal of technical legislation. In addition to performing its duties under contract, Hungarian Public Roads is also committed to social responsibility, the education of new generations of road users towards environmentally responsible behaviour, and the improvement of traffic ethics and safety.

Financing

State financing in the framework of contract on activities of public interest granted under the central state budget support. Data from recent years:

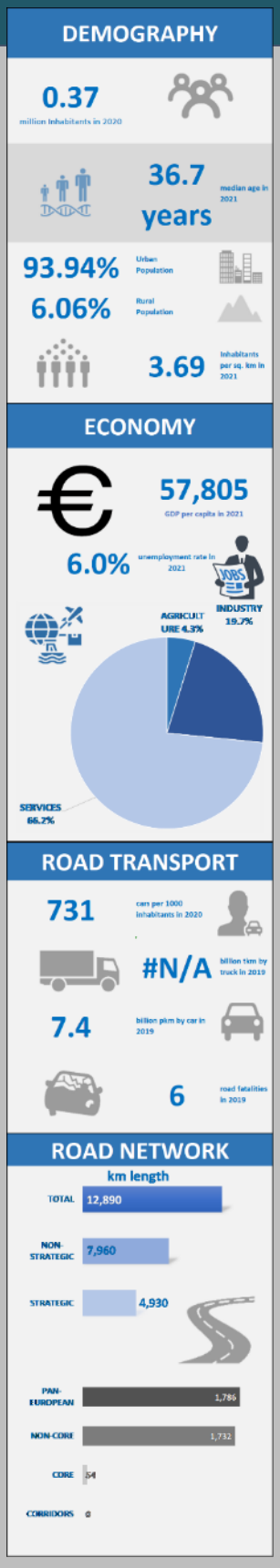
2018: HUF81 billion

2019: HUF89 billion

2020: HUF105 billion

In case of funds for road rehabilitations, or ITS investments, EU co-financed projects (TOP, CEF etc.) are carried out with external resources.

Iceland



Vegagerðin, the Icelandic Road and Coastal Administration (IRCA)

General description

Vegagerðin is the Icelandic Road and Coastal Administration (IRCA). The mission of the IRCA is to develop and maintain a transport network on land and sea in the most cost-effective manner, guided by the needs of the community. The main objectives are the following:

- safe and smooth traffic on roads and secure sea transport;
- the cost-effective development and management of the transport network in harmony with the environment;
- efficient and well-organised operations;
- responsible, skilled, and satisfied staff. Vegagerðin has approximately 300 employees and the following main divisions:
- Administration division: legal, public relations, human resources, digital innovation, review and follow up;
- Construction division: production and maintenance, harbours, design, general support ;
- Finance division: finance, economics, logistics and equipment, IT;
- Development division: transport plans, regional planning, traffic and traffic safety, research fund;
- Service division: , public transport, road equipment, road service, information/winter service;
- Regions: region west, north, east, south and capital area. The head office is in Garðabær. There are four regions with regional centres in Selfoss (South), Borgarnes (West), Reyðarfjörður (East), and Akureyri (North).

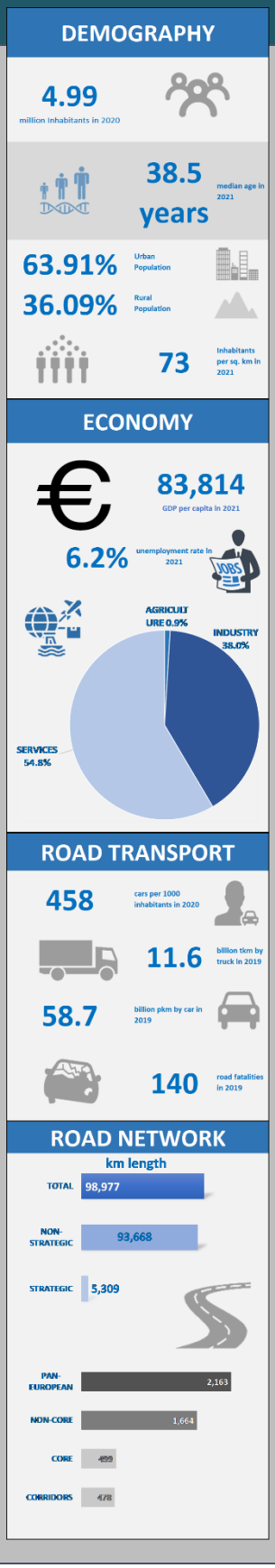
Responsibility

National roads are divided into state roads and public and private roads. State roads – including their design, construction, service, and maintenance – are managed by the Icelandic Road and Coastal Administration.

Financing

The IRCA's budget is approximately €350 million from national funds. €167 million is earmarked for road investments, about €85 million for maintenance, and €44 million for services (mainly winter services). €29 million is earmarked for public transport subsidies and €15 million for harbours, ferries, lighthouses, and breakwaters.

