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en Klimaat

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Bijlage(n)
2

Datum 19 juni 2023
Betreft Verslag Formele Telecomraad 2 juni 2023 (Eerste Kamer)

Geachte Voorzitter,

Hierbij bieden wij u het verslag aan van de formele Telecomraad van 2 juni 2023 in Luxemburg. Daarnaast ontvangt u in de bijlagen de reactie van Nederland op de consultatie van de Europese Commissie over toekomstige elektronische connectiviteit en digitale infrastructuur.

M.A.M. Adriaansens
Minister van Economische Zaken en Klimaat

A.C. Van Huffelen
Staatssecretaris van Binnenlandse Zaken en Koninkrijksrelaties
Digitalisering

Directie Europese en Internationale Zaken

Ons kenmerk
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Verslag formele Telecomraad 2 juni 2023

Gigabit Infrastructure Act

Voortgangsrapportage

Tijdens de Telecomraad heeft de Raad kennisgenomen van de voortgangsrapportage over het voorstel voor de verordening gigabit infrastructuur. Eurocommissaris Breton benadrukte in zijn inleiding dat dit voorstel van groot belang is voor het behalen van de connectiviteitsdoelen uit het Digitaal Decennium.

Nederland verwelkomde de verordening gigabit infrastructuur. Het verbeteren van de digitale connectiviteit is essentieel voor het concurrentievermogen van de EU. Nederland heeft daarbij wel aandacht gevraagd voor de proportionaliteit van de voorgestelde maatregelen en de impact op bestaande nationale systemen en procedures. In het bijzonder heeft Nederland aangegeven dat de administratieve lasten voor bedrijven en nationale en lokale overheden beperkt moeten worden en dat in het voorstel rekening moet worden gehouden met verschillende nationale systemen voor vergunningverlening.

Meerdere lidstaten deelden deze aandachtspunten en gaven aan dat nationale systemen en procedures behouden moeten blijven als deze effectief blijken te zijn. Sommige lidstaten gaven aan dat automatische vergunningverlening niet wenselijk is en dat door de implementatie van de GIA geen onredelijke lasten aan de lidstaten moeten worden opgelegd. In dit kader pleitten meerdere lidstaten voor een langere overgangsperiode.

Interoperable Europe Act

Voortgangsrapportage

Het Zweedse voorzitterschap presenteerde de voortgangsrapportage over de verordening Interoperabel Europa en gaf aan dat er de afgelopen maanden veel voortgang is geboekt in de onderhandelingen. De verordening is door de Europese Commissie voorgesteld om de interoperabiliteit tussen digitale overheidsdiensten van verschillende lidstaten te vergroten. De Commissie wees erop dat er nog de nodige stappen nodig zijn op het gebied van grensoverschrijdende dienstverlening tussen lidstaten, onderstreepte het belang van deze wetgeving en riep op tot spoedige afronding.

Nederland gaf aan de doelstellingen van de verordening te steunen. Net als een aantal andere lidstaten riep Nederland het Zweedse voorzitterschap op tot een snelle afronding van de onderhandelingen over het voorstel. Nederland heeft daarbij verder aandacht gevraagd voor het doorzoeken van interoperabiliteitsoplossingen (herbruikbare oplossingen, standaarden en documentatie), die gemakkelijker vindbaar moeten worden door deze te categoriseren via een nieuw in te stellen centraal publieke dienstenregister. In het huidige voorstel zijn deze oplossingen namelijk nog ongeordend.

Lidstaten verwelkomden de voortgangsrapportage en noemden de voorgestelde verordening als een belangrijke stap in het kader van het Digitaal Decennium. Het belang van interoperabiliteit voor grensoverschrijdende dienstverlening is voor

veel lidstaten evident. Tegelijkertijd benoemden lidstaten ook het belang van proportionaliteit en het beperken van bindende interoperabiliteitseisen tot grensoverschrijdende diensten. Ook riepen meerdere lidstaten op tot het beperken van de administratieve en financiële lasten voor met name regionale en lokale overheden.

Cyber Resilience Act
Voortgangsrapportage
Het Zweedse voorzitterschap presenteerde de voortgangsrapportage over het voorstel voor een verordening voor horziontale veiligheidseisen voor digitale producten. Het voorzitterschap gaf aan tot het einde van haar mandaat zoveel mogelijk voortgang te willen boeken in de Raadsonderhandelingen.

