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WHITE PAPER: DIGITAL NETWORKS ACT

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LONG VERSION

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A. Key elements of the EU proposal

1 Context and objectives

- In February 2023, the Commission launched a [call for consultation](#) on the future of the connectivity sector and its infrastructure. In October 2023, it presented the [results](#) of the consultation. These form the basis for the White Paper now being presented by the Commission.
- According to the Commission, cutting-edge network infrastructure and services are the foundation for the future competitiveness of all sectors of the EU economy and for [p. 3]
 - the development of numerous transformative digital technologies (e.g. Artificial Intelligence, Virtual Worlds, Web 4.0), and
 - for addressing societal challenges (e.g. in the energy, transport and healthcare sectors).
- The Commission is seeing a transformation in digital networks. It sees, for example [p. 4]
 - a convergence of network infrastructure with cloud and edge computing functions,
 - in the equipment sector, there is a trend towards software and cloud-based networks and open architectures.

According to the Commission, this transformation brings [p. 4]

 - on the one hand, opportunities for lower cost and innovative services, but
 - on the other, risks due to new dependencies (e.g. in the case of cloud infrastructure and services).
- The Commission believes that high-quality, reliable and secure networks throughout the EU are "indispensable" for the EU's competitiveness, for generating growth and for maintaining economic security. And that this requires a legal framework to incentivise, most notably, [p. 4]
 - the transition from legacy copper networks to fibre optic networks,
 - the development of 5G and other wireless networks and cloud-based infrastructures, and
 - the possibility for network infrastructure operators to generate economies of scale in the internal market.
- With this White Paper, the Commission now wants to initiate an in-depth debate on the future of the connectivity sector and connectivity infrastructure. It first identifies and outlines the problems and challenges and then presents possible future political and regulatory measures.
- Among other things, the Commission wants measures to [p. 5]
 - create additional incentives for the development of digital networks,
 - master the transition from old to new technologies, and
 - meet the future connectivity needs of end users.
- This **cepPolicyBrief** will first look at some of the Commission's efforts to deepen the internal market, focussing on the following topics:
 - Adapting the objectives of the EU regulatory framework to the telecommunications sector (EU Electronic Communications Code, Directive [\(EU\) 2018/1972](#), hereinafter referred to as the EECC),
 - Radio spectrum policy,
 - (A-)symmetrical network access regulation,
 - Copper switch-off,
 - Universal service and affordability of digital infrastructure, and
 - Sustainable digital transformation.

2 Stocktaking: Lack of a single market

- According to the Commission, there is currently no single market for electronic communications networks and services but 27 national markets [p. 12].
- The Commission points out that [p. 12-15]
 - there are around 50 mobile network operators and over 100 fixed network operators in the EU, but only a few of these operate across borders,
 - there are a large number of mobile operators at service level – 16 Member States have 3 operators, 9 have 4 operators, and 2 have 5 operators –,
 - even those mobile operators that are active in several Member States do not harmonise their offerings or operational systems throughout the EU,
 - prices for mobile and fixed broadband services in the EU vary considerably between Member States and are often lower than in the US, and
 - the EU is on a par with the US in terms of fibre coverage and basic 5G services, but lags behind in the deployment of modern infrastructures and services - e.g. stand-alone 5G networks.

- According to the Commission, in order to strengthen the internal market, it would therefore be appropriate [p. 15-17]
 - to reduce burdensome and divergent sector-specific regulations which would also boost cross-border consolidation in the sector, and
 - to have a more integrated market for radio frequencies and standardised approaches to radio frequency management.

3 Steps envisaged for completing the internal market

3.1 Adaptation of the objectives of the European Electronic Communications Code (EECC)

- The European Electronic Communications Code (EECC) establishes the EU legal framework for the regulation of electronic communications networks and services. In particular, its objectives are to [Art. 1 and 3, EECC]:
 - implement an internal market for electronic communications networks and services,
 - promote connectivity,
 - ensure availability and take-up of very high capacity networks,
 - promote sustainable competition in the provision of electronic communications networks and services,
 - achieve interoperability of electronic communications services,
 - ensure the security of networks and services, and
 - promote the interests of end users.
- According to the Commission, however, the objectives of promoting connectivity and the availability and take-up of very high capacity networks have not been achieved satisfactorily [p. 25].
- The Commission wants to expand the list of objectives of the EECC. In future, it will also include [p. 25]
 - sustainability,
 - industrial competitiveness, and
 - economic security.

The Commission points out that this may be necessary due to recent technological and geopolitical developments. Nevertheless, the other objectives of the EECC should continue to apply, in particular the protection of end users' interests. [p. 25]

3.2 Radio spectrum policy

- The Commission criticises the fact that its attempts over the past ten years to achieve greater coordination of radio spectrum management at EU level have failed due to resistance, and blames this failure for the delayed deployment of 5G, as compared with other countries.¹ It therefore believes that a more cooperative approach is essential for completing the roll-out of 5G and pushing ahead with the introduction of 6G. [p. 28]
- The Commission is considering whether a roadmap for the introduction of 6G should be enshrined in law so that 6G is rolled out simultaneously in all Member States. To this end, it wants to advocate a coordinated switch-off of 2G and 3G networks, including a solution for existing services (e.g. emergency communications). [p. 28-29]
- The Commission wants to enhance the efficiency of spectrum use by [p. 29]
 - strict conditions for the use of spectrum rights, including application of the "use it or lose it" principle, and
 - increased shared and flexible use of spectrum.
- With regard to the introduction of future wireless communication technologies, the Commission wants to ensure better coordination on [p. 29]
 - the timing of spectrum auctions, including a tighter time corridor,
 - radio spectrum authorisations,
 - conditions and rights regarding spectrum usage, and
 - the appropriate duration of usage rights.
- The Commission criticises the fact that the voluntary peer review procedure for spectrum licensing enshrined in the EECC has not proven successful [p. 29]. Under this coordination procedure, a peer review forum may be convened to review draft measures, before a Member State grants usage rights, with a view to exchanging

¹ The authorisation procedures for the roll-out of 5G were started in 2015 in the first Member States. and are not yet fully completed in 2024. The 4G authorisation process took up to ten years. As a result, some Member States were almost a generation behind others in wireless technology. [p. 13]

best practice [Recital 88, Art. 35, EEC]. The Commission is considering replacing this peer review procedure with a notification procedure similar to the one already used for market analysis [Art. 32, EEC]². [p. 29]

- The Commission criticises the high revenues of Member States in 5G auctions implemented in the EU, amounting to around € 26 billion, which had to be borne by operators in addition to the investment necessary for network infrastructure. These, it says, delayed network roll-out, reduced investment incentives and resulted in suboptimal network quality and performance. It therefore wants greater consideration to be given to the factor of the promotion of infrastructure roll-out in future auctions. [p. 30]
- The Commission is examining harmonised spectrum selection and authorisation at EU level with regard to the satellite sector, leaving spectrum revenues to the Member States [p. 30].
- The Commission advocates a more integrated spectrum governance mechanism at EU level in view of the potential additional EU tasks [p. 30].
- The Commission wants to reconsider the role of the European Conference of Postal and Telecommunications Administrations (CEPT) in EU decision-making on spectrum, as non-EU Member States are also represented on this body. Although it will continue to use CEPT's technical expertise, the Commission wants to call upon ad hoc groups, made up exclusively of Member States' representatives, when it comes to questions of European sovereignty. [p. 30 and 31]

