



**ERT**

**Expert Paper**

# **Connectivity is decisive for Europe's competitiveness**

**Recommendations for future-proof policies**

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## 1. Introduction

Secure connectivity infrastructure is a backbone of digitalisation. To reap the benefits that digital innovations can bring to Europe's economy and society, our industry and citizens need best-in-class infrastructure. Europe's competitiveness depends on a vibrant, innovative, investment-friendly and competitive connectivity ecosystem, and Europe is fortunate to have two globally leading connectivity infrastructure equipment manufacturers and a couple of EU-headquartered operators with a strong global footprint.

European telecom operators have been investing heavily over the past decade in expanding and upgrading connectivity infrastructure. The EU has nonetheless fallen behind other comparable regions (and countries) in very high-capacity network (VHCN) deployment, especially 5G. The European Commission has identified an overall investment gap of at least €174 billion to meet the Digital Decade connectivity targets.<sup>1</sup> These goals include that by 2030 all households should have access to gigabit networks, all populated areas should be covered by 5G and 10,000 carbon-neutral, secure edge nodes should be deployed across the EU. Looking ahead, absent significant changes to the policy environment, the EU's growing investment gap implies that it will fall far short of its own Digital Decade vision and targets. The heart of the challenge the EU must overcome is its reliance on outdated – and still largely national – telecoms regulatory approaches and policies. A more significant and ambitious effort at both EU and national levels is needed to modernise the policy regime and create true Single Market opportunities which incentivise investment and healthy competition.

## 2. Connectivity infrastructure is an enabler of a digital, green and inclusive Europe

Secure, reliable & high-performing connectivity will be a major contributor to Europe's economic well-being and competitiveness in the future, which will be defined by its path towards the digital and green twin transition.

The technologies driving Europe's twin transition will rely on state-of-the-art networks, namely

Fibre to the Home (FTTH) networks and 5G. **5G is a disruptive step-change technology** that presents major opportunities. The innovation with 5G, especially using new frequencies, delivers possibilities that previous networks could not. Its low latency, higher data rates, increased reliability and security, and lower power consumption allow 5G to transmit vast amounts of data with extremely low delay, and to reliably connect large numbers of devices. It will provide network-slicing functionalities based on fully separated and secure virtual network slices with controllable quality characteristics. These can guarantee the quality requirements needed by various industrial sectors. Consequently, very high-capacity networks like 5G enable key technologies such as artificial intelligence (AI), cybersecurity, digital twins, the Internet of Things (IoT), as well as the metaverse and virtual and augmented reality services.

High-capacity connectivity and the digital services it underpins will **benefit society at large** as citizens will have access to better services and products both in the public and private sectors. It will help the digitalisation of companies and governments, increase productivity, facilitate research, and support millions of jobs across Europe.

Healthcare, education and mobility are some examples in which the use of 5G-enabled technologies can lead to more accessible, affordable and better services. High-capacity connectivity will for instance facilitate a new generation of **smart healthcare** and a more patient-centred approach. People will be able to collect personal health data with IoT, enabling remote monitoring of patients as well as preventive treatments to reduce the rate of hospitalisations.

The expansion and upgrade of connectivity infrastructure in **remote areas** will help to diminish rural-urban inequality and foster inclusiveness, leaving no one behind in the transition towards a digital economy and society in Europe. This is particularly the case when it comes to hybrid working, which has become the norm since the pandemic. It presents significant opportunities for Europe as it will help to attract and retain talent, improve virtual collaboration, and increase employee wellbeing, helping to address the demographic challenge in rural areas in Europe.<sup>2</sup>

The successful transition to a **carbon-neutral society** and a more sustainable and circular

<sup>1</sup> European Commission, Investment and funding needs for the Digital Decade connectivity targets, March 2023

<sup>2</sup> ERT Expert Paper, The Digitally-Enabled Workforce of the Future, December 2022

economy will require best-in-class 5G connectivity that enables digital technologies that help to use resources more efficiently, increase the flexibility of the energy system, and design customised products and processes more sustainably, as increasingly demanded by consumers.<sup>3</sup> 5G networks as such are also significantly more energy efficient compared to previous mobile technologies.