Nederland onderschrijft het belang van horizontale wetgeving die de cyberveiligheid van producten regelt omdat dit een voorwaarde is voor een weerbare en veilige digitale economie. In de Raad heeft Nederland in het bijzonder aandacht gevraagd voor twee punten. Ten eerste het behoud van een betrouwbare en goed uitvoerbare conformiteitstoets door derde partijen voor meer gevoelige producten. Daarbij heeft Nederland het belang benadrukt van waarborgen als een *impact assessment*, certificatieschema, consultatie van het bedrijfsleven en voldoende tijd voor implementatie. Ten tweede heeft Nederland het belang benoemd van rapportageverplichtingen op basis van centrale nationale systemen, zodat de *Computer Security Incident Response Teams* (CSIRT's) van alle lidstaten goed zijn aangesloten en toegang hebben tot alle relevante informatie.

Veel lidstaten steunden het voorstel voor de *Cyber Resilience Act* (CRA) en spraken net als Nederland de hoop uit dat het Zweedse voorzitterschap nog tijdens haar termijn tot een algemene oriëntatie komt. Meerdere lidstaten wezen erop dat de CRA een kans biedt om internationale normen voor de cyberveiligheid van producten en waardeketens vast te leggen. Dit punt werd ook gemaakt door Eurocommissaris Breton, die daarbij aangaf dat een geharmoniseerde aanpak op EU-niveau, het versterken van de Europese interne markt en het concurrentievermogen cruciaal zijn in de huidige geopolitieke situatie. Meerdere lidstaten noemden ook een evenwichtige verdeling van administratieve lasten en proportionaliteit van maatregelen als aandachstpunten.

Toekomst van de connectiviteitssector
Beleidsdebat
Tijdens de Raad is een beleidsdebat gevoerd over de toekomst van de connectiviteitssector in de EU. Dit debat was gerelateerd aan de door de Europese Commissie opgezette consultatie over toekomstige elektronische connectiviteit en digitale infrastructuur. Deze consultatie sloot op 19 mei jl. U vindt de Nederlandse reactie op de consultatie bijgevoegd bij dit verslag.

Nederland gaf aan dat het de connectiviteitsdoelstellingen die zijn vastgelegd in het Digitaal Decennium volledig ondersteunt. In het bijzonder onderschreef Nederland daarbij het doel dat alle huishoudens in Europa in 2030 een mobiele aansluiting hebben op basis van 5G en een vaste aansluiting van minimaal

1 gigabit per seconde. Nederland gaf aan dat het op basis van feiten niet het beeld herkent dat Europese telecombedrijven onvoldoende kunnen investeren of dat bestaande instrumenten onvoldoende zouden zijn om regionale investeringsgaten te dichten. Daarbij benadrukte Nederland dat het kritisch is ten aanzien van eerdere beleidsdiscussies die nu opnieuw dreigen te worden gevoerd. Dit betreft discussies over een grotere rol van de Commissie bij spectrumuitgifte en het toestaan van een internettolheffing door telecombedrijven. Nederland heeft daarom in de Raad gepleit voor een op feiten gebaseerde benadering, waarbij uitsluitend maatregelen worden voorgesteld die nodig en geschikt zijn om daadwerkelijke problemen met connectiviteit op te lossen. Daarbij dienen de belangen van Europese eindgebruikers zoals consumenten centraal te staan en dient de netneutraliteit niet aangetast te worden.

Lidstaten spraken hun steun uit voor de EU-doelstellingen voor 5G en glasvezel in 2030. Enkele lidstaten gaven aan dat investeringen in digitale connectiviteit proprotioneel verdeeld moeten worden en dat ook intensieve gebruikers van connectiviteitsnetwerken hieraan zouden moeten bijdragen. Een brede groep lidstaten uitte echter net als Nederland zorgen over beleidsrichtingen als het mogelijk toestaan van een internettolheffing door telecombedrijven. Hierbij werd aangevoerd dat een dergelijke heffing nadelige gevolgen kan hebben voor de Europese digitale transitie, innovatie kan remmen, netneutraliteit in gevaar kan brengen en belangen van Europese consumenten en bedrijven kan schaden door onder meer hogere abonnementskosten en een lagere kwaliteit van internet. Meerdere lidstaten wezen daarbij op adviezen van consumentenorganisaties en BEREC, de Europese koepelorganisatie van telecommarkt-toezichthouders. Een brede groep lidstaten merkte ook op dat er momenteel geen sprake is van marktfalen en dat eventuele voorstellen van de Europese Commissie op dit terrein vooraf moeten worden gegaan door een grondige *impact assessment*.