Ireland



Transport Infrastructure Ireland (TII)

General description

The Roads Act 2015 provided for the dissolution of the Railway Procurement Agency (RPA) and the transfer of its staff, assets, rights and obligations to the National Roads Authority (NRA), operating as Transport Infrastructure Ireland (TII). TII is responsible for developing, managing and maintaining the country's national road network, light rail and proposed metro networks. The asset value of the infrastructure overseen by TII is in the order of €30 billion. Headquartered in Dublin, TII also has regional offices. TII provides opportunities to: • Ensure an integrated approach to the future development of the national roads network and the development of light rail; • Combine the expertise and proven record of the organisations which have delivered the Luas and the National Motorway Network thereby offering the potential for innovation and optimised delivery in the context of national roads, light rail and other infrastructure initiatives and programmes; • Ensure value for money by virtue of improved scale and the combining of complementary NRA and RPA commercial, financial and technical competencies.

Employees – Approx 300

Responsibility

Transport Infrastructure Ireland (TII) is responsible for the delivery and operation of safe and efficient transport infrastructure services, including the country's national road and light rail networks. TII's mission is to deliver transport infrastructure and services that contribute to the quality of life of the people of Ireland and support the country's economic growth. TII is based in Dublin and the organisation employs a wide range of professional, administrative and technical disciplines.**Financing**

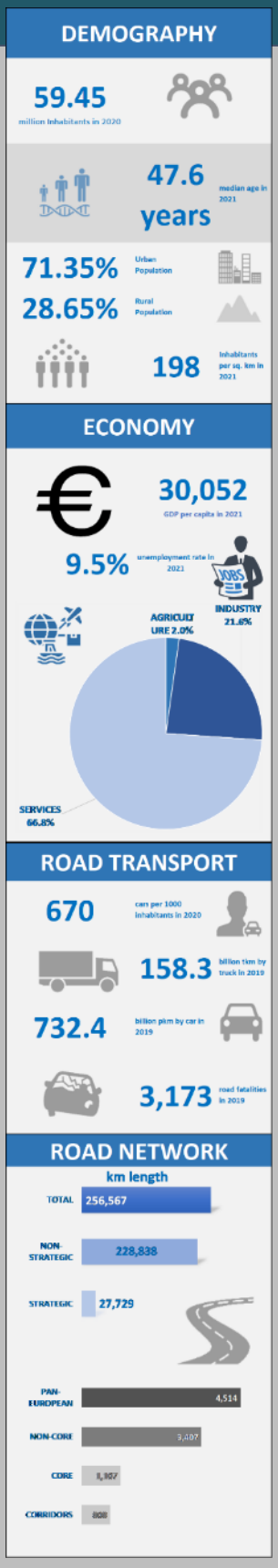
Financing of FTIA activities is funded 100% from the state budget. The total budget in 2021 was 1,093 million euros in business volume, of which 278 million euros for investments and 815 million for operation, maintenance, and traffic control, including costs for the planning process, state joint-financing (e.g. for public transport), state subsidies for private roads, contracted traffic, and support for research and innovation in the transport area.

Financing

TII's activities are funding from a range of sources, including:

- Cohesion fund
- TEN-T Funding

Italy



ANAS S.p.a.

General description

ANAS is an innovative, efficient and transparent joint-stock company that operates on a national and international level with Ferrovie dello Stato Italiane as sole shareholder.

ANAS is also subject to the auditing and technical-operative supervision of the Italian Ministry of Sustainable Infrastructures and Mobility.

ANAS has 6,800 employees, many of which are road operators, engineers and architects and manages 32,000 km of Italy's national road and motorway network, with projects that aim to expand and continuously develop this network and a multi-annual Investment Plan (2016-2020) of € 36 billion.

Through a network of 21 Regional Monitoring Centres, a National Monitoring Centre and a fleet of over 1,000 vehicles equipped with cameras and GPS satellite systems, Anas constantly monitors its roadway infrastructure to ensure safety and viability, while coordinating the activities of its operating personnel.

Responsibility

Anas manages Italy's national roads and motorways and is responsible for all of the activities this implies, from their design, including feasibility studies and environmental impact assessments, to their construction and ordinary and extraordinary maintenance.

The main activities are:

- OPERATIONS, ordinary and extraordinary maintenance of managed roads and motorways;
- RENOVATION and gradual IMPROVEMENT of our roadway network and related road and traffic signs;
- CONSTRUCTION of new roads and motorways, both directly and through contracts with third parties;
- INFORMATION services for customers;
- IMPLEMENTATION of laws and regulations that protect road and motorway assets;
- INTRODUCTION of measures that ensure traffic SAFETY;
- PROMOTION and PARTICIPATION in research projects and experiments on road networks, traffic and circulation.

The national road network managed includes 31,902,696 km of national roads, motorways, junctions and slip roads.

