



European 5G Observatory

5G Observatory Dashboard

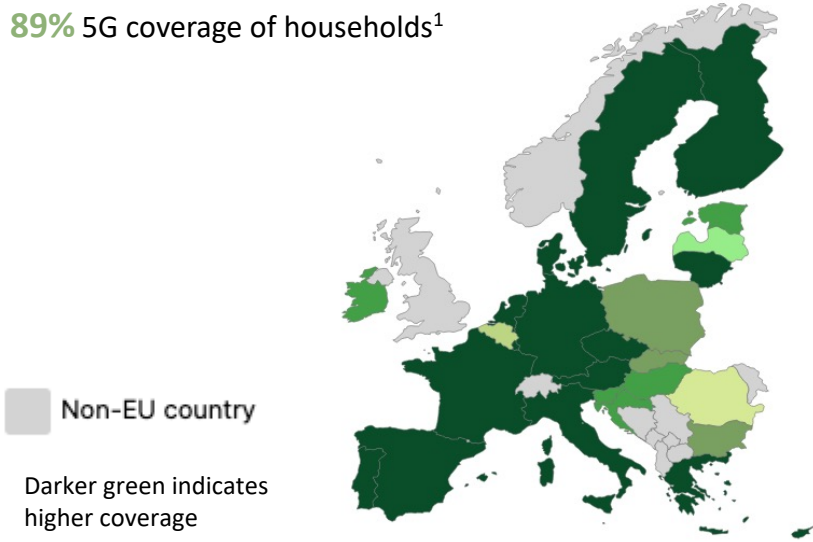
June 2024

CNECT/2021/OP/0008 European 5G Observatory, Phase III



5G deployment & coverage

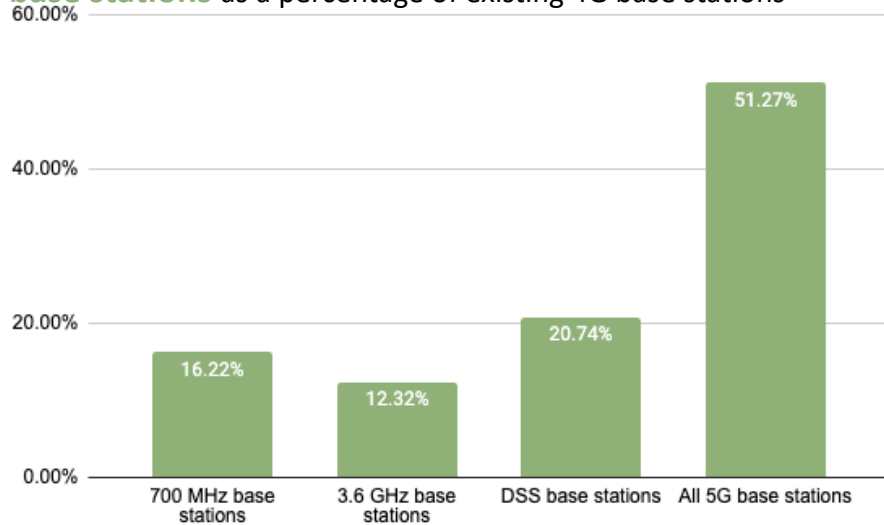
89% 5G coverage of households¹



Reporting period: Mid 2023

460,000 5G base stations in EU27

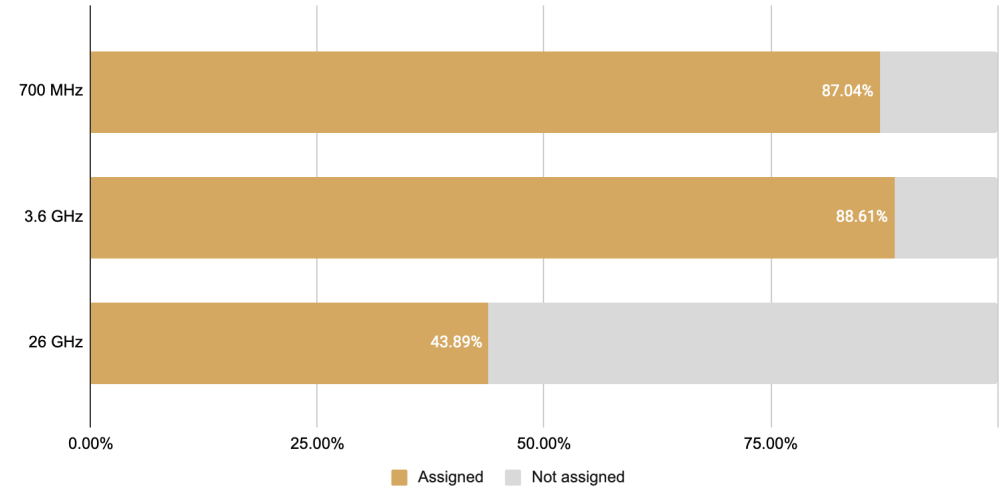
5G base stations as a percentage of existing 4G base stations²