**European industry** depends on access to high-capacity connectivity networks, which will help to harness the benefits of data sharing, predictive capabilities, and smart solutions in all sectors. This will boost productivity and innovation, create new use cases, and develop better and more sustainable products.

- High-capacity connectivity is a key pillar of the promise of “Industry 4.0”. In **manufacturing**, 5G technology and other IT solutions will allow a new wave of automation. Sensors within the production system can collect data that with the help of powerful AI can optimise production processes through real-time testing, the construction of digital twins, as well as staff training. Any adjustments needed can be implemented within seconds using cloud control of machines. Such smart factories make manufacturing more efficient and precise.
- Gigabit networks will have great implications for the **automotive** sector, both in the production of vehicles, as well as for connecting vehicles to make road traffic safer. Through the sharing of real-time traffic data, vehicles will, for example, be able to optimise route suggestions and receive timely information about hazardous events.
- In the **energy** sector, high-capacity connectivity is critical for the entire energy value chain, including energy generation, transmission, distribution, and commercialisation. The predictive capabilities of AI are invaluable to renewable energy for forecasting the weather, maximising efficient energy storage, and scheduling the maintenance of infrastructure and anticipating failures. High-capacity connectivity enables the use of smart grids which have a huge potential in reducing energy

consumption and costs, not only for electricity providers, but also for industrial energy management. Smart grids allow energy to be distributed more efficiently, which is key for the incorporation of renewable technologies, the management of distributed energy resources, and the electrification of the economy (transport, heating, etc.). Teleprotection services (using low latency communications to assist infrastructure protection) enhance grid reliability in cases of extreme weather or unexpected events. AI can also be useful for electricity trading, personalised customer experience and products, demand response initiatives (programmes to incentivise consumers to adapt their consumption in response to peaks in electricity demand), or virtual power plants.

### 3. Europe in the slow lane

#### 3.1) State of gigabit connectivity deployment

Europe is falling behind in the deployment of new 5G infrastructure despite the EU's objective to have 5G coverage in all populated areas by 2030.

Whilst the EU has 69 5G base stations per 100,000 inhabitants, South Korea has six times more, namely 515. China outperforms Europe with more than 150 5G base stations per 100,000 people.<sup>4</sup> In terms of 5G mobile subscriptions, we are only at a level of ~3% in Europe compared to ~15% in the US and China and ~30% in South Korea.<sup>5</sup>

Total 5G coverage lags behind other regions substantially. While North America and China have 95% and 90% population coverage respectively, Europe has yet to reach 60%.<sup>6</sup>

More importantly, the gap in mid-band coverage, which provides a step change in capacity and throughput and is the critical input to economy-wide digitalisation, is greater. While Europe has 15% mid-band coverage, less than half the global average, North America is at 80% and China at 90%.<sup>7</sup>

Although the expansion of fibre coverage has

<sup>3</sup> See also ERT's paper "Towards an EU Action Plan for a Digitally Enabled Green Transition", which shows that upgrading ICT infrastructure is the basis for emission-reducing technologies and the transition to a carbon-neutral society.

<sup>4</sup> EU 5G Observatory Biannual Report April 2023

<sup>5</sup> As a share of total mobile connections. ERT, European Competitiveness and Industries. Benchmarking Report 2022

<sup>6</sup> Ericsson Mobility Report, June 2023

<sup>7</sup> Ericsson Mobility Report, June 2023

progressed rapidly over the past years, reaching more than 55% of the European population in 2022, this number is projected to reach 90% only by the end of the decade.<sup>8</sup> Consequently, Europe risks failing to reach the Digital Decade target of “gigabit for every household”, a loss that would disproportionately hit remote areas.

Fixed Wireless Access (FWA) as well as satellite offers can help bridge the coverage gap under some conditions. Multiple technologies are needed to quickly close the digital divide and 5G FWA can play an important part in the connectivity mix. It can provide a cost-effective complement to fibre – offering quickly deployable step-change connectivity to homes and businesses where wired solutions are either unavailable or delivering limited bandwidth. 5G FWA leverages global standards, an established ecosystem, economies of scale and the same infrastructure used to provide cellular mobile services. With 5G, advances in radio technology coupled with increased availability of mid and high-band (mmWave) spectrum have delivered a step-change in FWA performance.

