BRIEFING

Commission initiative in preparation

European Parliament

Digital networks act

This European Parliamentary Research Service briefing aims to inform Members on issues related to a forthcoming Commission initiative. It highlights the main choices which may shape the initiative and which Members may wish to explore ahead of formal Commission adoption. Based on documentary and other sources, it reflects the information available at the time of writing.

For further information on this topic, Members and staff of the European Parliament may contact the author.

SUMMARY

Key EU connectivity challenges include: (i) accelerating fibre network deployment by setting a decommissioning deadline for legacy technology (copper networks); (ii) balancing EU and national interests in allocating spectrum; (iii) ensuring cybersecurity for new generation mobile technologies (5G and 6G); (iv) controlling and protecting the submarine cable connection system; and (v) tackling the network cost contribution debate ('fair share'). The long-awaited digital networks act (DNA) may also aim at tackling these issues to improve the EU's digital connectivity ecosystem.

The DNA is expected at the end of 2025, probably replacing the European Electronic Communication Code. The EECC Directive aims at stimulating investment in and take-up of very high capacity networks in the EU (e.g. fibre and 5G) and set new spectrum rules for mobile connectivity. As consistently late transposition has jeopardised its effects (resulting in fines for five Member States), it might be assumed that the DNA will take the form of a regulation.

Issues at stake:

- **Copper decommissioning measures for a full-fibre roll-out**: setting cut-off dates for older copper technologies to speed up fibre deployment. Decommissioning copper for 80 % of subscribers by 2028 and the remaining 20 % by 2030.
- **EU harmonisation on spectrum for future use cases (satellites and 6G)**: building a more coordinated EU spectrum policy to manage aspects such as spectrum authorisation processes (price for spectrum), auction timing (coordinated at EU level) and licence duration (extended).
- **Cybersecurity measures for 5G and 6G equipment: high-risk vendors (HRVs)**: Planned review of the Cybersecurity Act might include more stringent requirement to restrict HRV suppliers from telecom networks.
- **Submarine cables**: Proposing a joint governance system on submarine cable infrastructures and actions to mitigate hybrid threats with a legislative proposal on submarine cable resilience.
- **Network cost contribution debate**: setting up a dispute resolution mechanism between large traffic generators (LTG, e.g. Netflix) and telecom operators, where national regulatory authorities (NRAs) or the Body of European Regulators for Electronic Communications (BEREC) could help where commercial agreements cannot be achieved in a timely way, thus avoiding long civil court proceedings.

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Forthcoming European Commission proposal

The Executive Vice-President for Tech Sovereignty, Security and Democracy, Henna Virkkunen, has been entrusted with preparing the DNA. Advanced digital network infrastructure will be key to shaping the competitiveness of many EU sectors (e.g. manufacturing, energy and healthcare) in the near future. It is therefore necessary to ensure that the EU's networks are ready, including in terms of transmission speed.

The Commission presented a white paper on 'How to master Europe's digital infrastructure needs?' (the 'telecom white paper') in February 2024. Inter alia, it: (i) supports migration from the legacy copper to a newly deployed fibre network; (ii) recommends increasing competences in spectrum management to complete 5G roll-out and for future 6G deployment; (iii) stresses the need for security in 5G equipment supply; and (iv) resilient submarine cable infrastructure; and (v) envisages careful assessment of internet traffic to see whether a regulatory intervention in the commercial agreement between large traffic generators (LTG, e.g. Netflix) and EU telecoms operators (telcos) is needed.

The Commission has also asked WIK-Consult GmbH and Ernst&Young to produce a study assessing EECC functioning and evaluating potential new legislative proposals based on the white paper. The stakeholders' consultation for this study runs from Q1/2025 with final results to be available in 2025.