Diversenpunt lopende wetgevingsonderhandelingen: Dataverordening, raamwerk voor een Europese digitale identiteit en ePrivacy-verordening
Het voorzitterschap informeerde de Raad over de onderhandelingen over de Dataverordening, het raamwerk voor een Europese digitale identiteit en de ePrivacy-verordening. Deze onderhandelingen bevinden zich allen in de triloogfase. Het voorzitterschap gaf aan dat er de afgelopen maanden met name voortgang is geboekt in de triloogonderhandelingen over de Dataverordening en het raamwerk voor een Europese digitale identiteit. In de onderhandelingen over de ePrivacy-verordening liggen de mandaten van de wetgevers ver uit elkaar, al is er het afgelopen jaar wel enige voortgang geboekt op meer specifieke, technische punten.

De zorgen van uw Kamer met betrekking tot het voorstel voor een raamwerk voor een Europese digitale identiteit, onder meer besproken tijdens het interpellatiedebat, vormen ook in de triloogfase de kern van het Nederlandse standpunt. Nederland heeft deze aandachtspunten tijdens de Raad nogmaals benoemd en in het bijzonder het belang benadrukt van een expliciet verhandelverbod van gegevens die in de toekomst via wallets kunnen worden uitgewisseld. Enkele lidstaten gaven aan meerwaarde te zien in een raamwerk

voor een Europese digitale identiteit en spraken de hoop uit op een snelle afronding van de onderhandelingen.

Onder het diversenpunt over de ePrivacy-verordening heeft Nederland, indachtig de moties van de leden Dekker-Abdulaziz en Kathmann[1], ervoor gepleit om op Europees niveau alsnog met een oplossing voor het cookievraagstuk te komen. Voor Nederland is het van belang dat het voor burgers mogelijk is om in één keer aan te geven waarmee zij akkoord gaan en waarmee niet, zodat dit niet langer per website hoeft te worden aangegeven. Vanwege de beperkte voortgang in de onderhandelingen over de ePrivacy-verordening kijkt Nederland ook naar alternatieve oplossingen. In dat kader verwelkomt Nederland het initiatief van Eurocommissaris Reynders om te kijken naar vrijwillige opties die het voor eindgebruikers makkelijker moeten maken om cookies te weigeren en om alternatieven te vinden voor op tracking gebaseerde advertenties.

Diversenpunt 5G-veiligheid
De Europese Commissie kondigde aan binnen afzienbare tijd een rapport te publiceren over de EU-toolbox voor 5G-veiligheid. In het rapport zal de Commissie ingaan op vooruitgang die is geboekt in lidstaten maar ook op risico's rond hoog-risico aanbieders. De Commissie benadrukte het belang van EU-coördinatie in de huidige geopolitieke context. Een enkele lidstaat wees erop dat de EU concreter moet optreden en meer veilige netwerken zou moeten financieren, ook buiten de EU.

Diversenpunt internationale initiatieven over digitalisering
De Europese Commissie gaf een update over de voortgang van internationale initiatieven in het digitale domein, met een focus op de EU-VS Trade & Technology Council (TTC) en Digitale Partnerschappen. De Commissie gaf daarbij aan dat tijdens de vierde TTC-bijeenkomst in Zweden op 31 mei jl. onder meer is gesproken over nieuwe technologieën, standaardisering, digitale connectiviteit en waardeketens voor halfgeleiders.[2] Daarnaast gaf de Commissie aan dat de eerste TTC-bijeenkomst tussen de EU en India op 16 mei jl. positief is verlopen. De EU en India hebben afgesproken verder samen te werken op onder meer het gebied van kwantum-computing, betrouwbare AI, halfgeleiders en digitale vaardigheden.[3] Tot slot stond de Commissie kort stil bij de Digitale Partnerschappen met Japan, Singapore en Zuid-Korea. In juni en juli vinden er in het kader van deze partnerschappen besprekingen plaats tussen de Europese Commissie en deze drie landen. Enkele lidstaten benadrukten het belang van strategische samenwerking met derde landen.