- Motorways and motorway links: with over 1,294 km of toll-free motorways and motorway links ANAS is the country's second motorway management company.
- National roads: ANAS manage 90% of Italy's national roads. This road network extends throughout the country's territory with significant concentrations in the southern part of Italy.
- Roads in the means of being classified or declassified: when a new road is built, the previous old road, which remains under our management, becomes an "NSA" (Nuova Strada Anas – New ANAS Road) until it is reclassified.
- Junctions and slip roads: these are service roads or junction roads that connect local and national roads.

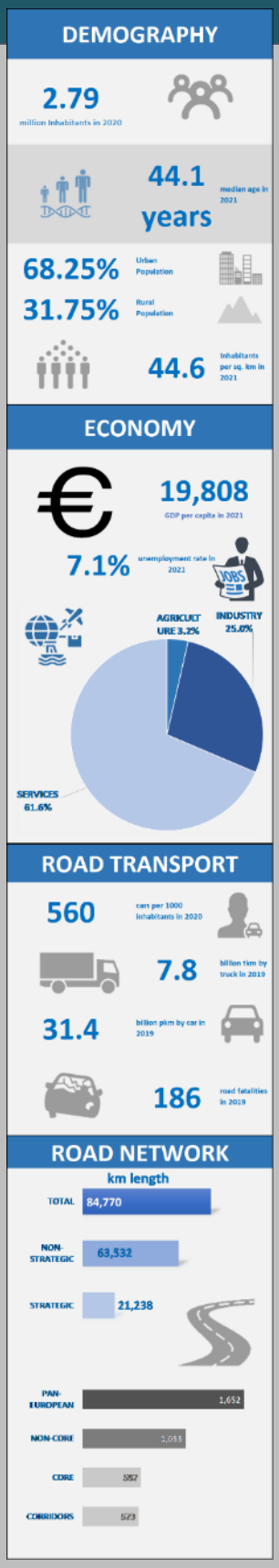
Financing

The “Contratto di Programma - CDP” (Programme Contract) is the instrument that allocates public resources to ANAS for the implementation of infrastructure works. Since 2015, in agreement with the Ministry of Infrastructure and Transport, ANAS introduced performance indicators that, year by year, measure the quality of services offered to customers.

The 2016-2020 programme contract, approved by the CIPE (Interministerial Committee for Economic Planning), started a multi-year horizon planning. The most recent update of the Program Contract between Ministry and ANAS for 2018-2019, included a plan for the extraordinary maintenance of bridges, viaducts and tunnels and a special plan for Cortina (2021 World Cup and 2026 Olympics).

The remodelled CDP increased investments to € 29.9 billion, broken down as follows: € 15.9 billion, (53% of the total), for scheduled maintenance, upgrades and safety enhancements, and € 14 billion, (47%), for new works and completion of routes.

Lithuania



Lithuanian Road Administration (LRA)

General description

The Lithuanian Road Administration is an enterprise founded by the Government of the Republic of Lithuania which oversees organising and coordinating the reconstruction, maintenance, and development of the roads of national significance.

The Lithuanian Road Administration aims: to satisfy the needs of society and road users; to work economically and efficiently when creating adequate traffic conditions seeking to achieve that the transport on the roads of national significance would be safe, fast, convenient and environment-friendly; to develop the roads and their network; the top priority is to ensure traffic safety.

Responsibility

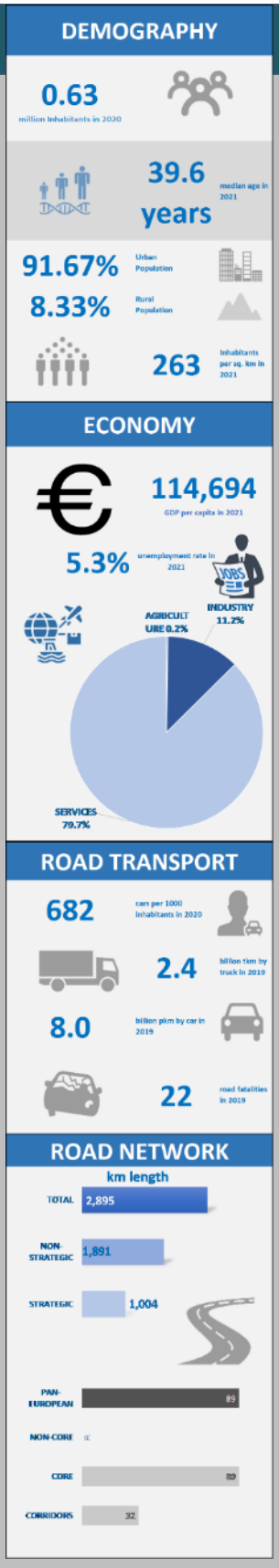
Its main tasks are:

- to implement the state policy regarding road maintenance and development formulated by the Seimas of the Republic of Lithuania;
- to implement the programmes on road maintenance and development drafted by the Ministry of Transport and Communications;
- to organise the development, modernisation, and functioning of the network of the roads of national significance.