### 3.2) Europe's investment gap

High investments are necessary to roll out and protect networks, for example from cyberattacks. European telecommunications operators have invested €500 billion in upgrading and expanding Europe's network infrastructure over the past decade. In 2022, their investments reached the highest point since 2016. The telecommunications industry invests a considerable 20% of its revenues in the expansion of digital infrastructure.<sup>9</sup> Yet, these investments will not suffice to realise Europe's connectivity targets. And public funding, while welcomed as a complement to private investment and to reach non-commercially viable areas, will fall short of meeting these ambitious targets.

As the telecom industry is capital intensive, particularly for 5G and FTTH roll-out, making a return on that capital requires sufficient scale. This is not the case in most European markets where the policy goal is to keep four operators per country. Consequently, revenues have declined whilst investment costs have increased. Operators are suffering from persistently low average return per unit both in fixed and mobile and EBITDA remains flat. Additionally, they have witnessed a significant spike in energy costs and financial pressures from

inflation.<sup>10</sup> European operators now have returns on investment below their cost of capital.

Moreover, the current status quo makes many of European network service providers vulnerable to foreign, Private Equity-led acquisition. Yet, the type of Private Equity most often interested in vulnerable but critical infrastructure companies is likely to drive further fragmentation of the sector, increase corporate debt, reduce R&D and security investments, and be driven by even more short-termism strategies, none of which aligns with Europe's strategic and long-term objectives.

## 4. Recommendations for the roll-out of gigabit connectivity in a changing market landscape

If Europe does not ensure a rapid expansion of very high-capacity networks, first of all FTTH and 5G, it risks undermining the benefits of digitalisation for our future economic competitiveness, the green transformation and a prosperous society. The EU therefore needs to urgently address the current infrastructure investment gap. Only with a sustainable investment environment can Europe catch up in gigabit connectivity development.

It is time to refresh the EU regulatory framework to adapt to ambitious EU digital targets and new market conditions. The EU must promote a true Telecom Single Market, where healthy competition does not impede investments and innovation, but goes hand in hand with these aims.

ERT overall welcomes the European Commission's Connectivity package from February 2023, which focuses on putting the right regulatory conditions in place for reaching the EU's Digital Decade targets. The proposal is a first step in the right direction. More ambition will be needed to deliver future-proof policies that facilitate investment in gigabit connectivity infrastructure and accelerate their roll-out across Europe.

### 4.1) Telecoms Single Market

It is key to address barriers to the European Telecom Single Market and increase harmonisation of rules

<sup>8</sup> ETNO, State of Digital Communications 2023

<sup>9</sup> ETNO, State of Digital Communications 2023

<sup>10</sup> ETNO, State of Digital Communications 2023

within the EU. EU and national policy-makers and regulators should moreover deliver the following measures to improve the private sector environment, enable innovation and drive the take-up and use of digital services:

- **Establish a harmonised framework for spectrum auctions, deployment and operation.** Long-term spectrum licenses with clear renewal rules should be provided. Any coverage obligations should be reasonable in terms of the timeframe and prioritise meeting the most imminent demand, including that of industry. The framework should be aligned across EU Member States. Spectrum licence extensions can also be considered in exchange for reasonable coverage commitments by operators, while ensuring that the related cost should not offset the intended benefits.
- **Secure additional spectrum to enable the further growth of mobile services in a sustainable economic and environmental manner.** In particular, additional low and mid-band resources need to be identified to respond to the growing demand for connectivity towards 2030. A firm commitment by EU Member States is required to allocate further spectrum to 5G Advanced and to study 6G spectrum opportunities at the ITU World Radiocommunication Conference 2023 (WRC-23).
- **Swiftly adopt the Commission's Gigabit Infrastructure Act proposal together with the necessary guidance to tackle the remaining deployment obstacles.** This involves in particular easing and reducing the cost of access to public infrastructure, such as public buildings and street furniture, shortening and simplifying administrative procedures including the tacit approval of permits and ensuring equal and broad access to (physical) infrastructure among operators from different sectors including public bodies. Consequently, grounds to refuse access should remain limited to those proposed by the European Commission. The Gigabit Infrastructure Act must remain a directly applicable Regulation, as envisioned by the European Commission, to ensure a harmonised implementation across Member States, avoid national fragmentation, and thus provide much-needed planning security within the Single Market.
- **Leverage the reforms of the Broadband State Aid Guidelines and of the General Block Exemption Regulation, and the availability of Recovery and Resilience Facility resources to**

carefully target technology and business model-neutral public funding and crowd in further private investment.