Diversenpunt conferentie over duurzame AI en AI voor duurzaamheid
Het Zweedse voorzitterschap gaf een terugkoppeling van de conferentie over duurzame AI en AI voor duurzaamheid die op 2 en 3 mei jl. plaatsvond in Göteborg. De conferentie bestond uit vier sessies, over 1) hoe we duurzame AI

[1] Moties 32761-266 en 32761-267
[2] Het gezamelijke statement van deze EU-VS TTC is te vinden op de website van de Europese Commissie: Joint Statement EU-US TTC in Sweden (europa.eu)
[3] Het gezamenlijke statement van deze EU-India TTC is te vinden op de website van de Europese Commissie: https://digital-strategy.ec.europa.eu/en/library/eu-india-ttc-joint-statement

kunnen garanderen, 2) duurzame AI-ecosystemen, 3) de rol van AI in de digitale en groene transities en 4) het perspectief van de burger in de ontwikkelingen rondom AI.

Diversenpunt generatieve AI
Door een lidstaat was een diversenpunt aangevraagd voor een gedachtewisseling over hoe lidstaten omgaan met generatieve AI, in het licht van alle snelle ontwikkelingen op dit gebied. Lidstaten boden een overzicht van instrumenten die zij gebruiken om innovatie in AI te stimuleren, het mkb te ondersteunen en vaardigheden en bewustzijn rondom AI te vergroten. Lidstaten gaven aan dat onder meer ethiek, transparantie en cyberveiligheid aandachtspunten zijn. In diverse landen zijn handleidingen in de maak voor het bedrijfsleven en overheden.

Indachtig de motie-Leijten[4] hecht het kabinet eraan richting uw Kamer te benoemen dat tijdens de onderhandelingen over de AI-verordening er actief op wordt ingezet dat in de AI-verordening duidelijk wordt opgenomen dat een genomen besluit altijd begrijpelijk kenbaar wordt gemaakt. Nederland bestudeert in dit kader het voorstel van het Europees Parlement voor een notitificatieplicht.

Diversenpunt Internationale Telecommunicatie Unie
Een drietal lidstaten had een diversenpunt aangevraagd over het opzetten van een coördinatiemechanisme binnen de EU voor het versterken van de relaties tussen de Internationale Telecommunicatie Unie (ITU) en de EU. Dit zou moeten leiden tot meer slagkracht van de EU binnen de ITU. Enkele lidstaten steunden dit idee, terwijl er ook lidstaten waren die aangaven dat het zinvoller is om vanuit de bestaande structuren als de Europese Conferentie voor Post en Telecommunicatie de EU-coördinatie te versterken. Deze lidstaten betoogden ook dat het van belang is om te investeren in presentie in technische werkgroepen onder de ITU.

Diversenpunt index van de Digitale Economie en Samenleving
Een lidstaat had een diversenpunt aangevraagd over de index van de Digitale Economie en Samenleving (DESI). Deze lidstaat stelde dat de DESI een belangrijke rol speelt in de vorming van beleid en uitvoering van acties op het gebied van digitalisering. Om de DESI zoveel mogelijk te laten aansluiten bij de huidige uitdagingen op het gebied van digitalisering stelde deze lidstaat een herziening van de indicatoren en methodologie van de DESI voor. Het pleidooi voor een meer dynamisch proces en herijking van de DESI kreeg steun van meerdere lidstaten.

Diversenpunt voorzitterschapsprogramma juli-december 2023
De Spaanse delegatie heeft de Raad tot slot geïnformeerd over de belangrijkste prioriteiten voor de Telecomraad tijdens hun voorzitterschap van de Raad in de tweede helft van 2023. Het Spaanse voorzitterschap zal zich met name inzetten voor het afronden van de lopende triloogonderhandelingen over de AI-verordening en Dataverordening (indien deze nog niet wordt afgerond onder het Zweedse voorzitterschap) en de onderhandelingen in de Raad over de CRA, de verordening gigabit infrastrucuur en de verordening voor een Interoperabel Europa. Daarbij

[4] Motie 21501-33-987

gaf Spanje aan dat de AI-verordening een historische kans is voor Europa om een voortrekkersrol te spelen in de ontwikkeling en regulering van AI. Daarnaast zal Spanje zich tijdens haar voorzitterschap inzetten voor het opzetten van nieuwe partnerschappen tussen de EU en Latijns-Amerika.