Reporting period: Majority of entries collected in March 2024; see footnote for more detail

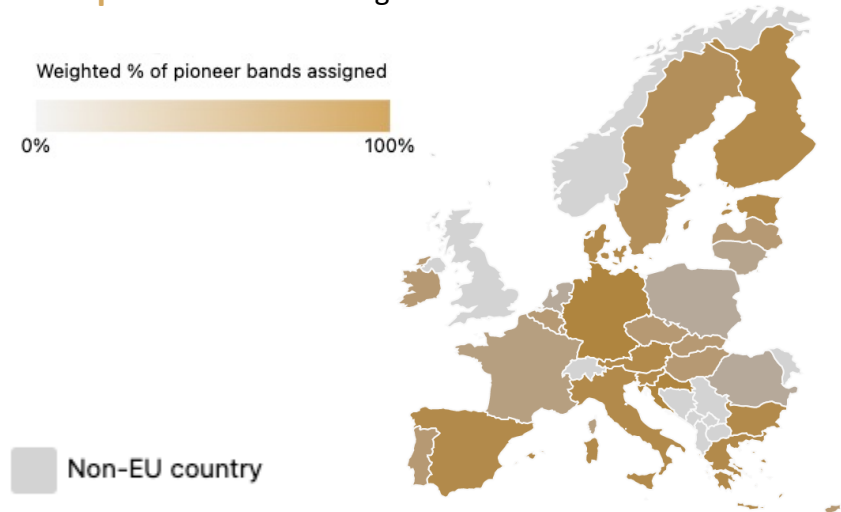
5G spectrum assignments

73% of pioneer bands assigned on average in EU27 (Each pioneer band is weighed 1/3rd)³