Financing

Total budget for 2020 (Road Maintenance and Development Programme + EU funds) is €606 million (incl. €40 million of EU funds). Financing sources are:

1) a share of the revenue from excise duty from the sale of petrol, diesel fuel, and energy products that are produced from materials of biological origin or contain their supplements and are intended for use as motor fuel;
2) a share of the revenue from excise duty for the sale of liquefied petroleum gas intended for use as motor fuel;
3) the tax on heavy goods vehicles registered in the Republic of Lithuania;
4) road user charges;
5) the tax levied for using vehicles on roads (vehicle combinations) the dimensions of which exceed those authorised;
6) the charge for the restriction of traffic;
7) targeted funds transmitted by natural or legal persons, other organisations, their affiliations and foreign states;
8) funds from the paid or recovered penalties for exceeding the speed limit registered by speed cameras installed on state significance roads.



Luxembourg

National Road Administration (Administration des Ponts et Chaussées)

General description

Administration des Ponts et Chaussées" is placed under the authority of the Ministry for Mobility and Public Works. It manages about 165 km of motorways, 837 km of national roads, 1.891 km of "Chemins repris" and around 650 km of cycle path, which represented about half of the entire road network in Luxembourg.

Around 1.150 people are employed at the Administration, among them 650 staff member based all over Luxembourg, who take care of the road maintenance.

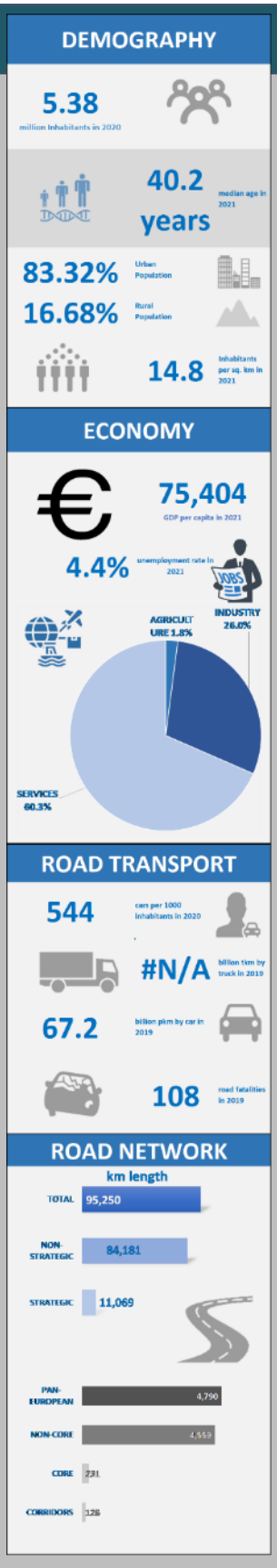
Responsibility

Administration des Ponts et Chaussées' main activities are the construction, maintenance and modernisation of the motorway, tunnels and the state's public road network. Infrastructures of the Luxembourg airport, the inland port of Mertert and the navigable channels and banks are also under the responsibility of the "Administration des Ponts et Chaussées". It is also responsible for the traffic management on the motorway network, ITS, the management of public lighting, traffic lights and signs.

Financing

The financing of the activities of the "Administration des Ponts et Chaussées" is allocated by the annual government budget and its multiannual spending targets. 2019, the National Road Administration has a budget of about 400 million euros for investments and maintenance operations.

Norway



Norwegian Public Roads Administration (NPRA)

General description

Statens vegvesen is the Norwegian Public Roads Administration (NPRA). It is a government agency under the Ministry of Transport and Communications with approximately 4.800 employees, 38% of whom are women. It comprises the Directorate of Public Roads and six divisions: Operations and Maintenance, Construction, Transport and Society, Road users and vehicles, IT and Shared services. The NPRA has 72 Driver and Vehicle Licensing Offices and five Traffic Control Centres distributed across the county.

Responsibility

The agency has three roles: Road and Traffic Manager, Disciplines and Government Agencies.

The NPRA shall contribute to the national objectives of the government, which impose requirements for security, environment, and an efficient transportation system that is available to all. As a road and road traffic manager, the NPRA is road administration for the state on the national roads (10.600 km). This means that the NPRA is responsible for planning, developing, operating and maintaining these roads.

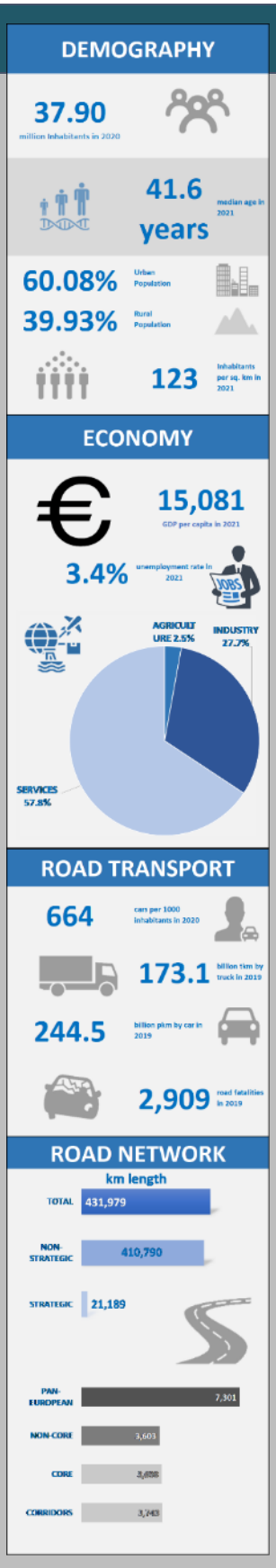
The agency is also responsible for national road ferries. As a specialist body, the NPRA is responsible for contributing to investigations, facts and proposals for the Ministry of Transport work on the National Transport Plan, the state budget and other parliamentary documents. The research and dissemination of results, the development of guidelines and guidance material and contact with relevant educational institutions is important in this context.