Nederland kan zich vinden in de prioriteiten van het aankomende Spaanse voorzitterschap en onderschrijft het belang van het afronden van de triloogonderhandelingen over de AI-verordening en Dataverordening. De recente ontwikkelingen hebben aangetoond dat kaders voor AI, waarin de AI-verordening voorziet, hard nodig zijn om de ontwikkeling van verantwoorde AI-systemen vorm te geven. Ook is het van belang er spoedig een akkoord wordt bereikt over de Dataverordening, zodat de data-economie wordt gestimuleerd, de keuzevrijheid en concurrentie in de Europese markt voor clouddiensten wordt vergroot en gebruikers van producten en diensten meer controle over hun data krijgen. Nederland vindt het daarnaast van belang dat er onder het Spaanse voorzitterschap voortgang wordt geboekt in de onderhandelingen over de ePrivacy-verordening.

Contribution ID: d028ff08-8213-4a1b-b4b0-46d9c06327b9
Date: 19/05/2023 15:57:55

Exploratory Consultation

The future of the electronic communications sector and its infrastructure

Fields marked with * are mandatory.

1. Introduction

At a time when digital technologies play an increasingly prominent role in social, economic, and political life worldwide, Europe's digitalisation is essential for its prosperity, as long as it is human-centric and respects our common EU values and the rights, dignity and integrity of the individual.

Digital technologies can be used to deliver services to people and make the EU's economy greener, more resilient and more inclusive, leaving no one behind. Booming technologies like connected objects, upcoming innovations in Artificial Intelligence ("AI"), or high-performance computing mean that the digital transformation will play an even bigger role in the everyday lives of Europeans; and a bigger role in securing its competitiveness. This is why the EU needs performant, sustainable digital infrastructure, starting with reliable network connections.

A sustainable digital infrastructure for connectivity is critical to take advantage of the benefits of digitalisation, for further technological developments and for the Union's digital leadership and autonomy. Reliable, fast and secure connectivity is a must for everybody and everywhere in the Union, including in rural and remote areas. The "Digital Decade" vision launched by the European Commission in 2021[1] and enshrined in the Digital Decade Policy Programme[2] in December 2022, further highlights the importance of the connectivity infrastructure, and accordingly sets political targets for 2030.[3] Concretely, by 2030, networks with gigabit speeds should become available to those who need or wish to have such capacity.

Digital markets and, in particular connectivity markets, are also facing transformative technological and market developments in the form of e.g. cloudification of networks, transition to edge computing, requirements for operation in the metaverse, for AI, etc.

Moreover, they are not isolated from the challenging geopolitical and economic situation overall.

New generations of mobile communications will require massive investments in fibre and densification of antennas. New performance will enable critical use cases and the connection of objects. These developments will likely have a significant impact on the business model of providers of electronic communications networks (“ECNs”), as well as of other actors in the value chain. In light of this, it is important to broadly reflect on how to secure a resilient connectivity architecture based on a sustainable business model able to support our digital future in the EU.

Now is therefore a key moment to have a comprehensive look at the connectivity sector and investigate where it stands, and what would be the needs for the future. The European Commission therefore launches the present exploratory consultation on the vision for the future of the connectivity sector and of the connectivity infrastructure.

Pursuant to Better Regulation rules, an exploratory consultation is preliminary in nature, and targets those that may provide insights to determine if any problem exists and could be addressed by EU action, or sketch the potential scope of a genuinely new policy.

The consultation is available in English, French and German, and it is open for responses through the EUSurvey tool for 12 weeks.

The questionnaire of the present consultation is structured along four sections and each of the sections includes a short introductory explanation of its background and rationale:

- Technological and market developments: impacts on future networks and business models for electronic communications
- Fairness for consumers
- Barriers to the Single Market
- Fair contribution by all digital players

Questions can be left blank. However, in order to be able to see different perspectives **we welcome replies from all types and categories of respondents**, also on questions that might prima facie not fall in their remit or knowledge.