The Commission set the tone for the DNA proposal by running an exploratory consultation on **future EU digital connectivity needs** (23 February to 19 May 2023) and a consultation on the **telecom white paper** (21 February to 30 June 2024). The Letta report on the future of the single market (July 2024) and the Draghi report on the future of European competitiveness (September 2024) both cover the **EU telecoms sector**. Virkkunen committed to propose a DNA aligned with these reports, her mission letter and stakeholder positions, including:

1. **Copper decommissioning**: A 'recommended date' by which copper decommissioning 'seems appropriate': 80 % of subscribers by 2028 and the remaining 20 % by 2030. The 2030 deadline would be aligned with the 2030 connectivity target for deployment of gigabit networks in all EU households. The Commission's DG for Communications Networks, Content and Technology (DG Connect) wants a 'proper process' to protect consumers from a sudden switch to fibre.
2. **Spectrum harmonisation**: The Commission's 2023 'consultation on the future of EU connectivity' demanded a common EU-level authorisation or licensing scheme for spectrum use in 'well-justified' cases (e.g. cross-border reach, or satellite). The telecom white paper notes earlier attempts to increase EU spectrum management were 'not fully successful' and suggested EU-level spectrum planning for future use cases (e.g. verticals, 6G, satellites). DG Connect has decried the current variations in spectrum auction design and Member State variations in minimum licence duration terms. Commissioner Virkkunen supports 'enhanced spectrum coordination where it makes sense', as well as spectrum harmonisation.
3. **5G equipment and high-risk suppliers**: A 2023 Commission communication stresses Chinese vendors Huawei and ZTE are higher risk than other 5G suppliers and recognised some Member States' decision to restrict or exclude them from 5G networks as justified and compliant with the EU toolbox on 5G cybersecurity. Virkkunen noted 42 % of 5G communications are transmitted through HRV radio equipment and regretted that some Member States did not take this issue 'seriously enough', concluding the Commission should 'take more action' in the context of the review of the cybersecurity act (also scheduled for end-2025 as part of the digital package).
4. **Submarine cables**: The Commission's 2025 work programme mentions it will act to better protect such infrastructure, without providing details or timing. The telecom white paper notes the Commission 'may consider proposing a joint EU governance system on submarine cable infrastructures'. A February 2024 Commission recommendation on the security and resilience of submarine cable infrastructures encourages Member States to cooperate with the Commission to assess its effects by December 2025, to determine appropriate ways forward, which could indicate a need for the Commission to propose a legal framework. The recommendation

proposes: (i) establishing a cable infrastructure expert group; (ii) setting up a new Cable Security Toolbox; (iii) drafting a list of projects for the deployment of strategic submarine cables meeting certain criteria for EU investment and funding (Cable Projects of European Interest). A February 2025 joint communication aims at strengthening the security and resilience of submarine cables, including establishing an EU cable vessels reserve to shorten the time to repair damaged cables (see example of the US Cable Security Fleet).

5. **Network cost contribution debate**: Although the Commission's 2023 consultation asked for feedback on possible LTG financial contribution to telcos, the 2024 telecom white paper did not develop these options. Instead, it viewed the issue as a transit and peering dispute settlement mechanism, as there are few known cases of intervention (by a regulatory authority or a court) in the contractual relationships between such market actors (LTG and telcos), which generally function well, as do the markets for transit and peering. However, the Commission could consider specific deadlines for negotiations and dispute resolution mechanisms if the number of disputes increases (e.g., by including the NRAs or BEREC as referees in cross-border disputes). DG Connect suggest focusing on shared societal contributions rather than just network funding.

Other European institutions and Member State positions

Copper decommissioning: The Council would rather not propose a specific deadline, emphasising that Member State's specificities must be taken into account. When migrating from copper to fibre 'competition and the rights of end-users should be safeguarded'. In short, the rush to deploy fibre and remove copper should not undermine a good competitive environment and burden citizens. Operators in 7 EU countries published copper decommissioning plans. In six of them (Denmark, France, Luxembourg, Norway, Spain and Sweden) telcos set a deadline for complete decommissioning (Norway, 2025; Sweden, 2026; France and Luxembourg, 2030; Denmark may approve 2030; Spain's deadline is 2026, but the decommissioning process will be almost complete by 2025).