The NPRA is the authority responsible for vehicle controls, supervisory tasks and conducting driver tests. In several areas, the agency has the authority to develop and approve regulations and make decisions that apply to road users and vehicles. The NPRA has the authority to adopt regulations and norms in certain areas regarding public roads, and enforce laws, regulations and manuals regarding public roads.

Financing

The budget spending of the NPRA in 2020 was NOK 36,4 billion. NOK 30,4 billion came from government funds for national roads and was earmarked, among other things, as follows: Traffic and vehicle supervision (NOK 2,13 billion), Operation (NOK 3,9 billion), Maintenance (NOK 3,6 billion), Investment (NOK 12,9 billion), National ferries (NOK 1,7 billion), and Subsidies for county roads (NOK 2,9 billion). In addition to NPRA funding, national roads were funded 1,7 billion from external sources in 2020, mainly from road toll.

Poland



Generalna Dyrekcja Dróg Krajowych I Autostrad (GDDKIA)

General description

The GDDKIA, 'Generalna Dyrekcja Dróg Krajowych I Autostrad' (General Directorate for National Roads and Motorways) is an administrative body, subordinated to the Ministry of Infrastructure. It consists of 16 regional divisions and the Head office in Warsaw. The GDDKIA employs about 4,000 people, mostly in road maintenance units. The GDDKIA manages about 19,400 km of national roads; other categories of roads (regional, county, or local) are managed locally.

The Polish national road network consists of three categories of roads:

- motorways (toll), administrated by the GDDKIA and three private concessionaires;
- expressways (toll for HGV), administrated totally by the GDDKIA;
- other trunk roads, administrated by the GDDKIA and the presidents of local councils.

Responsibility

The main goals of the GDDKIA's activities are:

- traffic management on national roads with the implementation of the National Traffic Management System;
- asset management by performance-based contracts;
- road safety by implementation of the EU Directive;
- investment management by new contracts, tender procedures, EU funds;
- technology management by quality inspection of investments as well as tests of the existing network done by regional road laboratories.

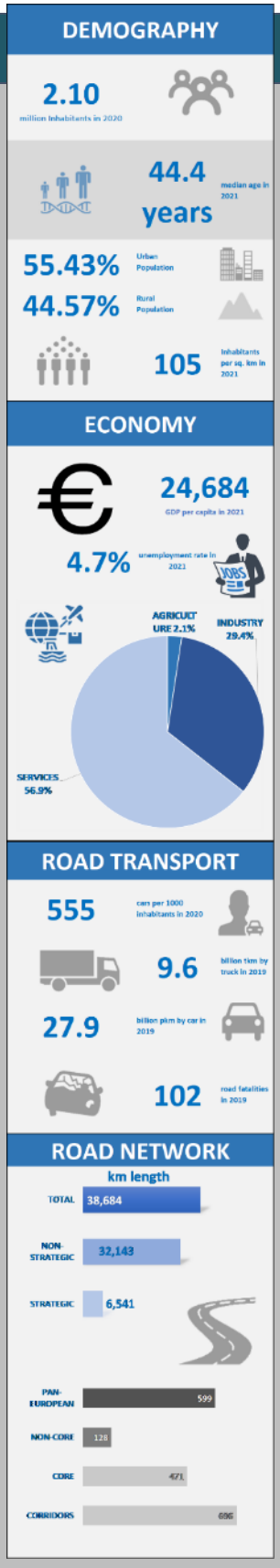
Financing

The GDDKIA is financed partly from the state budget, partly from National Road Fund (NRF), and partly from EU strategic programmes. GDDKIA's budget reaches approximately PLN13–17 billion (€3–4 billion). The National Road Fund financially supports the Programme for National Roads Construction and covers expenditure for planning, constructing, reconstructing, and renovating national roads.

The sources of income for the NRF are:

- fuel charges
- European Investment Bank loans
- road bonds
- revenues from the ETS (Electronic Toll System)

The GDDKIA spends approximately PLN2–2.5 billion (€0.5–0.6 billion) on standard summer and winter maintenance of the national road network every year.