Please make sure to save a draft of the questionnaire regularly as you fill it in, and to submit the questionnaire ("submit" button at the very end) before the end of the consultation period.

You can download the questionnaire in PDF format before starting to help you with the

preparations or discussions within your organisation. You will be able to download an electronic copy of your replies.

If you have any questions or problems regarding this exploratory consultation, please contact CNECT-FUTURE_OF_CONNECTIVITY@ec.europa.eu.

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[1] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, "2030 Digital Compass: the European way for the Digital Decade", COM(2021) 118 final, 9.3.2021.

[2] Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 ("Digital Decade Policy Programme 2030"), OJ L 323, 19.12.2022, p. 4.

[3] See Art. 4 Digital Decade Policy Programme 2030.

2. Background

2.1 Technology and market situation and challenges

As the importance of connectivity increases, massive investments in network infrastructure are needed in order to accommodate and integrate new technologies while at the same time attending to growing redundancy and cybersecurity requirements. Deployments in 5G and 6G (i.e. TeraBit capacities and sub-millisecond latency, answering to future network requirements) and new generations of mobile communications will require massive investments in fibre and densification of antennas. An increase in traffic volume, with low latency requirement is reported and this trend is likely to continue in the future. In Europe, but also elsewhere, one can witness a very fast evolving market where new revolutionary digital developments are to be expected (e.g. metaverse, Web 3.0). Network virtualisation, software defined networks ("SDNs"), private networks, network slicing and network sharing become increasingly common and one can observe the convergence between connectivity, computing (high performance computing (HPC)), edge computing, AI and storage (edge clouds).

Moreover, there is a tendency to separate different market elements (delayering), e.g. fibre and wholesale-only operators, and tower companies; while hyperscalers are investing in their own cable infrastructure. As regards data traffic, one can observe developments such as compression techniques, which allow a more efficient data transmission, as well as the practice of certain content providers to bring their content closer to the end-user by way of own infrastructure or the use of Content Delivery Networks ("CDNs").

Internet value chain has become increasingly complex, e.g. where mobile network operators are starting to deploy edge cloud infrastructure and to partner with hyperscalers. Cloud providers are beginning to offer last-mile networks to industrial clients using private 5G mobile

networks. CDNs are increasingly integrated into cloud based “infrastructure/platform as a service”. Mobile network operators are no longer the only players partnering with vertical industries to set up 5G local networks: vendors and cloud operators are equally ready and well equipped to play a role in these new markets. One can witness the emergence of vertically integrated global companies (such as Google, Amazon or Apple who also deploy their own submarine cables or backhaul).

The market of connected devices and applications is evolving very fast, with new technological developments, such as augmented and immersive reality, blockchain, digital twins, and AI. In the longer term, interoperable internet applications are expected to create consistent perceptions: this vision (sometimes referred to as “metaverse”) represents a future transformative frontier of the digital environment. Also developments such as “softwarisation” and virtualisation of networks; cloud functionalities and AI, edge computing will lead to architectural changes in connectivity infrastructure.

2.2 Demand situation

Increasingly competitive and deregulated markets have over the last decades resulted in competitive and affordable prices and choices for European consumers. Broadband coverage of rural areas remains challenging (8.5% of households not covered by any fixed network). 4G is widely available also in rural areas while 5G coverage accounts for only 34.7% of populated rural areas.[4] End-users as well as businesses are however increasingly dependent on internet access (fixed and mobile) and on the services and content available through this access. This has also resulted in an observed increased demand for faster broadband connections. The changes arising from the current market and technological developments would likely affect all European consumers and end-users, including SMEs. Rising inflation and the significant increase in the cost of energy will likely result in higher costs for internet service and content providers, despite the shift to the more energy efficient technologies of fibre and 5G.

2.3 Investment situation

Massive investments in network infrastructure are still needed to achieve Europe’s Digital Decade goals. The latest estimates quantify the investment needs until 2030 at around EUR 174 billion.[5] Some European providers of electronic communication networks and services, especially incumbents, claim that they suffer from a decreasing market valuation and lower return on investment, especially when compared to companies in the US (including both over-the-top players (“OTTs”) and infrastructure operators). They also claim that their alleged declining margins and increasing costs would put their future network investments at risk as, due to the current uncertainties (high inflation, hikes in interest rates and geopolitical tensions), capital markets appear to be more prone to focus on assets with short-term returns

/profitability and to prefer solutions that protect them from demand risk.