3.3 Market-power-(in)dependent network access regulation

- According to the Commission, sector-specific EU regulation of the telecommunications sector in recent decades has aimed to promote competition in telecommunications markets affected by monopolies. Once this goal has been achieved, the market-power-dependent (asymmetric) ex-ante regulation of network access should be abolished and competition law should apply. [p. 32]
- According to the Commission, asymmetric ex-ante regulation has been successful. The number of markets subject to such regulation fell from 18 in 2003 to 2 in 2020. There has also been a decline in the number of telecommunications network operators with significant market power. [p. 32]
- The Commission is therefore examining a fundamental phasing out of sector-specific ex-ante regulation and transitioning to a system of ex-post control only, by way of competition law. It points out, however, that ex-ante regulation may still be necessary in some regions (e.g. rural areas). [p. 33]
- According to the Commission, national regulatory authorities will still be able to fall back on asymmetric ex-ante regulation, but this should only apply [p. 34]
 - in the event of persistent market failure,
 - using the 3 Criteria Test³ with reversal of the burden of proof,
 - in geographically limited markets, and
 - if symmetrical and harmonised ex-ante regulation is insufficient.
 It may be supplemented or replaced by symmetrical access obligations with respect to access to civil engineering infrastructure.
- According to the Commission, network access products could be provided at a higher network level in a full-fibre environment without jeopardising competition at end customer level. It is therefore examining the introduction of a set of access remedies at EU level. [p. 34]

3.4 Copper switch-off

- According to the Commission, the migration from legacy copper networks to new fibre networks requires a coordination process involving all stakeholders. It fears negative effects for [p. 31]
 - competition, in particular for competition-driven infrastructure roll-out, and
 - the needs of end users, especially vulnerable consumers.
- The Commission wants to prevent possible strategic and anti-competitive behaviour by operators with significant market power with regard to the timing and agenda; here it is thinking, for example, of [p. 31]
 - strategies for supplementing copper networks by way of vectoring, or

² According to this procedure, the Commission may "require a national regulatory authority to withdraw a draft measure if it concerns the definition of relevant markets or the designation of undertakings as having significant market power and where such decisions would create a barrier to the internal market or would be incompatible with Union law and, in particular, the policy objectives that national regulatory authorities should follow" [Recital 80 of the EEC].

³ According to the 3 Criteria Test, remedies may be justified if (1) there are high and non-transitory structural, legal or regulatory barriers to market entry, (2) the market structure does not tend towards effective competition within a relevant period of time and (3) competition law alone is insufficient to address the identified market failure [Art. 67 (1), EEC].

- lock-in strategies that make it difficult for alternative FTTH providers⁴ to enter the market.
- The EECC already contains rules on the migration from old networks to new ones [Art. 81, EECC]. The Gigabit Recommendation provides national regulatory authorities with additional guidance in this regard [p. 15ff, [C\(2024\) 523](#)]
- The Commission calls for [p. 32]
 - protective measures to safeguard competition due to the temporary increase in copper prices during the switch-off phase, and
 - lighter access regulation for very high capacity networks by means of flexible pricing, subject to safeguards.
- The Commission is looking at setting a date for switching off the copper cable networks. It envisages a switch-off by 2028 for 80% of customers and by 2030 for the remaining 20%. [P. 32]

3.5 Universal service and affordability of digital infrastructure

- According to the Commission, "adequate" broadband internet services are widely available in the EU. However, it fears that, due to price or their remote location, many consumers will not have access to high-speed connections, and therefore calls on the Member States to support these consumers. [p. 34]
- The Commission takes a positive view of connectivity vouchers financed from state funds which could help to bridge the gap in access to very high-capacity networks [p. 35].
- The Commission is considering whether, in addition to providers of electronic communications services, providers of number-independent interpersonal communications services (e.g. providers of messenger services such as WhatsApp) should also contribute to financing the Universal Service in future [p. 35].

3.6 Sustainable digital transformation

- The Commission emphasises the importance of integrating sustainability aspects when defining digital standards [p. 35]
- The Commission is considering the introduction of [p. 35]
 - transparency measures for electronic communications operators regarding their environmental footprint,
 - EU indicators to measure the environmental footprint of these services, and
 - an EU code of conduct for the sustainability of electronic communications networks.
- The Commission wants to ensure that the green taxonomy [[\(EU\) 2020/852](#), see [cepPolicyBrief](#)] is based on "robust and credible" metrics, and use it to incentivise investment in the communications sector. This is intended to [p. 35]
 - make ICT greener ("green ICT"), and
 - support the greening of other sectors ("ICT for green").Metrics developed by the European Green Digital Coalition will also be taken into account.
- The Commission advocates labelling for consumers on the different environmental impacts of video resolution settings [p. 36].

⁴ "FTTH providers" are providers that lay fibre optic cable right into the home ("Fibre to the home").

B. Legal and political context

1 Legislative Procedure

21 February 2024 Adoption by the Commission

2 Options for Influencing the Political Process

Directorate General: DG Communications Networks, Content & Technology (Connect)

Committee of the EP: Industry, Research and Energy (ITRE), Rapporteur: TBA

Federal Ministries: Digital (leading)

Committees of the German Bundestag: Digital (leading)

C. Assessment

1 Economic Impact Assessment

1.1 Adapting the objectives of EU legislation on electronic communications

The Commission wants to extend the numerous existing objectives of the EU legislation on electronic communications (EECC) and in justification points to current technological and geopolitical developments. The planned changes ultimately stem from the realisation that the EU is failing to meet its high expectations in the development and use of very high capacity networks and from the belief that the existence of such networks is essential for a progressive and competitive Europe. However, expanding the set of objectives to be fulfilled by the legislation should be avoided, even if it may currently appear politically opportune.

Firstly, it risks giving rise to interference in market processes purely for industrial policy reasons, and other key objectives of the EECC, most notably the strengthening of the internal market and competition as well as the promotion of end-user interests, risk being drowned out. The preferential regulatory treatment given to high-capacity networks as part of the revision of the EECC in 2018 was already a step in the wrong direction. It should steer the prices for access to telecommunications networks in such a way as to curb investment in networks without "high capacity", whilst supporting those with high capacity. It should not, however, be the task of politicians to decide whether, when and where fast networks are built and then utilised. If there is sufficient demand for fast networks, telecoms companies are likely to have a vested interest in providing them.

Secondly, the inclusion of additional objectives could encourage the emergence of further trade-offs. Thus, for example, lifting network access regulation could be deemed necessary for reasons of "economic security" and "industrial competitiveness" but not if one considers the implications it would have for maintaining sustainable competition. And the desire to maintain the security of networks and services could also be incompatible with the new sustainability objective. How such contradictions would be dealt with remains largely unspecified.

Thirdly, there is concern that the need to consider further objectives contained in the telecoms rules could unnecessarily delay decision-making processes and increase bureaucratic costs because it will take time to check whether certain remedial measures announced by the national regulatory authorities are compatible with all – old and new – regulatory objectives. Without a hierarchy of objectives, this could present the authorities with challenges which they will be hard-pushed to solve.

And fourthly, there is a risk that, without more detailed definition of the additional objectives and the concepts behind them - for example: what exactly does the Commission mean by "economic security"? - there will be a proliferation of interpretations and regulatory approaches at national level, which will be detrimental to coherent and harmonised EU regulation, and will open the door to varying industrial policies.

1.2 Radio spectrum policy

Radio spectrum has some interesting properties. Firstly, it is a naturally scarce resource. Its quantity is limited and cannot simply be increased. Secondly, radio signals can interfere with each other (interference problems). And thirdly, without state intervention, radio spectrum is generally accessible and therefore ultimately a public commodity or resource. All these characteristics have consequences. The interference problems represent a negative external effect that leads to a utilisation rivalry, in which increased spectrum utilisation reduces the

utility value for individual spectrum consumers. General accessibility or the failure to assign usage rights can cause overuse and trigger a tragedy of the commons, as individual spectrum users do not consider the social costs of their use in their individual decision-making calculations. This generally results in a failure to make efficient economic use of the limited resource of radio spectrum.^{5,6} The sovereign allocation of rights to use radio spectrum has therefore become established as a solution to these problems, whereby spectrum is transformed into a private good, so to speak, and dedicated usage rights are distributed to selected market players. This should ensure that spectrum is used as efficiently and with as little interference as possible.