Slovenia

Ministry of Infrastructure – Slovenian Infrastructure Agency

General description

As at 31 December 2020, Slovenia had almost 39,000 kilometres of public roads; 6,541 km of which were categorised as state (national) roads. Motorways and expressways are managed by Družba za avtoceste v Republiki Sloveniji (Motorway Company in the Republic of Slovenia – DARS), main and regional roads are managed by Direkcija Republike Slovenije za infrastrukturo (DRSI; Slovenian Infrastructure Agency – SIA), while the rest of the roads are managed by local communities. DARS and SIA have a joint Traffic information centre in Dragomelj, which provides online information for users about conditions on national roads. 599 km of state roads belong to the Pan European Road Network (556 km of motorways and 43 km of main roads), which represents 9% of the national road network. SIA maintains 43 km of pan European roads, which represents only 0.7% of national network under its control.

Responsibility

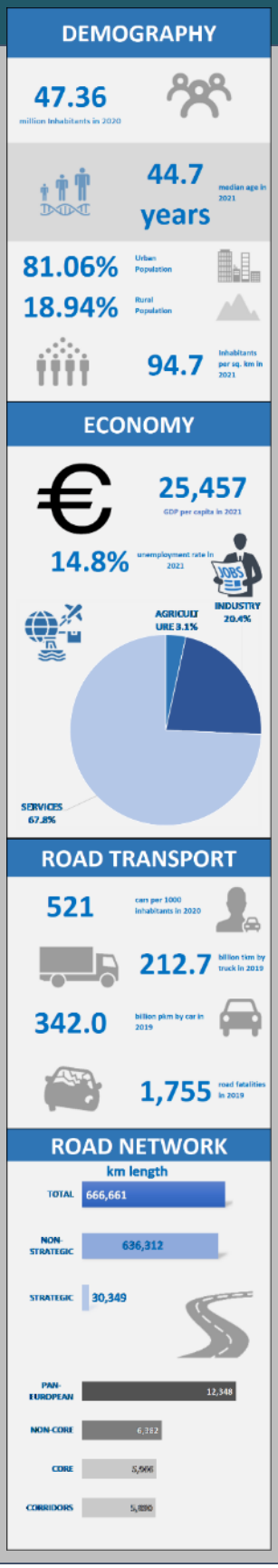
DARS is a joint-stock company that is 100% owned by the Republic of Slovenia. It is responsible for the motorways of Slovenia. The head office is in Celje and a branch office in Ljubljana. It has 1,269 employees. On the motorway network, there are nine big motorway centres and six small motorway centres. DARS' mission is to ensure modern approaches to and responsibility for the environment, to optimise traffic flow, safety, and comfort on the Slovenian motorway network. Slovenia's main and regional roads are managed by SIA, a body within the Ministry of Infrastructure based in Ljubljana, which comprises the field of road and railway infrastructure. It has 111 employees (of which 83 work in the field of road infrastructure and 28 in the field of railway infrastructure). Mission: to ensure optimal management of available resources, protection, maintenance and construction of main and regional roads and the railway network in Slovenia, so that within the scope of its competencies, SIA contributes to the improvement of mobility, ensuring road safety, accessibility, usability, minimal burden on the natural and living environment, and coherence with the economic and spatial development of municipalities, regions, and the state.

Financing

Revenues of DARS are driven by tolls. Toll revenues have been accounting for a stable 92.8% of total revenues in the amount of € 398.6 million in 2020. In 2020, funding of DARS amounted to € 224.36 million (51.1 % for road construction and renovation, 19.9 % for routine maintenance, and 29.0 % for motorway management and administration).

SIA is financed from the state budget. The 2020 budget included €236,4 million for road infrastructure (48,1% for road construction, 39,7% for the maintenance and management of roads, and 12,2% for administration), and € 419, million for rail infrastructure.

Spain



General Directorate of Roads

General description

The General Directorate of Roads (DGC) of the Ministry of Transport, Mobility and Urban Agenda is the Spanish National Road Administration responsible for the management of the National Road Network ("Red de Carreteras del Estado", RCE), which represents 16% of the overall length and carries more than 52% of the total traffic (and more than 65% of the total of heavy good vehicles traffic) on the Spanish interurban network.

The DGC is organised in Central Services, located in Madrid, and Peripheral Services ("Demarcaciones de Carreteras"), which are the 15 territorial organisations depending on the DGC.

Central Services are organically organised in General Sub-directorates, according to the different stages of the infrastructure development. These sub-directorates are: Projects, Construction, Maintenance, Operation (including Road Safety), and Coordination (which includes economical management). Finally, there is a Technical Directorate, providing technical support for every service in the DGC.

The DGC has approximately 1,800 employees, 10% in Central Services and 90% in Peripheral Services.