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[4] Digital Economy and Society Index (DESI) – September 2022.

[5] This figure includes the coverage by 5G of major transport paths and does not take into account potential cost reduction thanks to the simultaneous deployment of fixed and mobile Gigabit networks. Source: “Investment and funding needs for the Digital Decade targets“ study, upcoming.

3. About you

* **Language of my contribution**

- (•) English
- ( ) French
- ( ) German

* **I am giving my contribution as**

- ( ) Academic/research institution
- ( ) Business association
- ( ) Company/business
- ( ) Consumer organisation
- ( ) EU citizen
- ( ) Non-EU citizen
- ( ) Non-governmental organisation (NGO)
- (•) Public authority
- ( ) Trade union
- ( ) Other

* **First name**

* **Surname**

* **Email** (this won't be published)

* **Scope**

- ○ International
- ◉ European
- ○ National
- ○ Regional
- ○ Local

* **Organisation name**

255 character(s) maximum

Netherlands Ministry of Economic Affairs and Climate

* **Organisation size**

- ○ Micro (1 to 9 employees)
- ○ Small (10 to 49 employees)
- ○ Medium (50 to 249 employees)
- ◉ Large (250 or more)

* **Country of origin**

Please add your country of origin, or that of your organisation.

This list does not represent the official position of the European institutions with regard to the legal status or policy of the entities mentioned. It is a harmonisation of often divergent lists and practices.

- ○ AF - Afghanistan
- ○ AL - Albania
- ○ DZ - Algeria
- ○ AD - Andorra
- ○ AO - Angola
- ○ AG - Antigua and Barbuda
- ○ AR - Argentina
- ○ AM - Armenia
- ○ AU - Australia
- ○ AT - Austria
- ○ AZ - Azerbaijan
- ○ BS - Bahamas
- ○ BH - Bahrain

- BD - Bangladesh
- BB - Barbados
- BY - Belarus
- BE - Belgium
- BZ - Belize
- BJ - Benin
- BT - Bhutan
- BO - Bolivia
- BA - Bosnia and Herzegovina
- BW - Botswana
- BR - Brazil
- BN - Brunei Darussalam
- BG - Bulgaria
- BF - Burkina Faso
- BI - Burundi
- CV - Cabo Verde
- KH - Cambodia
- CM - Cameroon
- CA - Canada
- CF - Central African Republic
- TD - Chad
- CL - Chile
- CN - China
- CO - Colombia
- KM - Comoros
- CG - Congo
- CR - Costa Rica
- CI - Côte D'Ivoire
- HR - Croatia
- CU - Cuba
- CY - Cyprus
- CZ - Czechia
- CD - Democratic Republic of the Congo
- DK - Denmark

- DJ - Djibouti
- DM - Dominica
- DO - Dominican Republic
- EC - Ecuador
- EG - Egypt
- SV - El Salvador
- GQ - Equatorial Guinea
- ER - Eritrea
- EE - Estonia
- SZ - Eswatini
- ET - Ethiopia
- FJ - Fiji
- FI - Finland
- FR - France
- GA - Gabon
- GM - Gambia
- GE - Georgia
- DE - Germany
- GH - Ghana
- GR - Greece
- GD - Grenada
- GT - Guatemala
- GN - Guinea
- GW - Guinea Bissau
- GY - Guyana
- HT - Haiti
- HN - Honduras
- HU - Hungary
- IS - Iceland
- IN - India
- ID - Indonesia
- IR - Iran
- IQ - Iraq
- IE - Ireland

- IL - Israel
- IT - Italy
- JM - Jamaica
- JP - Japan
- JO - Jordan
- KZ - Kazakhstan
- KE - Kenya
- KI - Kiribati
- KW - Kuwait
- KG - Kyrgyzstan
- LA - Laos
- LV - Latvia
- LB - Lebanon
- LS - Lesotho
- LR - Liberia
- LY - Libya
- LI - Liechtenstein
- LT - Lithuania
- LU - Luxembourg
- MG - Madagascar
- MW - Malawi
- MY - Malaysia
- MV - Maldives
- ML - Mali
- MT - Malta
- MH - Marshall Islands
- MR - Mauritania
- MU - Mauritius
- MX - Mexico
- FM - Micronesia
- MC - Monaco
- MN - Mongolia
- ME - Montenegro
- MA - Morocco