For several years now, the EU Commission has been trying to coordinate and harmonise the national allocation of radio spectrum usage rights at EU level,⁷ but this has (so far) largely failed due to resistance from Member States. Now, the Commission wants to try again. This could prove double-edged, however. European coordinated action may contribute to more efficient spectrum use and is often a sensible response to the problem of interference (especially in border regions). Uniform procedures for allocating usage rights, coordinating the timing of the allocation of rights and more harmonised usage periods will improve planning certainty and help to reduce existing uncertainties arising from the diverse and inconsistent approaches to spectrum allocation in the Member States. As a consequence, EU action could help to generate economies of scale and strengthen the willingness to invest, especially among all those network operators who (want to) offer their services across borders. Nevertheless, a greater shift to the EU level also poses risks. EU-wide harmonisation requires a similar starting position in the Member States which is not usually a given. The telecommunications markets are still characterised by a large number of national particularities. One cannot generally assume that certain frequency bands will be needed or demanded equally in all EU Member States at the same time. There is also concern that, even if the Commission is ostensibly concerned with speeding up the allocation of frequencies for new, more modern network infrastructure, some Member States will have to forego the rapid allocation of usage rights and "wait" out of consideration for Member States that are "lagging behind". This would be counterproductive. It also remains to be seen whether "better" decisions on "optimal" spectrum policy/allocation can in fact be made at EU level – considering the experience and knowledge gained over many years by the representatives of the national regulatory authorities. If this is not the case, responsibility should remain at national level in line with the principle of subsidiarity, or alternatively, an in-depth exchange with the national level should continue. Thus, future radio spectrum policy must be able to capitalise on the potential opportunities of a more standardised approach without losing sight of the potential disadvantages.

With regard to the measures now announced by the Commission, the following should be noted:

The idea of enshrining a concrete timetable for the introduction of 6G spectrum bands into law and enabling 6G to be rolled out in all Member States as coherently and as early as possible stems from the Commission's disappointment that this roll-out process for 5G spectrum bands failed to meet the deadline set for these bands of the end of 2020⁸. Only around 81% of the EU population is covered by at least one 5G base network (as of the end of 2022) and an average of 71% of the 5G pioneer bands (as of October 2023) have been allocated.⁹ It is certainly a cause for annoyance that such jointly agreed targets between all EU Member States have not been met, as this could affect planning security and the willingness to invest and innovate. Stricter enforcement of agreed targets would therefore make sense, also in terms of strengthening legal certainty. Conversely, however, the "breaking" of deadlines should not be the only reason for detailed specification of the timing and EU-wide coverage of the roll-out process (beyond the setting of deadlines). Sufficient scope should be left at national level – even when introducing 6G spectrum bands – so that the different needs and requirements in the Member States can be taken into account. Nevertheless, this should not be regarded as a rejection of increased coordination and greater exchange between the Member States during the introduction of 6G. Both may contribute to more coherent implementation paths, but without having to result in mandatory, undifferentiated synchronisation.

⁵ Felder, S. (2005), *Frequenzallokation in der Telekommunikation: ökonomische Analyse der Vergabe von Frequenzen unter besonderer Berücksichtigung der UMTS-Auktionen*, Peter Lang International Academic Publishers.

⁶ Stumpf, N. (2016), *Die Versteigerung knapper Ressourcen im Öffentlichen Wirtschaftsrecht – Erscheinungsformen, verfassungsrechtliche Grenzen und europarechtliche Einflüsse* (Doctoral dissertation, Universität Würzburg).

⁷ See also Proposal for a Directive of the European Parliament and of the Council establishing the European Electronic Communications Code (EECC), [COM\(2016\) 590](#), 12 October 2016.

⁸ See Art. 54 EECC.

⁹ 5G Observatory Biannual Report October 2023.

The Commission's intention to increase the efficiency of spectrum utilisation by imposing strict conditions on the use of spectrum licenses – for example, by increasingly applying the "use it or lose it" approach – is basically appropriate. Under the EECC, the competent authorities can already attach conditions to individual rights to use radio spectrum, according to which the rights must be exercised within a certain period of time and may be withdrawn if they are not exercised. The rules for the withdrawal of radio spectrum usage rights must be clear and transparent in order to ensure legal certainty, uniformity and predictability.¹⁰ "Use-it-or-lose-it clauses can contribute to more efficient deployment of usage rights, prevent strategic hoarding of spectrum to prevent market entry and increase the credibility of rights allocation. Nevertheless, not every (small) delay in the use of radio spectrum should result immediately in an automatic withdrawal of rights as there may also be a certain degree of uncertainty among potential rights-holders, when spectrum is allocated, regarding the time periods required for making network investments. Furthermore, it should be regularly examined whether spectrum trading would not be a more suitable alternative measure for helping to ensure efficient spectrum utilisation. For example, the transfer or leasing of usage rights could improve the allocation of scarce resources, provided that ownership rights are clearly defined and transaction costs are low. In practice, however, this is likely to encounter practical hurdles, on the one hand due to the oligopoly-like structures of the telecommunications markets and on the other hand due to strategic considerations of the rights holders. Both reduce the likelihood of a significant supply of usage rights.

The Commission's efforts to ensure, when introducing future wireless communication technologies, that there is better coordination with regard to radio spectrum licences, timetables for spectrum auctions, including a narrower time corridor, and the duration of usage rights, are basically appropriate. Radio spectrum assignments often take place at different times in the various Member States and the validity periods of the rights of use vary¹¹. Greater coordination between the Member States could generate noticeable gains in efficiency here. Thus, it could reduce problems of cross-border interference, increase both the predictability of authorisation procedures and planning security for network operators, facilitate the simultaneous provision of services and products across national borders wherever possible and enable better use of network operators' economies of scale. All of this has the potential to increase the willingness to invest and facilitate the development of pan-European networks.

However, it remains to be seen how the Commission intends to tackle improved coordination in regulatory terms.¹² In any case, it would seem imperative not to ignore any different starting positions of the Member States or national particularities – e.g. differences in population density – even under an amended legal framework, and not to completely curtail the competences of the Member States in terms of deadlines and periods of validity. Otherwise, there would also be a risk that potential trailblazers would be hindered when it comes to the allocation of spectrum, while latecomers might be overburdened. This must be taken into account in any new provisions on better coordination. Any possible plans for giving the Commission a more centralised role in setting dates for auctions or in determining the duration of usage rights¹³ should in any case be rejected. The Commission could make proposals in this regard, but the decision-making power should be reserved for the legislators.¹⁴ Furthermore, any further regulatory specification or harmonisation of the duration of usage rights should be avoided. Sufficiently long minimum terms for time-limited harmonised spectrum usage rights – as already specified in the EECC – could improve planning security and the willingness of network operators to invest and provide incentives for innovation. Further standardisation, however, would unduly restrict the freedom (of action). Due to the technologically dynamic but also unpredictable development of the telecommunications sector, overly strict requirements could encourage an inefficient distribution of usage rights. "Excessively long" validity periods may also lead to market foreclosure and have a restrictive effect on competition. In any case, it

¹⁰ Art. 45 and 47, EECC.