Responsibility

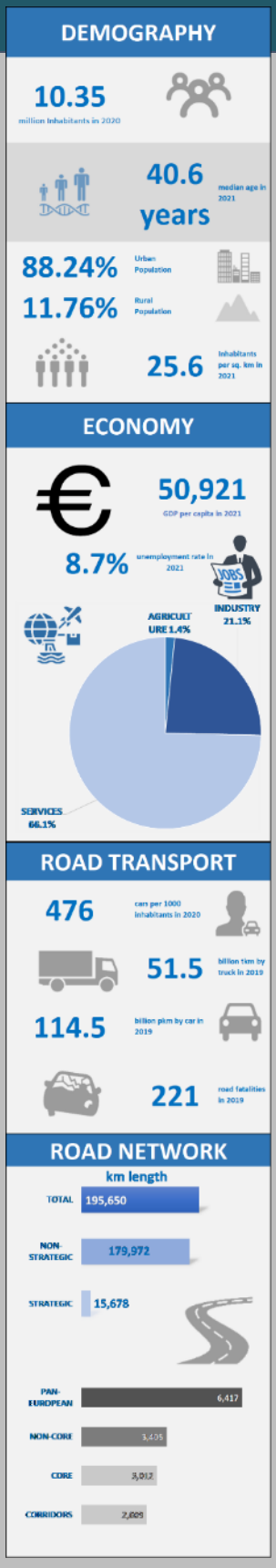
The DGC is responsible for planning, designing, constructing, maintaining, and operating the National Road Network, RCE. It is also responsible for road safety on this network. The General Directorate of Traffic of the Ministry of Home Affairs is the authority responsible for traffic management and regulation on all road networks in Spain. Environmental evaluation on the RCE is conducted in coordination with the Ministry for the Ecological Transition and the Demographic Challenge. The three appointed ministries are part of the National Government of Spain.

Other regional and local administrations are responsible for the management of other interurban road networks in Spain: Autonomous Communities for regional roads, Provincial Governments for provincial roads, and City Councils for local roads.

Financing

The 2022 budget for the National Road Network RCE is about €3.314 million, of which €1.123 million is earmarked for new infrastructures and €2.191 million for the maintenance and operation of the existing network, including investment on improvements on safety, noise impact reduction, environmental protection and tunnels.

Sweden



Trafikverket - Swedish Transport Administration

General description

Trafikverket is the Swedish Transport Administration. The mission of the Transport Administration is to make sure that the transport system works, which is a basic precondition for guaranteeing that society will function. The administration creates the prerequisites for ensuring that all transportation and travel is conducted in the best and safest way, regardless of where citizens live, with due consideration given to the environment and health.

The Transport Administration has approximately 6,600 employees. Many employees work in the following areas: traffic control work on the roads and railways, community planning and negotiation and survey work, IT- work, technical survey and development, survey, inspection and supervision work, shipping work, architectural and infrastructure design works, production planning and production management.

The Head Office is in Borlänge. There are six regions with regional centres: Kristianstad (South), Gothenburg (West), Eskilstuna (East), Stockholm (Stockholm), Gävle (Central) and Luleå (North).

Responsibility

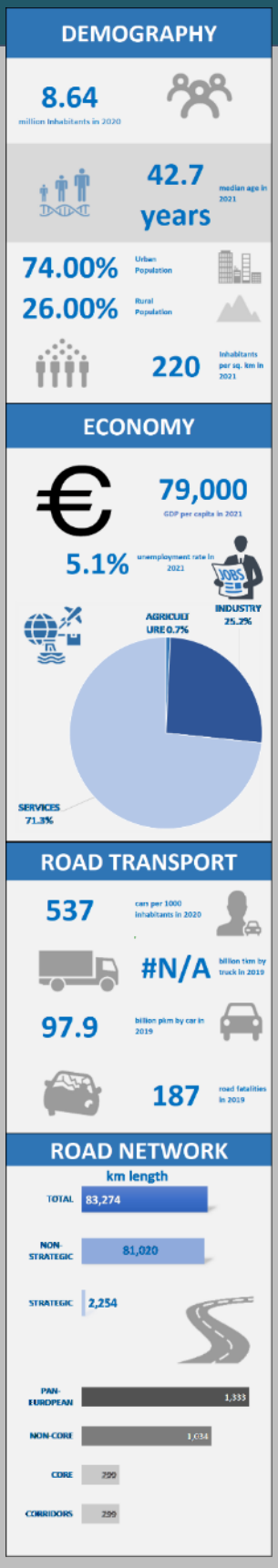
Trafikverket's main tasks are:

- to be responsible for the long-term planning of the transport system for road and rail traffic, shipping and aviation, and for the construction, operation, and maintenance of state roads and railways;
- to work for public passenger transport through the procurement of agreements and private aspects of state grants for the Swedish shipping industry.

Financing

SEK54 billion in business volume, of which some SEK23.5 billion for investments and about SEK19.5 billion for operation, maintenance, and traffic control. The remaining SEK11 billion includes costs for the planning process, state joint-financing (e.g. for public transport), state subsidies for private roads, contracted traffic, and support for research and innovation in the transport area.