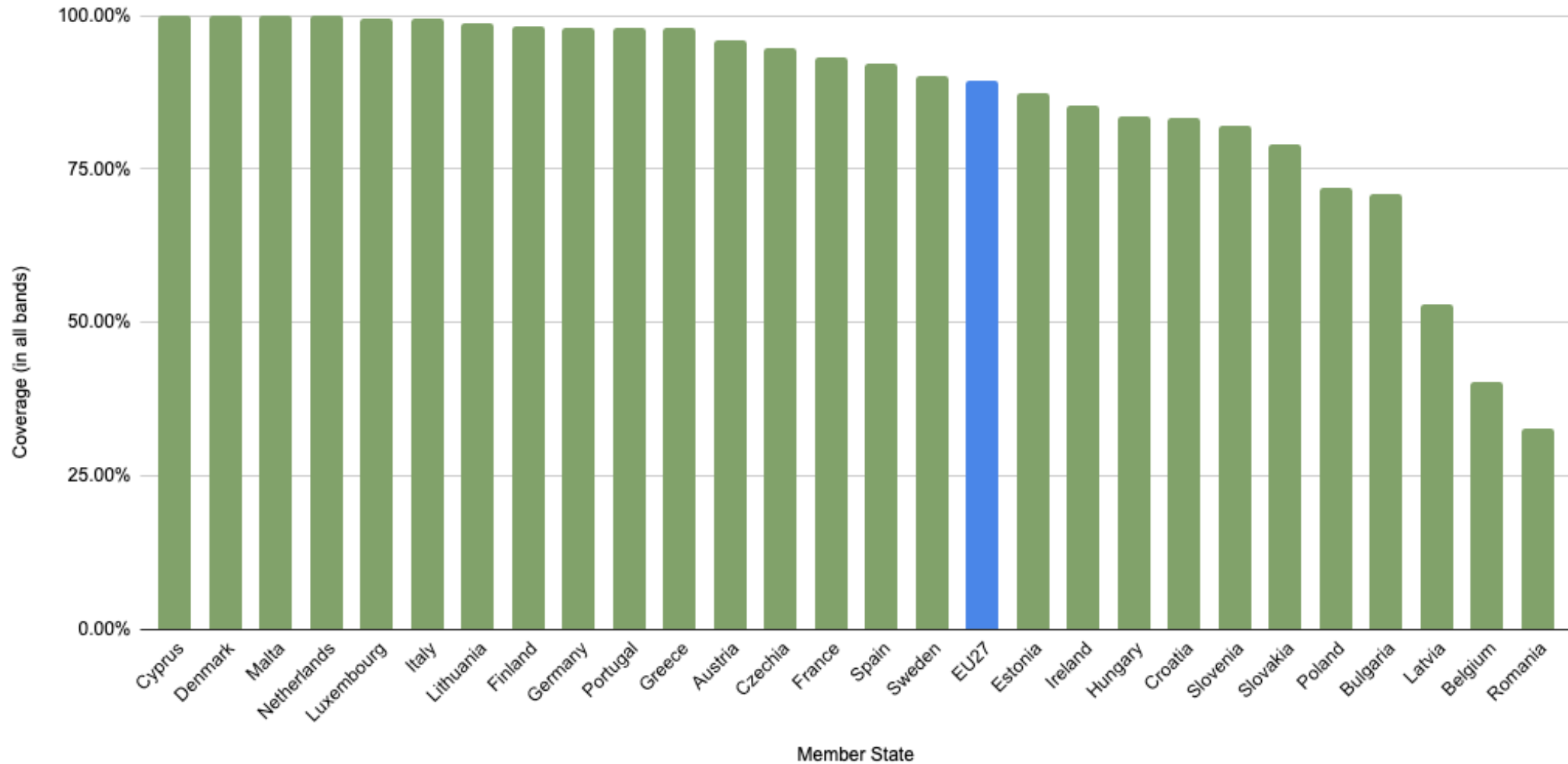
Reporting period: Up to May 2024

5G pioneer bands assigned across the EU27³



Reporting period: Up to May 2024

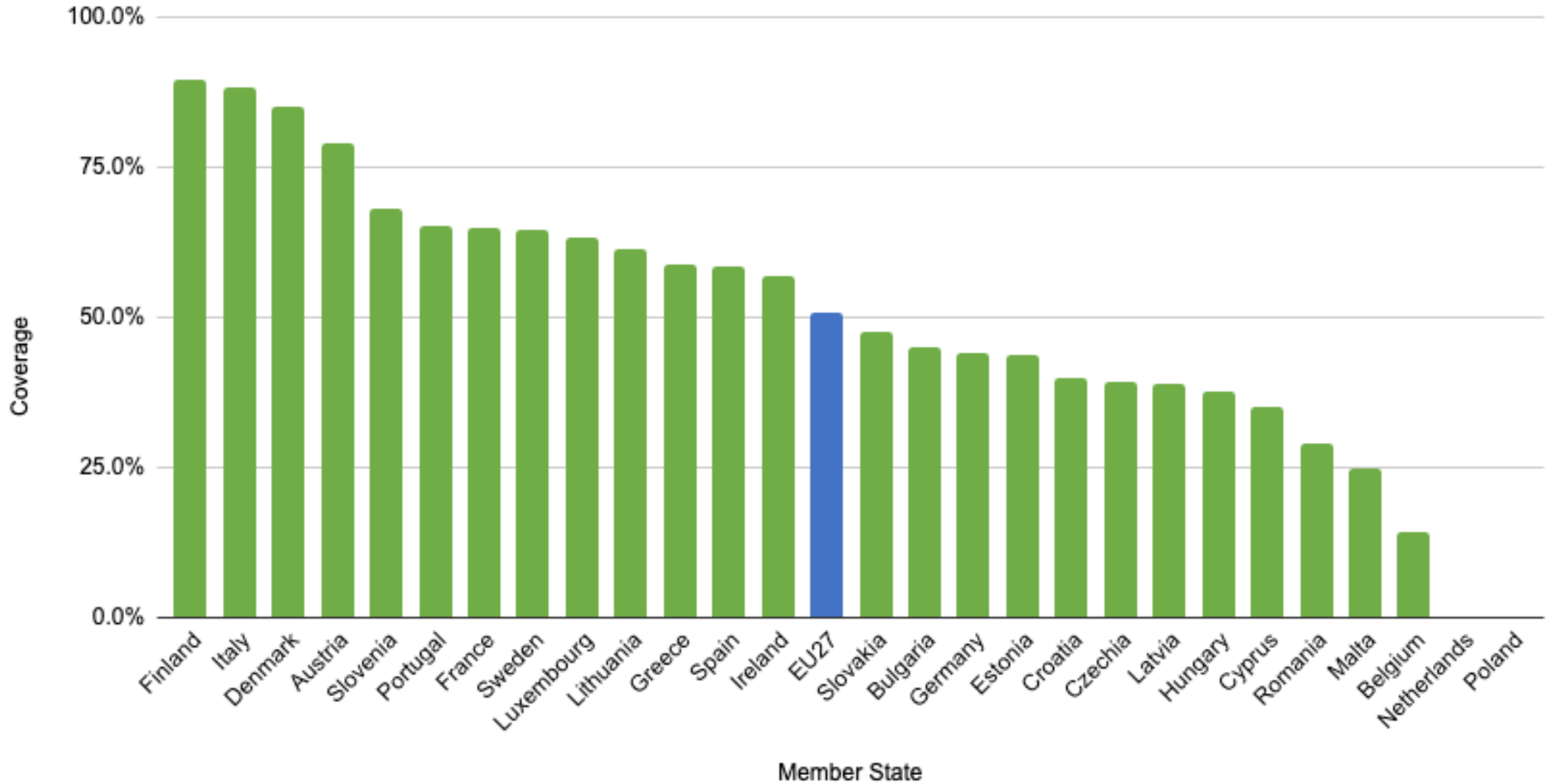
5G coverage of households (in all spectrum bands) ¹