- **Enable the development of tailored connectivity services** by capitalising on the advanced 5G features (network slicing). European Commission Guidance should provide clarity on the compliance requirements for specialised services (cf. Art. 3(5) Open Internet Regulation (Regulation (EU) 2015/2120)).
- **Invest in digital skills and literacy** and ensure that public services such as healthcare, social security and education take full advantage of the possibilities provided by gigabit connectivity.
- **Leverage and support existing European suppliers and manufacturers of key hardware as well as software components and solutions** to reduce investment costs, secure adequate supply, minimise foreign dependencies, and simultaneously promote the development of cutting-edge innovation and standards “Made in Europe”.
- **Prioritise and promote connectivity as a key input for economy-wide digital transformation to cut carbon emissions** by setting sector-specific digitisation goals.

#### 4.2) Harnessing 5G economies of scale

The EU's competition policy – merger policy in particular – must become fit for the digital age to enable European, homegrown infrastructure investments by allowing sufficient scale, particularly in mobile, where fragmented networks will be unable to take advantage of the economies of scale that 5G technology offers.

In-market consolidation is needed to achieve the scale required to strengthen the sector against growing financial headwinds and unlock the investment that Europe so badly needs. This is because the vast majority of operators' capital expenditure is in the radio access networks (which are inherently national). The positive effects of in-country scale on investment incentives and efficiencies – and therefore consumer welfare and the ability to fund the investment needed to reach the Digital Decade goals – far outweigh the current focus of the Commission, mainly concentrated on short-term consumer pricing effects. Sustainable competition in fact relies on other qualitative effects produced in the long-term: network investment, innovation, faster and wider roll-out, quality.

It is therefore vital that the Commission re-evaluates

its substantive approach to merger review including recognising the need for efficiencies that enable investments in markets with high economies of scale and fixed costs.

It is also crucial that when considering potential remedies, the European Commission does not adopt decisions which can have harmful effects on competition and in turn the EU's digital ambitions. Remedies that entail the divestment of assets to, or wholesale access agreements with, new entrants on subsidised terms (i.e. terms more favourable than the market would otherwise dictate) might have short-term benefits. However, the beneficiaries of such remedies may well not be sustainable in the long or even mid-term. This approach is at odds with the ambitious objective of long-term and sustainable investments in European telecom markets, not least given the recognised investment gap.

#### **4.3) Debate on a possible contribution of large technology companies to the cost of connectivity**

A debate has emerged on whether large online consumer platforms that represent most of the Internet traffic globally and in the EU should contribute to the cost of delivering that traffic. ERT favours a market-driven approach and encourages providers of those large online platforms and telecom operators to negotiate and propose suitable and commercially viable solutions that adequately reflect the costs incurred. Such a market-driven approach must also form the basis of / be reflected by any potential regulatory intervention.

## **5. Conclusion**

Europe has access to world-leading technologies like 5G but is falling behind in the deployment of advanced connectivity infrastructure, which has repercussions for Europe's digital and green transition, competitiveness, and leadership position in future digital technologies and applications.

Swift action is needed to create the right regulatory framework, ensure market conditions that facilitate the investment in gigabit connectivity infrastructure and accelerate their roll-out across Europe.

This includes promoting a true Telecom Single Market, a more long-term vision towards market consolidation and swift progress in the Connectivity package initiatives.



The European Round Table for Industry (ERT) is a forum that brings together around 60 Chief Executives and Chairmen of major multinational companies of European parentage, covering a wide range of industrial and technological sectors. ERT strives for a strong, open and competitive Europe as a driver for inclusive growth and sustainable prosperity. Companies of ERT Members are situated throughout Europe, with combined revenues exceeding €2 trillion, providing around 5 million direct jobs worldwide - of which half are in Europe - and sustaining millions of indirect jobs. They invest more than €60 billion annually in R&D, largely in Europe.

This Expert Paper has been prepared by the ERT Working Group on Digital Transformation.

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