¹¹ The EECC already stipulates that individual spectrum usage rights, if granted for a limited period, must be valid for at least 15 years. At the same time, an appropriate extension is provided to ensure that rights-holders have a stable, predictable legal framework relating to the use of spectrum for a period of at least 20 years. (Art. 49 EECC)

¹² The EECC already provides for "temporal coordination of allocations". For example, the Member States must work together to coordinate the use of harmonised radio spectrum for electronic communications networks and services in the EU, with due regard to national market conditions (see Art. 53, EECC).

¹³ In its proposal for the EECC, the Commission already proposed that the Commission may, by means of an implementing measure, (a) set uniform dates by which the use of certain harmonised radio frequencies must be authorised and (b) extend or shorten periods of validity in order to bring existing rights of use or authorisations into line with harmonised dates [see Art. 53 of the proposal [COM\(2016\) 590](#)].

¹⁴ For example, the legislators have decided to coordinate the allocation of certain 5G frequency bands in the EECC [see Art. 54, EECC].

is questionable whether market participants and regulatory authorities are in a position or have the necessary knowledge to decide on the most efficient use of a frequency band over very long periods of time in view of the many technological innovations, constant changes in demand for spectrum or changes in the preferences of end users regarding the use of services and applications.

According to the EECC, the Radio Spectrum Policy Group¹⁵ may, at the request of a national regulatory authority, another competent authority or (exceptionally) on its own initiative, organise a "peer review forum" on draft measures of Member States prior to the granting of usage rights for radio spectrum in order to enable an exchange of best practices in awarding radio spectrum.¹⁶ This coordination mechanism is voluntary in nature, but due to the tension described above between the potentially efficiency-enhancing coordination of radio spectrum policies and the need to take national interests into account, it is appropriate to maintain this ultimately non-binding format for the purpose of discussion and the mutual exchange of views on draft measures. A switch to a coordination procedure similar to the consultation procedure that has been enshrined and established in the EECC for years, and is used for questions of market definition and analysis and network access obligations,¹⁷ would go too far. This is because, in contrast to the current voluntary peer review procedure, it has binding force and allows the EU Commission to pass decisions directed at the national regulatory authorities, requiring them to withdraw or amend their draft measures. There is in any case some doubt as to whether the Commission is in a position to make "better" radio spectrum decisions than the national regulators. There is also a risk that the implementation of an additional, mandatory coordination process with the participation of several players will delay the allocation of radio spectrum due to the administration involved. This should be avoided.

Radio spectrum is a scarce resource. This scarcity means that it has to be allocated efficiently. In principle, spectrum should therefore be put to the "most productive use".¹⁸ Auctioning has proven to be an efficient instrument for this purpose because, in the context of such an auction, the companies that will prevail in the bidding process will be those that are most willing to pay and can deploy the usage rights most efficiently. Auctions thus ensure a fair market price for the resource of "radio spectrum". Although auctions do restrict competition as losing suppliers cannot participate in the market, they at least enable competition "for the market".¹⁹ In contrast, unregulated access to spectrum would result in its overutilisation and make little economic sense. The Commission complains that auctions for allocating individual usage rights for radio spectrum generate too much revenue for the national authorities, and believes that this should be as low as possible in future auctions so that the network operators have more funds for network and infrastructure expansion. This is misguided because the amount of revenue generated by auctions ultimately reflects the value that the participating economic players attach to the resource. This value is in turn based on what they estimate their future earnings potential to be. If these estimates are high, companies will also be prepared to pay more, which will in turn generate higher income for the Member States. There is nothing shameful about this, however, and it will not necessarily prevent or slow down network infrastructure expansion because the costs of radio spectrum are sunk costs that are generally likely to have little or no influence on future investment decisions.

The Commission's call to focus (even) more strongly on promoting infrastructure roll-out in future auctions should also be rejected. Such requirements are either superfluous because the provider is already prepared to fulfil them for reasons of self-interest. Or, if he is not prepared to do so, then the expansion is generally not economically viable and not worthwhile for the provider. Explicit infrastructure expansion requirements may be politically desirable in terms of achieving future specific connectivity goals. However, at best they are only justified on the basis of socio-political considerations, but not in terms of a broader approach. If such conditions play a greater role in the future, it is important to ensure that they are communicated at an early stage to market players interested in frequency spectrum in order to maintain their willingness to invest. Furthermore, the requirements should not drive network expansion significantly above a level that corresponds to the private sector as this would be a waste of scarce resources.

The European Conference of Postal and Telecommunications Administrations (CEPT) is an organisation that was established in 1959. One of the organisation's central tasks is to promote Europe-wide harmonisation of the

¹⁵ The Radio Spectrum Policy Group is an advisory group of the Commission (see also Commission Decision of 11 June 2019 on the establishment of the Radio Spectrum Policy Group and repealing Decision 2002/622/EC).

¹⁶ See Art. 35, EECC.

¹⁷ See Art. 32, EECC.

¹⁸ Felder, S. (2005), p. 13.

¹⁹ Felder, S. (2005), p. 139.

radio frequency spectrum and to develop joint positions and proposals within the International Telecommunication Union (ITU).²⁰ These tasks are performed by the Electronic Communications Committee (ECC).²¹ CEPT's members are administrations from currently 46 countries, including the EU Member States and other European countries (e.g. Switzerland, Great Britain). Decisions are always made by consensus.²² It has been apparent for some time that the Commission is concerned about the influence of non-EU states and non-EU players in certain decisions and discussions and sees this as a threat to the EU's digital sovereignty and resilience.²³ However, the idea of using bodies consisting only of representatives of the Member States must be rejected for a number of reasons. Firstly, it may be difficult in practice to distinguish between situations that are potentially problematic from the aforesaid viewpoint and those that are not, which could open the door to politically driven interventions. In this regard, the follow-up question would be who should determine whether or not the situation is a "threat to sovereignty". In any case, it is not appropriate to leave such a decision to the Commission alone. Secondly, it should be borne in mind that the CEPT's existing decision-making mechanisms also currently prevent the vital interests of the EU Member States from being disregarded or ignored, as the Member States make up the majority of its members. Thirdly, there is a risk that Europe's voice (i.e. as a whole, not just the EU Member States) would be weakened in international bodies such as the World Radiocommunication Conference if exclusively EU bodies gave rise to divergent approaches being represented. And fourthly, the EU would not only deprive itself of a fruitful exchange of possibly differing ideas, but, as a result of the diffusion of administrative bodies, entrepreneurs would also be confronted with additional market entry barriers and radio interference problems due to different technical conditions for radio spectrum usage. It is therefore questionable whether the envisaged changes to the CEPT structures will generate actual gains in sovereignty for the EU.

1.3 Market-power-(in)dependent network access regulation

The European telecommunications sector has been subject to sector-specific ex-ante regulation of access to telecommunications networks for many years. This aims to ensure sustainable competition in wholesale telecommunications markets where there are one or more companies with significant market power, and it is assumed that general competition law as an ex-post instrument is not sufficient to ensure this competition. The Commission's conclusion, that the ex-ante regulation approach has been successful in practice and has stimulated competition on the telecommunications markets, cannot be denied. Since the number of markets eligible for such market-power-dependent ex-ante regulation fell from 18 in 2003 to 2 in 2020, the Commission is considering switching to a system of ex-post-only control under competition law and turning its back on sector-specific ex-ante regulation. Although this review process is already enshrined in the EECC²⁴, the fact that the Commission is now more serious about the general abolition of asymmetric ex-ante regulation is a new development and one to be welcomed because any regulation is only appropriate for as long as it is absolutely essential. Any regulatory intervention that may previously have made sense can become less meaningful over time, for example due to the development of competitive structures on the regulated market(s) or the establishment of new technologies that jeopardise the significance of existing network infrastructures.