Reporting period: Mid 2023

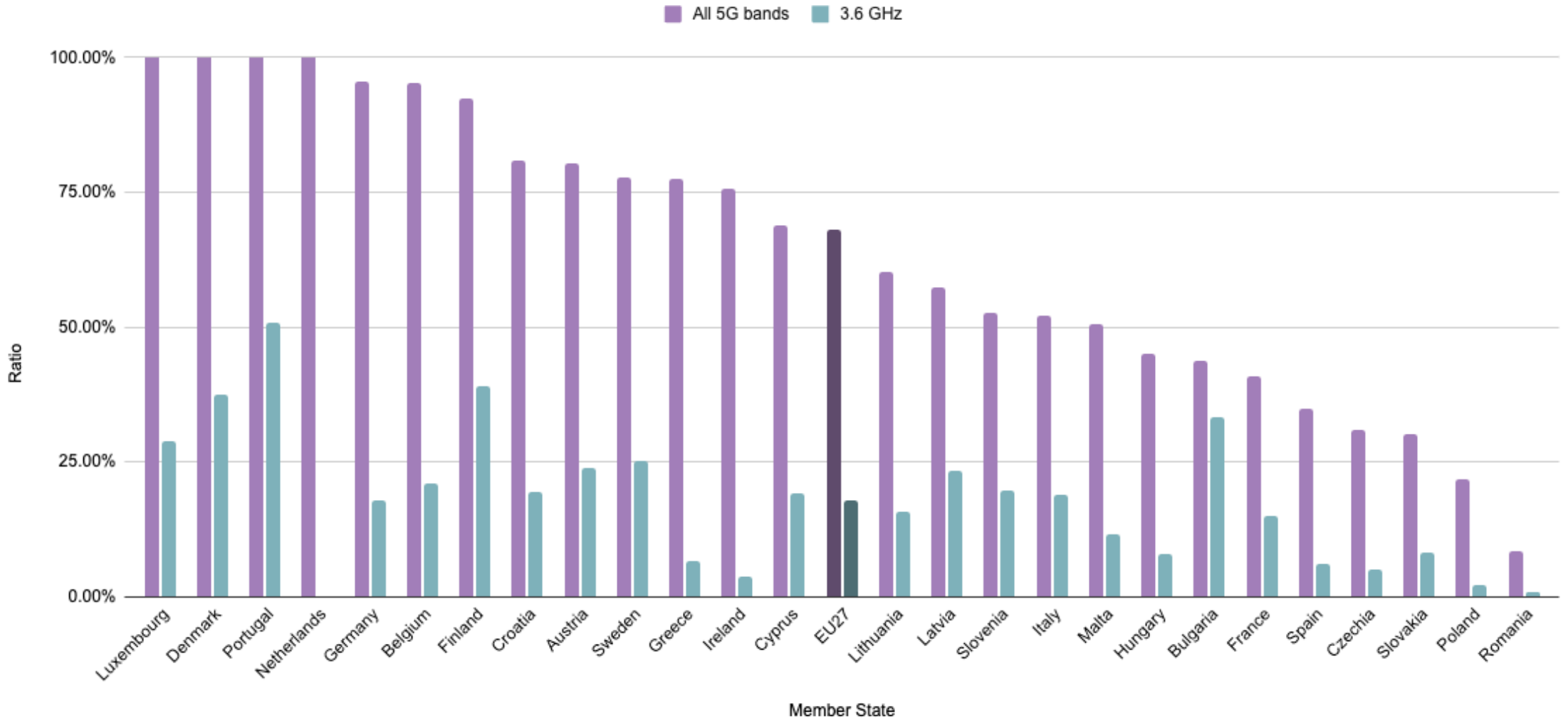
EU 5G progress

5G coverage in the 3.6 GHz band



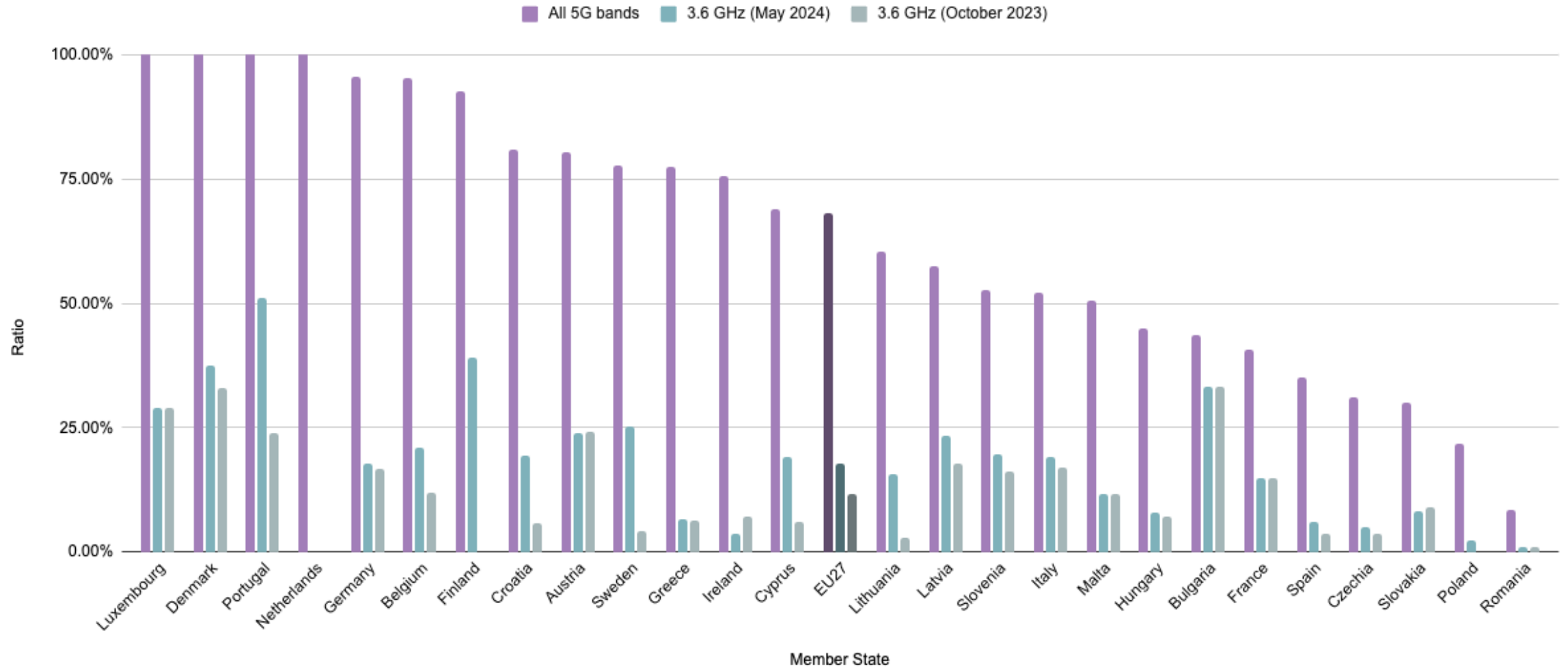
Reporting period: Mid 2023

5G base stations as a percentage of existing 4G base stations in Member States²



Reporting period: Majority of entries collected in March 2024; see footnote for more detail

5G base stations as a percentage of existing 4G base stations in Member States compared to previous bi-annual report²



Reporting period: Majority of entries collected between Aug. – Oct. 2023; see footnote for more detail