Spectrum harmonisation: The Council has repeatedly stated spectrum is a national competence. Member States make money through spectrum auctions (spectrum is a limited resource). In its conclusion on the telecom white paper, the Council pushed back on the most ambitious reforms suggested and emphasised any future legislative proposal requires a thorough impact assessment. The Council seems more open to EU-level authorisation and/or common licence regimes for cross-border services (e.g. satellite), but always in light of existing regulation and taking national circumstances into account.

5G equipment and HRVs: Council urged the Commission to propose a 'more transparent and faster approach to the development of EU cybersecurity certification schemes'. In its draft conclusion on connectivity, Council suggested to move faster to protect 5G networks, encouraging discussion towards a more harmonised approach to the 5G cybersecurity toolbox. Nearly all Member States have taken measures aimed at restricting or banning high-risk vendors. Specifically, Germany, Estonia, Romania and Sweden explicitly banned Chinese 5G equipment vendors. Belgium, Cyprus, Estonia, France, Germany, Italy, Lithuania, Romania, and Sweden require operators to obtain government or national competent authority authorisation before deploying HRV 5G network equipment, and this has been proposed in Croatia and Norway.

Submarine cables: Council highlighted the importance of guaranteeing submarine cable infrastructure security and invited the Commission 'to consider further measures', while recalling that national security is a national competence. It also urged the Commission to investigate creating a 'Trans-European Network Digital' instrument (TEN-D) to develop a reliable and resilient digital network, including submarine cables, across the EU and with international partners. In the past, several Member States (including Italy, the Netherlands and Poland) were reluctant to share information on their critical infrastructure (particularly submarine cables). According to journalists, the Polish Council Presidency's latest draft conclusions concerning the EU's 'reliable and resilient connectivity' mentioned improving existing repair cable vessels' capacity.

Network cost contribution debate: The 2022 joint European declaration on digital rights and principles for the digital decade commits to 'developing adequate frameworks so that all market actors benefiting from the digital transformation assume their social responsibilities and make a fair and proportionate contribution to the costs of public goods, services and infrastructures, for the benefit of all people living in the EU'. Council underlines the internet interconnection market functions well, so any intervention on the network cost contribution debate requires a thorough impact assessment. Division among Member States persists on this point, with northern countries cold on interventions. Whereas France, Italy and Spain seem in favour of a legislative proposal and issued a joint report stating that both European telcos and LTGs should pay their fair share of network costs, Italy (proposal rejected) and France recently introduced fair contribution proposals. In Germany, a Cologne regional court ruled that Meta (Facebook's parent company) must pay to use the network.

Stakeholder and academic views

This section provides a flavour of the debate, rather than an exhaustive account of all views.

Copper decommissioning: The FTTH Council argues that decommissioning might help meet the targets and improve energy efficiency, but notes progress is slow and varied. It also recommends an EU-wide strategy to make sure consumers are not left behind as the EU moves towards full fibre connectivity. Connect Europe's 2025 report notes decommissioning is an attractive economic and environmental opportunity for telcos. However, it stresses that the range of conditions in different Member States mean widely varying timescales for decommissioning. Deutsche Telekom agrees with the policy goal, but warns against a binding deadline that disregards the different levels of fibre rollout in the Member States. BEREC also supports the policy goal, but deems a non-binding approach more appropriate: 'the process must not be rushed due to the need for an appropriate level of end-user protection'. It also ran a public consultation (to 31 January 2025) on how to manage decommissioning. The CERRE think tank proposes a regulatory solution setting proportionate targets at national level based on national projected trajectories towards the 2030 digital targets, rather than a common deadline. It also proposes a reform of the public subsidies regime to address the costs of political decommissioning decisions.