In the forthcoming in-depth examination of whether a move away from ex-ante regulation would be appropriate, the Commission should be guided by the concepts and theories of network economics. These indicate that ex-ante regulation should only apply if a total of four criteria are cumulatively fulfilled thereby giving rise to a "monopolistic bottleneck":

1. There must be a natural monopoly. In this respect, the concept of the essential facilities doctrine must be taken into consideration. A facility – in this case, for example, a network element – can be considered essential if it
 - a. is indispensable in order for a competitor to gain access to the retail market; there are therefore no alternative facilities (substitutes) to which the competitor could have recourse, and

²⁰ <https://www.cept.org/cept/our-mission>

²¹ <https://www.cept.org/ecc/what-we-do>

²² <https://www.cept.org/cept/background>

²³ A similar discussion took place in 2023 regarding the election of the new chairman of the European Telecommunications Standards Institute (ETSI) - a European standardisation organisation in which the representative of a US company was elected (for more information, see [here](#)).

²⁴ See, for example, Recital 29 of the EECC. This already stipulates that the declared aim of any ex-ante provision should be to ultimately render it superfluous and, in the event of correspondingly strong competitive dynamics and the emergence of effective and sustainable competition, to switch to pure ex-post control via competition law.

- b. cannot be duplicated by reasonable means; it then makes no economic sense for the facility to be provided again by the potential competitor, as it is more cost-effective to provide it through one provider than through two or more

If this is the case, the existence of a natural monopoly can be assumed.

2. The criterion of irreversibility of costs must be met. Irreversibility of costs ("sunk costs") means that the established company has lower decision-relevant costs than a potential competitor and that the investments made could no longer be utilised if the company were to exit the market.
3. Entry to the market is not free. This is the case if the potential competitor does not have access to the same technology as the natural monopolist. In general, according to the theory of monopolistic bottlenecks, only the production costs to be borne by the market entrant should constitute a barrier to market entry, not economies of scale or capital costs.²⁵
4. Ex-ante regulation must actually contribute to the creation of effective and sustainable competition.

If one of these criteria is not met, it is imperative that sector-specific ex-ante regulation be abandoned in favour of competition law. The existence of a natural monopoly - Criterion 1 - should not be sufficient to justify ex-ante regulation because the credible threat of a newcomer entering the market can already have a disciplinary effect on the monopolist. Such threats may be considered credible if free market entry - Criterion 3 - is possible and there are no sunk costs - Criterion 2. The corresponding market is then considered contestable and potentially vulnerable. If this is the case, competition law should be given priority, as otherwise the interference with the entrepreneurial freedom of the company obliged to grant network access is too great.

However, it is clear that this regulatory approach, which is appropriate from an ordoliberal perspective, is not fully reflected in existing European law. Although the EECC only permits ex-ante regulation on wholesale markets in which there are one or more companies with significant market power²⁶ and no effective competition,²⁷ the three-criteria test used for the examination – whilst taking up the central elements of the network economics approaches described above - contains some misalignments. For example, according to the three-criteria test enshrined in the EECC²⁸ and specified in the Markets Recommendation²⁹, remedial measures may be justified if

- there are high and non-transitory structural, legal or regulatory barriers to market entry,
- there is a market structure which does not tend towards effective competition within a relevant time horizon, and
- competition law alone is insufficient to adequately address the identified market failure.

However, a look at the clarification of the first criterion in the Markets Recommendation shows that the Commission also considers "economies of scale" and "absolute cost advantages" as barriers to entry.³⁰ However, as described above, positive economies of scale and certain cost advantages (e.g. lower capital costs) should not be considered barriers to market entry that could justify ex-ante regulation. The determination of whether a market tends towards effective competition – Criterion 2 – may also be considered too vague. Ultimately, it should be clear that as long as a monopolistic bottleneck can be regarded as stable in the long term and it is unlikely that this will change, no such competition-friendly tendency will emerge, but in the opposite case a reduction of sector-specific ex-ante regulation would be appropriate.

The Commission's idea of restricting ex-ante regulation to geographically limited markets and thus ultimately relying more on a regionalisation of regulation, is basically appropriate from a regulatory perspective. Because if a monopolistic bottleneck no longer exists at national level, but only on a regional level, regulation to combat the bottleneck is no longer appropriate at the higher level. Regionalisation of regulation therefore facilitates

²⁵ In principle, the existence of a natural monopoly is not sufficient to justify ex-ante regulation because the credible threat of a newcomer entering the market can already have a disciplinary effect on the monopolist. Such threats can be considered credible if free market entry is possible in principle and there are no sunk costs. The corresponding market is then considered contestable and potentially vulnerable ("theory of contestable markets").

²⁶ This is the case if the company "either individually or jointly with others, enjoys a position equivalent to dominance, namely a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers" [Art. 63 (2), EECC].

²⁷ Recital 63, EECC.

²⁸ Art. 67 (1), EECC.

²⁹ Recommendation (EU) 2020/2245 of the Commission of 18 December 2020 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive (EU) 2018/1972 of the European Parliament and of the Council establishing the European Electronic Communications Code.

³⁰ Recital 9, Markets Recommendation.

more targeted and "correct" regulation, which in practice can lead to both deregulation³¹ and new regulation³². Even if the geographical differentiation of network access regulation therefore makes sense, the costs associated with it should always be considered and weighed against its added value, i.e. greater competitive intensity.

On the other hand, the increased focus on symmetrical access regulation, which is becoming increasingly relevant in response to the partial disappearance of monopolistic bottlenecks at national level and the emergence of competition problems at local or regional level, must be viewed critically. This is because it no longer relies on the fundamental principles of ex-ante regulation of telecommunications networks, as already explained above. Thus, symmetrical access regulation impacts all network operators without distinction. There is no factual or a geographic market definition nor any serious examination of whether unassailable market power is present. However, if competition is potentially possible, for example because a natural monopoly is unlikely, and if the relevant market is therefore contestable in principle, there is no need for regulation or, more specifically, symmetrical access regulation. From the perspective of network economics, therefore, it is ultimately a flawed design. If asymmetric, market-power-dependent ex-ante regulation - at national level or geographically differentiated - is ruled out as a regulatory approach, recourse to competition law should always be preferred to indiscriminate symmetric ex-ante regulation.

Conclusion: The Commission should dismantle sector-specific network access regulation and move to competition law if it comes to the conclusion that there are no longer any monopolistic bottlenecks in the telecommunications markets. However, if it finds that there are still (a) natural monopolies, (b) irreversible costs, (c) no free market entry and that (d) ex-ante regulation is better able to ensure effective competition than competition law, it should stick to it. For the analysis, we advocate adapting and clarifying the three-criteria test previously envisaged by the Commission because it does not yet take sufficient account of some network economics approaches. Increased regionalisation of ex-ante regulation makes sense in terms of regulatory policy, as it allows more targeted regulation of monopolistic bottlenecks. In contrast, symmetrical ex-ante regulation is a flawed design whose significance should not be increased any further. If there are no monopolistic bottlenecks, competition law should take precedence.