CEF-Digital funded 5G corridor projects: Call 1 & 2

Study projects

5G Brno – Bratislava
 Brno (CZ) to Bratislava (SK)
 ~ 140 km

5G MELUSINA
 Luxembourg (LU) to Metz (FR)
 ~ 70 km

5G on Track
 Mulhouse (FR) to Karlsruhe (DE)
 ~ 200 km

5G Carolina
 Prague (CZ) to Munich (DE)
 ~ 70 km

5G Gail
 Udine (IT) to Villach (AT)
 ~ 200 km

5G Estuary
 Antwerp (BE) to Vlissingen (NL)
 ~ 260 km

Latest 5GS
 Tallin (EE) to Vilnius (LT)
 ~ 670 km

EUMOB
 Bordeaux (FR) to Bilbao (ES)
 Perpignan (FR) to Barcelona (ES)
 ~ 9500 km

5G ADRIA
 Koper (SI) to Rijeka (HR)
 ~ 378 km

5G FREJUS
 Fourneaux (FR) to Bardonechchia (IT)
 ~ 26.5 km

5G HSL EUROLINK
 Paris (FR) to Brussels (BE)
 ~ 468 km

5G-SITACOR
 Udine (IT) to Postojna (SI)
 ~ 275 km

Works projects

5G SEAGUL
 Sofia (BG) to Velestino (EL)
 ~ 473 km

MEDCOR5G
 Barcelona (ES) to Montpellier (FR)
 ~ 548 km

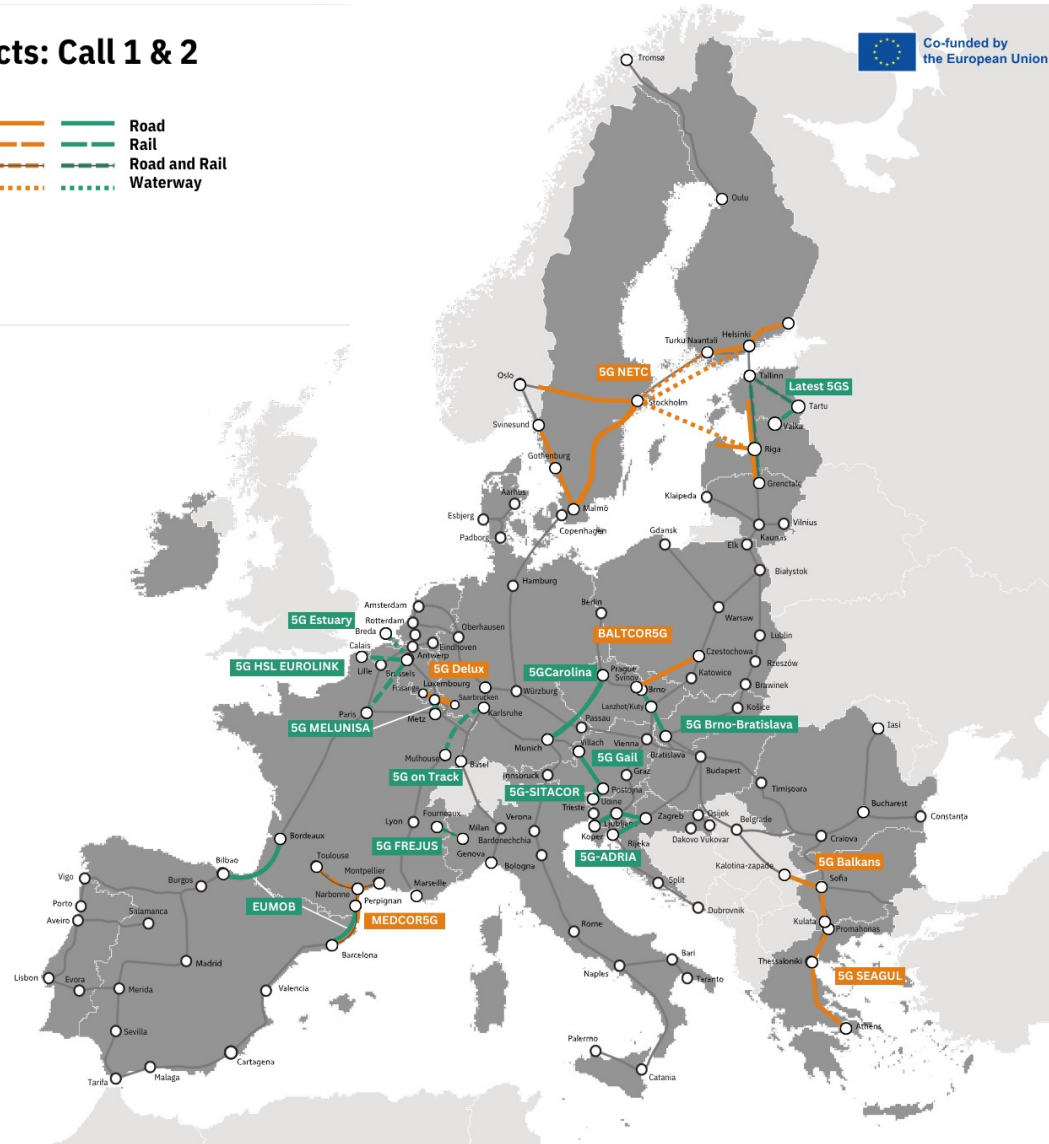
5G DeLux
 Frisange (LU) to Saarbrücken (DE)
 ~ 98 km

5G NETC
 Malmö (SE) to Helsinki (FI)
 to Riga (LV)
 ~ 3354 km

5G Balkans
 Sofia (BG) to Dimitrovgrad (RS)
 ~ 135 km

BALTCOR5G
 Czechochowa (PL) to Ostrava/Svinov (CZ)
 ~ 147 km

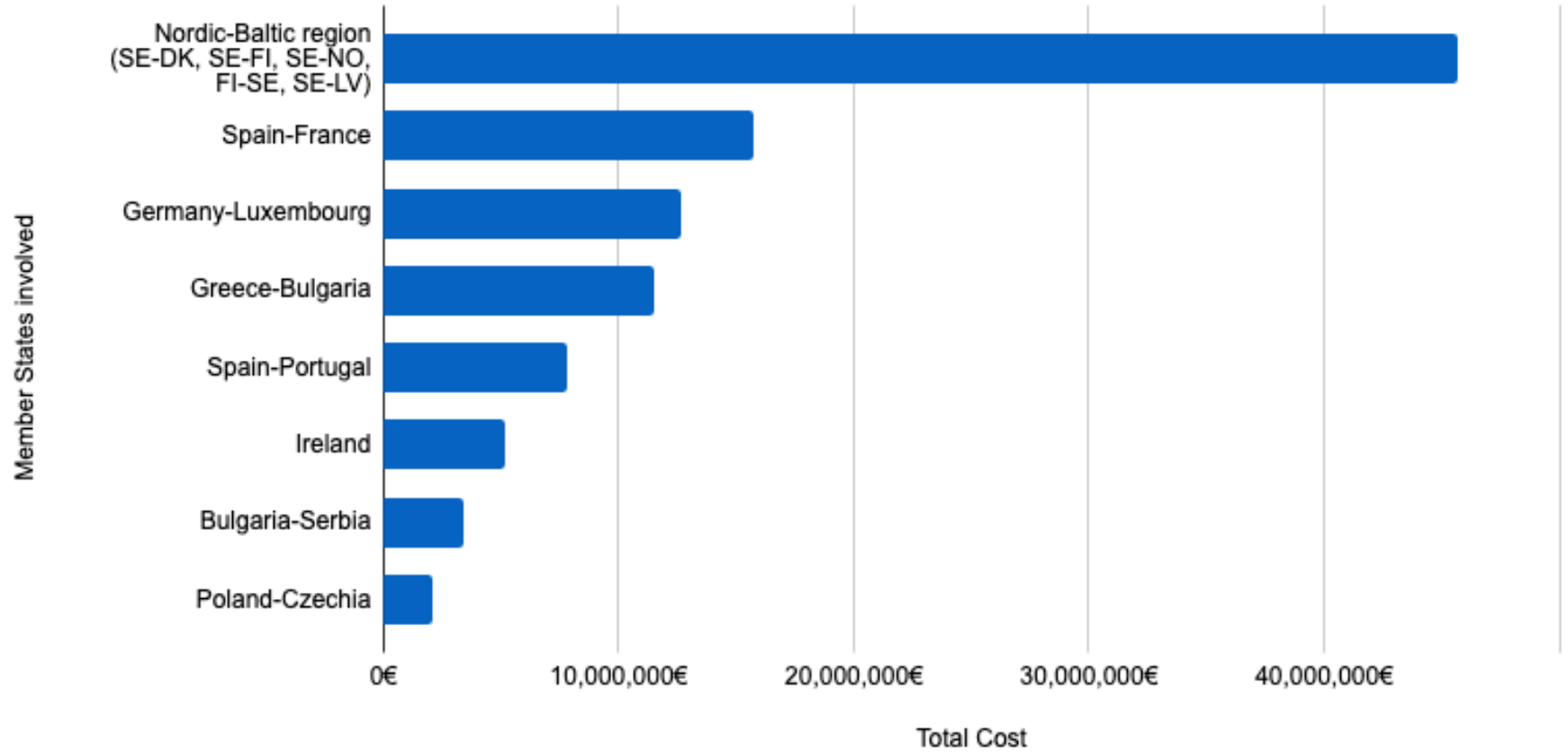
- Road
- Rail
- - - Road and Rail
- - - Waterway