Switzerland



FEDRO - Federal Roads Office

General description

The Federal Roads Office (FEDRO) was established in 1998 as Switzerland's federal authority responsible for road infrastructure and private road transport. It belongs to the Federal Department of the Environment, Transport, Energy and Communications (DETEC), and focuses on securing sustainable and safe mobility on the country's roads. The office creates the prerequisites for ensuring that roads are used for people and vehicles in the best and safest way, regardless where people live and gives due consideration to the environment and health. FEDRO is responsible for all strategic and operational duties required to fulfil this expectation.

FEDRO has approximately 650 employees. The Head Office is in Ittigen near Bern. The national road network is managed locally in the five regional centres (from West to East): Estavayer-Le-Lac, Thun, Zofingen, Winterthur, Bellinzona. The Traffic Management Centre is located in Emmen near Lucerne.

Responsibility

The main responsibilities and duties of FEDRO are:

- The construction, operation, and maintenance of the national road network (mainly motorways). The national road network is 2,250 km long. The Pan European Road Network represents 60% of it;
- to ensure access by persons and vehicles to all roads in the country;
- to set traffic rules and regulations for road-related topics;
- to be the federal competence centre for motorised and not-motorised individual traffic.

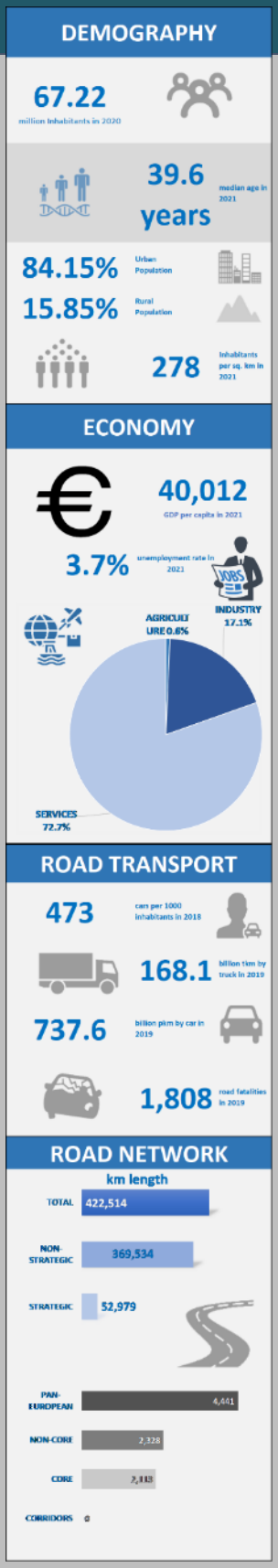
Financing

The current funding basis consists of:

- revenue from the oil tax on motor fuel (CHF3.5 billion),
- revenue provided by motorway stickers (CHF350 million)
- revenue from vehicles (CHF 370 million)
- Compensation provided by cantons regarding the national road network extension in year 2020

The overall annual expenditure of the administration is CHF4.35 billion, of which CHF2.9 billion is spent on operations, road network completion and the performance of maintenance work on the network and CHF400 million is invested on agglomeration projects. The rest of the budget includes state subsidies for main roads, multimodal transport investments, environmental protection, research, and administration.

United Kingdom (England)



National Highways

General description

National Highways is the government company which plans, designs, builds, operates and maintains England's motorways and major A roads. National Highways aim to provide all its customers with safe and reliable journeys, and to deliver a sustainable benefit to the environment.

National Highways has over 5,000 employees based in various locations around England. This includes a uniformed Traffic Officer Service who serve in control centres and patrol key areas of the network.

Responsibility

National Highways is responsible for motorways and major A roads (trunk roads) in England. These roads are referred to as the Strategic Road Network (SRN) and total around 4,300 miles. While this represents only 2 per cent of all roads in England by length, these roads carry a third of all traffic by mileage and two thirds of all heavy goods traffic.

National Highways is responsible for operating, maintaining, and improving the Strategic Road Network. SRN is essential to the growth, wellbeing and balance of the nation's economy.

National Highways does not manage all roads in Britain:

- Local roads are managed by the relevant local authority
- Scottish roads are managed by Transport Scotland
- Welsh roads are managed by the Welsh Assembly
- London roads are managed by Transport for London

Financing

National Highways' funding comes directly from government and is split between capital investment and operational expenditure. National Highways has five-year investment agreements.

Over the period 2020–2025, National Highways will deliver £27.4 billion[16] of investment on the strategic road network as described in the government's Road Investment strategy. This includes £20 billion of capital funding committed between 2020 and 2025 as set out in our Strategic Business Plan.

[16] The Spending review 2021 confirmed government's continued investment in strategic roads and National Highways plans to invest £24.1 billion across the second road period. In the spending review, National Highways' budgets were re-aligned to its latest delivery profile.

Ref: CEDR REPORT: TR2022 - 02

ISBN: 979-10-93321-68-4

Conference of European Directors of Roads (CEDR)
Ave d'Auderghem 22-28
1040 Brussels, Belgium
Tel: +32 2771 2478
Email: information@cedr.eu
Website: http://www.cedr.eu

9791093321684