1.4 Copper switch-off

In the EU, a slow but gradual migration is taking place from traditional copper cable networks to advanced networks with higher capacity ("VHC networks") and in particular to fibre optic networks. There are already guidelines at EU level for the process of the switch of network infrastructures. Market-dominant network operators must inform the national regulatory authorities (NRAs) in advance of switching off a copper cable network. For their part, NRAs must ensure that the switch-off takes place according to a transparent schedule and in compliance with appropriate notice periods. Where it is necessary to do so in order to safeguard competition and end-user rights, they must also ensure that alternative network access products of comparable quality are available to competitors. Finally, to enable final switch-off, they can cancel the multiple existing network access obligations for the copper cable network.³³

The Commission is now indicating that the migration process is proceeding too slowly. In its recently adopted Gigabit Recommendation, it emphasises that "unjustified delays in the migration to VHC networks should be avoided" and that the migration should take place "as fast as possible" (while maintaining effective competition).³⁴ The specified final target date for switching off copper cable networks – 2030 – also testifies to this ambition. Ultimately, the Commission is particularly concerned with promoting connectivity, access to and utilisation of VHC networks in order to achieve the goals it has set itself in this regard. This applies in particular to its goal of providing all end users at a fixed location with a gigabit network up to the network termination point, by 2030.³⁵

In order to achieve this goal, the Commission is relying on a gradual relaxation of price control obligations in addition to setting a target year of 2030 for switching off copper cable networks. For example, the NRAs are to

³¹ A nationally dominant company could, for example, be exempted from the obligation to grant access at national level.

³² At regional level, a company could be categorised as dominant. This could affect both the formerly nationally dominant telecommunications network operator and its competitors.

³³ See Art. 81, EECC.

³⁴ Commission Recommendation (EU) 2024/539 of 6 February 2024 on the regulatory promotion of gigabit connectivity (Gigabit Recommendation), C(2024) 523, point 69.

³⁵ White Paper, p. 36.

consider "as one option among several" allowing network operators with market power to increase the wholesale fees for access to the copper cable network – under certain conditions^{36,37} The background to these considerations is the conviction that (1) network operators with considerable market power would thus tackle the decommissioning of old networks more quickly and (2) end users and access consumers would migrate more quickly to VHC networks.³⁸ It is now clear that adjustments – i.e. increases or reductions – to the regulated network access fees can incentivise and discourage faster migration from copper cable to VHC networks and that network expansion can be promoted and slowed down with this control element. For example, network operators with market power may benefit from additional revenue if copper cable access fees are increased. This could prompt them to invest more heavily in the expansion of VHC networks or, due to the increased profitability of the copper network, to refrain from doing so. Conversely, falling copper cable access charges could mean that telecommunications companies requesting access have less incentive to invest in the expansion of VHC networks, or, on the other hand, that they have more incentive because falling network charges allow them to make savings, so that additional financial resources are available for investment.^{39,40}

Irrespective of the answer to the question of what impact an increase in regulated copper cable network charges would ultimately have, the fact that the Commission is using or wants to use the regulation of wholesale charges to achieve its political objectives – broad access to and utilisation of VHC networks – is highly questionable from an ordoliberal perspective. It does not appear to want to simply accept the investment, expansion and migration incentives associated with the current fees. But it should. Because the absolute primary objective of regulatory ex-ante obligations on network access is to ensure effective and sustainable competition. As soon as this goal has been achieved, the obligations must be relaxed or cancelled⁴¹, but not misused for other purposes.

Adjusting the wholesale charges for copper cable network access is also problematic because it distorts prices to such an extent that they no longer reflect actual supply and demand and are ultimately an attempt to influence end users' decisions when choosing their preferred product offering. Indirectly, the adjustment of wholesale charges will also motivate all those end users who are actually satisfied with their existing copper-based offer to switch to VHC networks. But that is patronising to the end user. End users should be able to decide of their own free will and without regulatory "nudging" which offer to prioritise.

In this context, the setting of a date for switching off the copper cable networks should also be scrutinised. Such a stipulation has the hallmarks of a planned economy. It is intended to influence the decision-making process of various market players in such a way that certain political goals - roll-out and use of VHC networks, are achieved (faster). However, the decision as to whether and, if so, when such a decommissioning takes place should be in the hands of the network operators and should not be prescribed by the state. The latter represents an undue presumption of knowledge. Politicians do not and cannot know when a shutdown is appropriate or necessary. Ultimately, setting a fixed date could force market players to make decisions that they would never make from a business perspective. For example, it could drive them to increase the expansion of VHC networks, even though there is insufficient demand for their subsequent use. This would be tantamount to a government-imposed misallocation of limited financial resources. The Commission should therefore refrain from setting a fixed end date for switching off copper cable networks.

The focus, which is becoming increasingly evident, on switching from old copper cable networks to fibre-based technologies also looks problematic. The relevant EU legislation⁴² regularly refers to VHC networks, which, in addition to electronic communications networks consisting entirely of fibre optic components, also includes networks with similar network performance.⁴³ Nevertheless, the Commission seems to favour fibre optic networks over other technologies – e.g. mobile telephony – regardless of the fact that the latter may also be promising network technologies. In any case, the Commission should not favour or discriminate against any

³⁶ The price increase will only apply in areas where the cancellation period has already begun. In addition, their period of validity should not be extended by any unreasonable delay in implementing the decommissioning. And it should be flanked by adequate measures to safeguard competition. [para. 81, Gigabit Recommendation]

³⁷ Para. 74 and 81, Gigabit Recommendation.

³⁸ Para. 74, Gigabit Recommendation.

³⁹ cep (2012), EU Consultation - Access pricing and NGA roll-out, [cepPolicyBrief](#) No. 02/2012, 11 January 2012.

⁴⁰ Kühling, J., Knapp, P., Nöcker, T., & Wambach, A. (2021). Telecommunications 2021: Competition in transition: 12th Sector Report of the German Monopolies Commission pursuant to Section 195 (2) and (3) German Telecommunications Act (TKG).

⁴¹ See also Art. 3, EECC.

⁴² E.g. the EECC or the Gigabit Recommendation.

⁴³ Art. 2 (2), EECC.

technology per se in its deliberations on the migration from conventional to modern networks because such favouritism could also lead to avoidable misallocations.

1.5 Universal service

The Commission correctly states that broadband internet services are available throughout the EU at a level that is necessary to carry out essential online tasks and which, in principle, enables citizens to participate in economic and social life. By mid-2022, 97.3% of EU households had at least access to broadband technology at a fixed location.^{44,45} It can therefore be assumed that network coverage is almost complete, which, in the past, was a key objective of universal service obligations. Universal service obligations therefore have almost no practical relevance anymore. In light of this objective, it would therefore be advisable to abandon universal service obligations altogether, as they can no longer be considered necessary.

However, since the broadband availability target has almost been achieved, the Commission has turned its attention to ensuring that in future universal service obligations primarily enable access to

1. affordable internet access services, and
2. high-quality, fast connections above a basic supply.

Re. 1: The goal of "affordability" of internet access services is already enshrined in the EEC. The aim is to ensure the "full social and economic participation of consumers in society" and to guarantee "access to and use of at least basic minimum services" for all citizens.⁴⁶ However, the goal of making basic internet access services affordable also appears to have been largely achieved. The prices for these services have continued to fall in recent years⁴⁷ or remain at a low level. However, if they are not considered sufficiently affordable, universal service should no longer be used to achieve this goal. Instead, it is the task of social policy to ensure financial support for citizens who cannot afford the basic service, for example through appropriate social welfare benefits that take into account the costs of an appropriate broadband connection.⁴⁸ Universal service obligations would not then be necessary (any more) to ensure the affordability of internet access services.