6 5G cross border works
 12 5G cross border studies

5G Corridors

Committed investment
in 5G cross-border deployment



Comparison of 5G rollout in international markets^{4, 5}

5G rollout

	China	South Korea	Japan	USA	EU
					
Approximate number of 5G base stations*	3,500,000	307,000	146,000	175,000	460,000
Total country population	1,425,700,000	51,800,000	123,300,000	340,000,000	448,400,000
5G base stations per 100,000 inhabitants	245	593	118	51	103
Indicative 5G subscribers*	851,000,000	30,000,000	26,000,000	317,000,000	223,000,000
Indicative 5G subscribers per 100,000 inhabitants	59,690	57,915	21,087	54,750	29,893

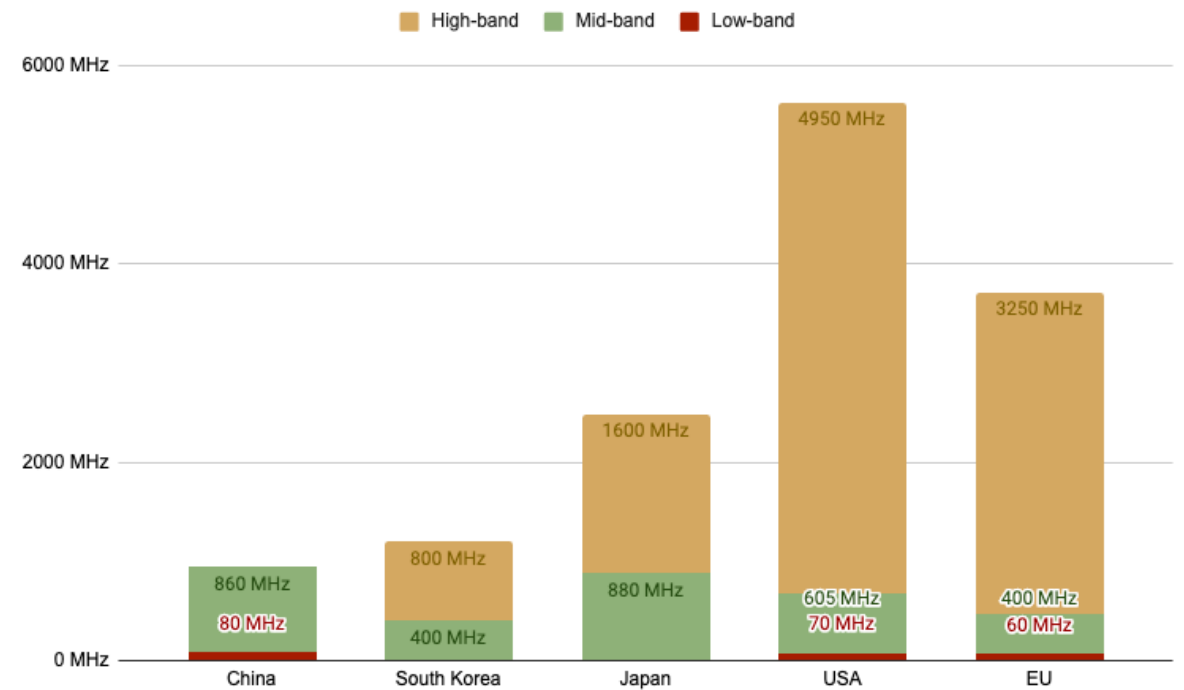
Reporting period: 5G base station data collected between July 2022 – May 2024; Population data collected May 2024; 5G subscriber data collected between July 2022-May 2024