Spectrum harmonisation: GSMA called for a 'pro-investment approach to EU spectrum policy' to achieve a 'more predictable and harmonised approach to spectrum auctions, licensing costs, prolongation of licences and identification of future bands'. Connect Europe shares a similar view, emphasising the need for long-term spectrum licences to attract investment and for consistency among Member States for spectrum auction formats and prices. Mobile virtual network operators (MVNO) opposed the Draghi report's spectrum-related proposals as disproportionately benefiting the largest operators and restricting challenger operators' ability to compete, thereby reducing opportunities for innovation. This view is shared by the CEPR think tank, reporting that Draghi is wrong on certain aspects of harmonisation. Draghi's proposed 'EU-wide spectrum auctions' across Member States would allow one or two operators to acquire all of the available spectrum, an outcome the EU should avoid. However, CEPR agrees with the Draghi proposal to harmonise 'EU-wide spectrum licensing rules'. CERRE proposes to extend the current spectrum licences to operators at no charge by adding a 'use it or lose it approach' to the licence. In this way, operators could be forced to return a licence if the spectrum is not used efficiently.

5G equipment and high-risk vendors: The NIS cooperation group stresses how hostile third countries might exercise pressure on 5G vendors to facilitate cyberattacks or espionage activities serving their national interests. CERRE suggests taking a more general vendor-agnostic approach when assessing network infrastructure or component security, by implementing national technical testing facilities. Establishing a compulsory EU-wide certification scheme (and not merely a voluntary one, as is the case today) could be a step towards ensuring a truly safe environment.

Submarine cables: Although 70 % of submarine cables incidents are unintentional, the NIS cooperation group notes sabotage of submarine cables and cyberattacks is of particular concern.

Disruption of submarine cable internet traffic due to accident or technical failure might be reduced by establishing cable protection zones. Various parties have presented ideas to protect submarine cables: (i) European Defence Fund investment; (ii) Member States' use of detection systems as part of licence requirements for landing submarine cables; (iii) 'a dedicated envelope in the EU budget to allow governments to invest in protecting their submarine cable infrastructure'; (iv) EU investment in submarine cable repair capabilities; (v) a comprehensive and common EU approach to support EU-based companies to develop and construct new secure submarine cable routes.

Network cost contribution debate: Connect Europe is in favour of a dispute settlement mechanism. The Internet Society wrote to Virkkunen, asking the Commission not to intervene in the internet's commercial dynamics (no 'fair share'). BEREC's draft 2024 report concluded 'the bargaining relationship between market players is broadly in balance', as 'markets developed very well without regulatory intervention'. Due to the lack of market failure in the interconnection market, the president of the French telecom regulator (ARCEP) suggested making LTG accountable for their environmental impact through a tax. Some find such a contribution an unnecessary and harmful regulatory intervention, other voices support a regulatory negotiation framework.

European Parliament position

While Parliament has yet to take a position, speaking at a hearing on sovereignty in the digital sector in September 2024, Pilar Del Castillo (EPP, Spain) stated 'spectrum integration is now more important than ever' and policy makers should 'take into account' pan-European spectrum licences. She also called the Commission's approach to facilitating negotiations between telcos and LTGs when negotiations fail, a feasible solution. Parliament requested involvement in cybersecurity certification scheme adoptions (e.g. 5G), which might be achieved by amending the cybersecurity act to make certification scheme requests not implementing but delegated acts. Amendments to the draft own-initiative report on tech sovereignty and digital infrastructure (rapporteur: Sarah Knafo – ESN, France) urged the Commission to work on enhanced coordination of spectrum allocations (starting with 6G frequencies) and to envisage stricter measures to de-risk HRVs in 5G and 6G networks. A 2024 Parliament resolution on the security implications of Chinese influence on EU critical infrastructure also mentions concerns relating to submarine cables.