Re. 2: The EEC currently provides for a universal service that enables citizens to access and use a minimum range of services that are used by the majority of end users.⁴⁹ The scope of the universal service is therefore not static but dynamic – the services used by the majority are constantly changing – and thus ensures social and economic participation now and in the future. With its new idea of ensuring access to high-quality, high-speed connections via the universal service, the Commission seems to want to break with the current approach aimed at basic coverage. This is probably based on two considerations. Firstly, that adequate participation of all citizens is only possible through access to high-quality connectivity. And secondly, that the current demand for high-speed internet access services is too low⁵⁰: The lever of "universal service" is ultimately therefore intended to encourage citizens to move away from simple broadband internet access services. With these ideas, the Commission is moving further and further away from the actual basic idea of universal service. It is no longer being seen as a "safety net" put in place due to the "risk of social exclusion" of part of the EU population, but is being misused for other (political) purposes – e.g. better utilisation of fast internet access services.⁵¹ The Commission should not head in this direction, however. The universal service should not be overloaded with extraneous objectives but, if it is retained, should continue to focus on a basic service.

⁴⁴ EU Commission (2023), Broadband Coverage in Europe 2022, Mapping progress towards the coverage objectives of the Digital Decade.

⁴⁵ The availability of internet access services that reached a download speed of at least 30 Mbit/s was already at 90% in 2021 [see EU Commission (2023), Exploratory consultation -The future of the electronic communications sector and its infrastructure, 23 February 2023].

⁴⁶ Recital 214, EEC.

⁴⁷ Retail prices for fixed and mobile broadband offers at EU level fell by between 6.4% and over 13% in 2021 alone compared to the previous year [EU Commission (2023a), Mobile and Fixed Broadband Prices in Europe 2021].

⁴⁸ According to Eurostat, the proportion of people unable to afford an internet connection for personal use at home was 2.4% in 2022. Affordability thus improved by 0.3 percentage points compared to 2021 [Eurostat (2024), Persons who cannot afford internet connection for personal use at home by age, sex and income group].

⁴⁹ Recital 214, Art. 84 (3), EEC.

⁵⁰ The demand for broadband connections of at least 1 Gbit/s in the EU is comparatively low. It was 14% in 2022. 55% of EU households demand a broadband connection with at least 100 Mbit/s. [p. 7]

⁵¹ Recital 212, EEC.

Universal service in the Member States can currently be financed by public budgets and/or by the providers of electronic communications networks and services.⁵² While funding was provided by the aforementioned providers, the providers of internet access services and number-based interpersonal communications services (NBICS) have so far been the main contributors. The envisaged extension to providers of number-independent interpersonal communications services (NIICS) appears appropriate at first glance because it is not only the providers of internet access services and NBICS who benefit from a larger user base achieved through the universal service, but also the providers of NIICS. However, the same may be said of a large number of other companies, such as those providing content via the internet. Ultimately, therefore, all companies that are part of the internet ecosystem would have to be called upon to finance a universal service. This does not seem feasible, however. Firstly, a reliable and fair determination of which companies should be included in the cost allocation, and to what extent, looks virtually impossible to work out. And secondly, it would involve a high administrative burden. In fact, we are in favour of a complete rejection of private-sector universal service financing. Instead, it should be handled solely by the public sector in future. Since the relevance of the universal service is questionable in our view anyway (see above), its scope should also be limited. Pure state funding would also counteract the current distortions of competition caused by the different burdens placed on players in the ecosystem.

In its White Paper, the Commission emphasises that it considers so-called connectivity vouchers financed from state funds as an effective approach to bridging the gap in access to very high-capacity networks. It has already emphasised this in its guidelines on state aid for the promotion of broadband networks⁵³, which were presented in 2023, as well as in the most recent revision of the Block Exemption Regulation⁵⁴. Connectivity vouchers ultimately aim to stimulate demand for high-bit-rate broadband services and thus contribute to the effective utilisation of these services. At the same time, such stimulation of demand is usually justified by the generation of positive external effects. Thus, a market failure exists because the economically desirable demand exceeds the actual demand. This gap in demand is to be closed by reducing the costs for voucher users. Basically, the assumption is that the individual end user does not take the positive social effects into account when deciding in favour of a particular internet access service. Even the effective availability of a high-capacity network is often not sufficient for end users to make use of it.⁵⁵⁻⁵⁶ But even if one comes to the conclusion that such a market failure exists and that closing the demand gap has positive economic effects⁵⁷, it is still questionable whether connectivity vouchers are an effective instrument. Firstly, they must be designed in such a way that they are available to broad categories of end users (e.g. all consumers)⁵⁸ which will give rise to serious deadweight loss. On the one hand, such a subsidy also benefits end users for who, it must be assumed, would have demanded a certain internet access connection even without a subsidy, or at least that such demand, for example due to high household income, would at least be possible. The result would thus be an inefficient use of limited state funds. Secondly, there is no guarantee that the cost reduction brought about by the vouchers will actually reach the end users addressed. To achieve this, the providers of access services would ultimately have to play their part and hide the vouchers as part of their pricing behaviour.⁵⁹ And thirdly, there is the question of the effectiveness of the measure. This is because it is ultimately questionable whether a price reduction induced by vouchers

⁵² Art. 90, EEC.

⁵³ In particular, the guidelines state that connectivity vouchers can be designed for broad categories of end users "to incentivise the use of broadband services". They can be declared compatible with the internal market "if they contribute to the development of an economic sector without adversely affecting trading conditions to an extent contrary to the common interest" [EU Commission (2023b). Communication, Guidelines on State aid for broadband networks, [2023/C 36/01](#)].

⁵⁴ According to the Regulation, certain State aid in the form of connectivity vouchers for consumers or SMEs can be considered compatible with the internal market per se, meaning that they are exempt from the notification requirement [see Recital 9, new Art. 4 (1) (yc), new Art. 52c of Commission Regulation (EU) 2021/1237 of 23 July 2021 amending Regulation (EU) No 651/2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty on the Functioning of the European Union].

⁵⁵ Paragraphs 189, 191 and 194 of the Broadband Guidelines.

⁵⁶ Ultimately, the demand induced by the vouchers also contributes indirectly to "improving the economic viability of expansion projects" [Monopolies Commission (2019), 11th Telecommunications Sector Report (2019) - A sense of proportion in network expansion].

⁵⁷ The Commission believes that increasing broadband penetration contributes to economic development and that high-capacity networks have a positive impact on gross domestic product. Critical of this is Gerpott, T. J. (2020), Voucher für Glasfaseranschlüsse: Warum Bund und Länder auf sie verzichten sollten, *Wirtschaftsdienst*, 100(2), 128-132.

⁵⁸ Paragraph 189 of the Broadband Guidelines.

⁵⁹ See also Gerpott, T. J. (2020) and Monopolies Commission (2019).

actually leads to a pronounced demand stimulus towards networks with high capacity. For one thing, price does not seem to play a major role in the decision for or against a faster connection. Nowadays, the price differences between faster and slower connections are often already small.⁶⁰ And secondly, many end users simply have no preference for higher speeds. Other aspects, such as network stability and the reliability of the provider, seem to be more important to them.⁶¹ Consequently, it is doubtful whether connectivity vouchers really achieve their stated goal in practice.

1.6 Sustainable digital transformation

The increasing digitalisation of the European economy and the associated growing use of digital solutions, technologies, networks and services are a double-edged sword from a sustainability perspective. On the one hand, digitalisation undeniably contributes to an ecologically cleaner economy. Examples include the migration from conventional, less efficient copper networks to advanced fibre optic networks or the use of digital applications in road traffic control. On the other hand, the use of digital technologies is often associated with environmental damage (e.g. generation of electronic waste) and greenhouse gas emissions. The Commission assumes, for example, that the ICT sector will be responsible for 13% of global electricity consumption by 2030. At the same time, digital technologies should be able to contribute to greenhouse gas emission reductions of around 15%.⁶² An analysis by Accenture concludes that the technologies could contribute up to 20% of the necessary savings in the areas of energy, materials and mobility by 2050.⁶³ And according to a recent Bitkom study, digital technologies could save more CO₂ emissions in 2030 than they cause. Depending on the speed of digitisation, the authors arrive at an "enablement factor"⁶⁴ of 6 to 9.⁶⁵

To ensure that the digital transformation is as sustainable as possible, the Commission's White Paper focuses, among other things, on increasing the transparency of the environmental footprint of electronic communications service providers. In view of the immense challenges associated with the digital and sustainable transformation, this certainly appears to be necessary. After all, transparency is unquestionably a vital basis for effective action by the relevant stakeholders. On the one hand, service providers can gain insights into their challenges and then react accordingly. And on the other hand, end users receive additional information on the basis of which they can make more informed sustainable decisions and better compare the sustainability performance of providers. However, as such transparency requirements are inevitably associated with administrative effort, care must be taken to ensure that implementation is as unbureaucratic as possible. Given the variance of electronic communication services, this is likely to be challenging.