5G spectrum

Main bands authorised for 5G in international markets⁶

Country		Low-band (<1 GHz)	Mid-band (1 - 6 GHz)	High-band (>6 GHz)
China		700 MHz	2.6 GHz 3.6 GHz 4.9 GHz	-
South Korea		700 MHz	3.6 GHz	28 GHz
Japan		-	3.6 GHz 3.7 GHz 4 GHz 4.5 GHz	28 GHz
USA		600 MHz	2.5 GHz 3.45 - 3.55GHz 3.5 - 3.7 GHz 3.7 - 3.98 GHz	24 GHz 28 GHz 39 GHz 47 GHz
EU		700 MHz	3.6 GHz	26 GHz

Authorised 5G spectrum in international markets⁶



Footnotes

1. EU 5G Coverage: 5G Coverage in all bands is a general indicator that does not presume any particular quality of service measures. All 5G coverage is included, including that using DSS. Location covered by at least one operator.
2. EU 5G Base stations: For some EU countries, only the total number of 5G base stations is known. This means the true total number of base stations in the EU in 700 MHz, 3.6 GHz or DSS bands may be higher. Additionally, some countries use bands that are not included in this chart and do not operate using a DSS configuration.
3. EU 5G Spectrum: Countries need to assign 60 MHz in 700 MHz; 400 MHz in 3.6 GHz and at least 1000 MHz in 26 GHz to receive a 100% score.
4. International 5G Base stations: This figure is approximate. There may be discrepancies between the reported figures, as the method for calculating the number of base stations is not standardized between regions. The US number of 5G base stations is an estimate based on available information.
5. International 5G Subscribers: The US number of 5G subscribers also includes all of North America. 5G Subscriber data in EU includes all of Western/ Eastern Europe.
6. International 5G Spectrum: USA data shows all spectrum made available to mobile operators by the FCC. Not all of this spectrum will have been sold to operators so the final amount of spectrum assigned to operators may be slightly lower. For the EU spectrum assignments differ amongst EU Member States. Because of this, the number used in the scoreboard shows how much spectrum has been harmonized at an EU-level. Some individual countries may have more spectrum assigned for 5G, while some may have less.

Sources and reporting periods

European Union

- **5G coverage:**
 - **Source:** Collected by Point Topic on behalf of the European Commission. These figures are also used in the DESI Index. Data is collected through a survey of National Regulatory Authorities and operators on a regional, NUTS3 level.
 - **Reporting period:** Mid 2023
- **5G base stations:**
 - **Source:** Collected by European Commission via the Digital Decade Committee through a survey of National Regulatory Authorities and collated by the 5G Observatory consortium.
 - **Reporting period:** Estonia excluded due to lack of data; Data for Austria, Cyprus, Czechia, Germany, Denmark, Greece, Spain, Finland, Croatia, Hungary, Ireland, Italy, Lithuania, Latvia, Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia collected in March 2024; Data for Belgium collected in February 2024; Bulgaria collected in September 2023; France collected in August 2022, Sweden was collected in October 2023; Luxembourg in December 2022 and Malta in March 2023
- **Spectrum assignments:**
 - **Source:** Initial data from the annual [DESI index](#) and supplemented with new data from the [PolicyTracker Spectrum Database](#) and PolicyTracker Auction Tracker.
 - **Reporting period:** Up to May 2024.
- **Population data:**
 - **Source:** [EU](#).
 - **Reporting period:** 2023.
- **5G subscribers:**
 - **Source:** [Ericsson Mobility Report](#), includes all European countries.
 - **Reporting period:** 2024.

International

- **5G base stations:**
 - **Source:** USA: Estimate based on [Steel in the Air](#) and [Wireless Infrastructure Association Report](#); South Korea: [Mk.co.kr](#) citing Ministry data ; Japan: [Xtech news article](#) citing Ericsson study; China: [Ministry of Industry and Information Technology \(MIIT\)](#).
 - **Reporting period:** USA: End 2023; South Korea: August 2023; Japan: 2022 ; China: February 2024 .
- **Population data:**
 - **Source:** [UN](#) via WorldOMeters.
 - **Reporting period:** 2024.
- **5G subscribers:**
 - **Source:** USA: [Ericsson Mobility Report](#), includes all of North America; South Korea: [Omdia 5G in South Korea 2023 Report](#); Japan: [Omdia Japan forecast](#); China: [Ministry of Industry and Information Technology \(MIIT\)](#)
 - **Reporting period:** USA: 2023; South Korea: June 2023; Japan: Q1 2022 ; China: February 2024.
- **Spectrum assignments:**
 - **Source:** Sourced from the [PolicyTracker Spectrum Database](#) & [FCC 2022 Communications Marketplace Report](#).
 - **Reporting period:** Up to end of 2024.