Telecom market state of play, investment needs, economic data

The EU has set non-binding 'digital decade' targets for 2030. These include providing all households with access to a **fixed gigabit network** (1 Gigabit per second – Gbps) and ensuring **5G** coverage of all populated areas. The July 2024 second digital decade report notes fixed gigabit network (fibre and DOCSIS 3.1) covers 79 % of households and basic 5G mobile networks reaches 89 % of the population. **Full fibre networks** (FTTP) reach 64 % of households but deployment of 5G stand-alone networks (**'full' 5G**) still does not reach a meaningful share of the EU population.

With 42 % of **5G communications** transmitted through radio equipment from HRVs (e.g. Huawei and ZTE), **satellite** connectivity is increasingly critical to technological sovereignty. The EU is developing a low-earth-orbit (LEO) satellite constellation to secure communication and avoid critical dependencies on non-EU infrastructure as well as a space law covering aspects related to the cybersecurity of the entire space infrastructure in Q2/2025.

The Commission published a recommendation on **submarine cables** in 2024, presenting national and EU-level action that can be pursued to protect them as well as an action plan in February 2025.

The **network cost contribution debate** concerns eight big content providers (Alphabet, Meta, Netflix, Microsoft, TikTok, Apple, Amazon, Disney), which generate more than half of global internet traffic across fixed and mobile networks.

Reaching all Digital Decade targets and catching up with leading competitors, could require the EU triple its current annual investment in high-tech digital innovation, to over €300 billion per year

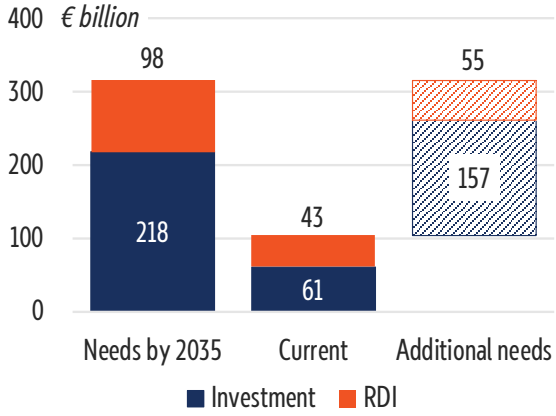
(Figure 1). The European Commission estimates over €200 billion is needed to finance the connectivity targets alone.

Copper decommissioning can lead to large cost savings for telecom providers, as fibre networks are less prone to damage or signal interference, reducing maintenance and downtime.

Member States' collective efforts to reach the 2030 **5G** coverage targets fall short (stuck at 94 %) and require national roadmap improvement. A significant correlation exists between 5G coverage and the time taken to allocate key 5G bands and deploy networks. This suggests that a long-term EU spectrum management plan (e.g. licence renewals to maximise social gains) could accelerate 5G roll-out.

The 5G toolbox urges Member States to restrict **HRVs**. The European Court of Auditors notes six of the eight largest suppliers are based outside the EU and recommends assessment of the impact. Restrictions could increase total 5G network investment costs by €2.4 billion per year and €3 billion total to replace Chinese 5G equipment .

Figure 1 – EU investment needs per year in € billion



Source: EPRS.

The World Bank found **submarine cables** reduce internet prices, driving increased connectivity. As over 99 % of international internet traffic flows through submarine cables, the expansion of foreign construction and repair operators poses a security risk. For example, Chinese firms reportedly built or repaired 100 of the world's 400 submarine cables in 2021.

The **network cost contribution debate** is driven by telecoms operator estimates that data traffic driven by large traffic generators (LTG) could cost them €36 to €40 billion a year in network management and deployment costs. Other sources stress LTG's €183 billion investment in European internet infrastructure between 2011 and 2021.

FURTHER READING:

S. De Luca, Strategic dependencies: Threats to EU sovereignty in communication infrastructure, EPRS, February 2025

S. De Luca, A future-proof network for the EU: Full fibre and 5G, EPRS, April 2024.

S. De Luca, The path to 6G, EPRS, January 2024.

S. De Luca and Tambiama M., Reinforcing the resilience and long-term coordination of EU internet infrastructure, EPRS, July 2023.

S. De Luca, Network cost contribution debate, EPRS, April 2023.

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