The Commission's announcement that it intends to implement standardised EU indicators to measure the ecological footprint of electronic communications service providers is understandable and should in principle be supported because standardised, industry-wide metrics can strengthen the credibility and reliability of relevant information and improve its comparability. Developing the EU indicators is likely to be challenging and finding a common understanding difficult due to the variety of existing approaches in the sector and the complexity of its business models. Nevertheless, efforts to achieve greater standardisation are required here, for example to facilitate the use of standardised data (formats). In order to reduce duplication of effort, the Commission should firstly learn from and take up existing "best practices" when developing the EU indicators and secondly draw on the experience gained with regard to the establishment of European reporting standards under the Sustainability Reporting Directive [(EU) 2022/2464, see [cepPolicyBrief](#)] and the Green Taxonomy Regulation [(EU) 2020/852, see [cepPolicyBrief](#)].

Based on the aforementioned EU indicators, the Commission also wants to establish an EU code of conduct on the sustainability of electronic communication networks by 2025, with the aim of channelling more investment into energy-efficient network infrastructures. A similar code of conduct has already been established for broadband communications equipment.⁶⁶ The establishment of an EU code of conduct on the sustainability of electronic communications networks should ultimately increase the pressure on network operators to take

⁶⁰ See EU Commission (2023a), Mobile and Fixed Broadband Prices in Europe 2021.

⁶¹ Deloitte (2024), Optical Fibre Study 2024, European Broadband Consumer Survey 2024: No need for more speed?.

⁶² White Paper on the Digital Networks Act, p. 16.

⁶³ Forum Institutional (2022), Digital solutions can reduce global emissions by up to 20%. Here's how, 23 May 2022, available [here](#).

⁶⁴ Ratio of CO₂ savings to CO₂ footprint.

⁶⁵ Bitkom (2024), Klimateffekte der Digitalisierung 2.0, Studie zur Abschätzung des Beitrags digitaler Technologien zum Klimaschutz in Deutschland, 26 February 2024.

⁶⁶ More details on this code of conduct are available [here](#).

greater account of sustainability aspects in their decisions on network investments. At the same time, they are intended to prevent progressive network operators from being at a competitive disadvantage, for example because their customers do not reward their sustainability efforts accordingly. This may be due to the fact that potential customers are unable to evaluate or observe the sustainability-related advantages or disadvantages of a network adequately or at all. A voluntary code of conduct that enables network operators to send out corresponding sustainability-related signals in accordance with uniform standards could counteract this and raise awareness of the relevance of this topic among customers.

As already explained in several cep publications, the Green Taxonomy Regulation is not an appropriate policy instrument [(EU) 2020/852, see [cepPolicyBrief](#), [cepAdhoc](#) and [cepInput](#)]. Since the EU is not realistically going to abandon its central instrument for channelling capital towards "sustainable" economic activities in the near future, it would be pointless, due to the path dependency that has arisen, to reject outright any measures by the Commission to define criteria for determining such activities. At this stage, it is important to embed all sectors of the economy, including the ICT sector, in the green taxonomy, including in order to avoid distortions between different sectors in the competition for capital. As the ICT sector is currently only part of the green taxonomy to a limited extent^{67,68} and, as described at the beginning of the section, may be a key enabler for the sustainable transformation of other sectors, greater consideration of the sector seems necessary. There should be an examination of the extent to which the operation of certain electronic communications networks should - under certain conditions - be included in the climate taxonomy as an enabling economic activity. It is true that modern networks often do not contribute directly to greenhouse gas reductions. However, they can serve as a basis for efficient digital solutions to utilise their CO2 reduction potential, which they would not be able to exploit if they had to rely on conventional networks. Regardless of how the corresponding "robust and credible" metrics turn out, however, it must not be forgotten that there is ultimately no objective or standardised definition of "sustainability", nor can there be, even such metrics suggest there can. Whether the criteria are ultimately considered adequate and credible will depend on the individual viewer. In any case, it should not be assumed that the metrics developed represent an "objective" truth without trade-offs or value judgements.

⁶⁷ Currently, the scope of the relevant delegated act on climate taxonomy [Delegated Regulation ([EU 2021/2139](#)) relating to the ICT sector covers the economic activities of (a) "data processing, hosting and related activities" as so-called transitional activities, and (b) "data-based solutions to reduce greenhouse gas emissions" - including the use of decentralised technologies (DLT), the Internet of Things (IoT), 5G and artificial intelligence - as so-called enabling activities.

⁶⁸ An electronic communications network, for example, does not currently fall within the scope of the climate taxonomy, as "its predominant use or deployment" often does not serve to reduce emissions" [Draft Commission Notice on the interpretation and implementation of certain legal provisions of the EU Taxonomy Climate Delegated Act establishing technical screening criteria for economic activities that contribute substantially to climate change mitigation or climate change adaptation and do no significant harm to other environmental objective, 19 December 2022].

D. Conclusion

The list of objectives of the EU regulatory framework on electronic communications should not be expanded, even if this appears politically opportune at present due to technological and geopolitical developments. It risks giving rise to interference in market processes purely for industrial policy reasons, and it could also encourage the emergence of further trade-offs and unnecessarily delay decision-making processes.

A more harmonised and coordinated radio spectrum policy has the potential for more efficient use of spectrum, as well as for greater planning security and willingness to invest, especially in the case of cross-border network operators. A stronger shift to the EU level, however, generally requires the Member States to have similar starting positions, and the telecommunications markets are still characterised by a large number of national particularities.

It is appropriate for the Commission to examine the expiry of market-power-dependent network access regulation in more detail. The time to take the plunge and switch to ex-post control is when there are no longer any monopolistic bottlenecks on the telecommunications markets. For the examination, we are in favour of adapting the three-criteria test. Greater regionalisation of regulation would allow for more targeted regulation of monopolistic bottlenecks. In contrast, market-power-independent ex-ante regulation is a flawed design whose significance should not be increased any further.

The date specified for switching off copper cable networks – 2030 – has the hallmarks of a planned economy. It is intended to influence the decision-making process of market players in such a way that certain political goals, such as the rapid roll-out of high-capacity networks, are achieved more quickly. It is the market players themselves and not government who should decide if and when decommissioning will take place.

Universal Service has lost its practical relevance due to almost complete network coverage. Instead of expanding it further, it should now be abandoned altogether. If it is nevertheless retained, there should be a complete move away from private-sector financing. Connectivity vouchers risk causing deadweight effects. It is also doubtful whether the cost-cutting potential of the vouchers will benefit the end users who are being targeted.

As already stated in several cep publications, we take a critical view of the Green Taxonomy Regulation. However, since it is now in force, being applied and unlikely to be abolished in the near future, it must be addressed. Greater inclusion of the ICT sector in the green taxonomy seems justified in any case, as it could be an enabler for the sustainable transformation of other sectors.