- MZ - Mozambique
- MM - Myanmar
- NA - Namibia
- NR - Nauru
- NP - Nepal
- NL - Netherlands
- NZ - New Zealand
- NI - Nicaragua
- NE - Niger
- NG - Nigeria
- KP - North Korea
- MK - North Macedonia
- NO - Norway
- OM - Oman
- PK - Pakistan
- PW - Palau
- PA - Panama
- PG - Papua New Guinea
- PY - Paraguay
- PE - Peru
- PH - Philippines
- PL - Poland
- PT - Portugal
- QA - Qatar
- MD - Republic of Moldova
- RO - Romania
- RU - Russian Federation
- RW - Rwanda
- KN - Saint Kitts and Nevis
- LC - Saint Lucia
- VC - Saint Vincent and the Grenadines
- WS - Samoa
- SM - San Marino
- ST - Sao Tome and Principe

- SA - Saudi Arabia
- SN - Senegal
- RS - Serbia
- SC - Seychelles
- SL - Sierra Leone
- SG - Singapore
- SK - Slovakia
- SI - Slovenia
- SB - Solomon Islands
- SO - Somalia
- ZA - South Africa
- KR - South Korea
- SS - South Sudan
- ES - Spain
- LK - Sri Lanka
- SD - Sudan
- SR - Suriname
- SE - Sweden
- CH - Switzerland
- SY - Syrian Arab Republic
- TJ - Tajikistan
- TZ - Tanzania
- TH - Thailand
- TL - Timor-Leste
- TG - Togo
- TO - Tonga
- TT - Trinidad and Tobago
- TN - Tunisia
- TR - Turkey
- TM - Turkmenistan
- TV - Tuvalu
- UG - Uganda
- UA - Ukraine
- AE - United Arab Emirates

- GB - United Kingdom
- US - United States of America
- UY - Uruguay
- UZ - Uzbekistan
- VU - Vanuatu
- VE - Venezuela
- VN - Viet Nam
- YE - Yemen
- ZM - Zambia
- ZW - Zimbabwe

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If you include confidential information in any position paper or document uploaded to the questionnaire, please provide both a confidential and a non-confidential version. Information marked as confidential will not be published.

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You can choose whether you or your organisation agrees to have your details published (on the Internet or in any other support) or to remain anonymous when your contribution is published.

If anonymity is requested, the requestor shall make sure that he/she is not identifiable either from any comments made in the reply or from any file attachment. Anonymity will also be ensured should the Commission engage an external contractor to process the information gathered during the consultation.

Please note that, for the purpose of transparency, the type of respondent (e.g., ‘business association, ‘consumer association’, ‘EU citizen’) and country of origin, will always be published.

Opt in to select the privacy option that best suits you. Privacy options default based on the type of respondent selected. More information on the processing of personal data is available here.

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  Organisation details and respondent details are published: The type of respondent that you responded to this consultation as, the name of the organisation on whose behalf you reply as well as its size, its country of origin and your contribution will be published. Your name will also be published.
- **Anonymous**
  Only organisation details are published: The type of respondent that you responded to this consultation as, the name of the organisation on whose behalf you reply as well as its size, its country of origin and your contribution will be published as received. Your name will not be published. Please do not include any personal data in the contribution itself if you want to remain anonymous.

☑ I agree with the data protection provisions.

Section 1. Technological and market developments: impacts on future networks and business models for electronic communications

New generations of mobile communications will require massive investments in fibre and densification of antennas. New performance will enable critical use cases and the connection of objects. The growing requirement for strategic autonomy, security and sovereignty regarding key enabling technologies in the electronic communications area will also have a significant impact on future developments. In particular, the EU's 5G security toolbox[6] puts forward measures including restrictions on high-risk suppliers, some of which are likely to be present in existing networks and may require replacement over time.

Moreover, it is to be recalled that environmentally, information and communications technologies are an important enabler of emission reductions for many sectors in the economy, while at the same time they themselves need to make an effort to reduce their environmental footprint.

It is expected that technology will evolve towards the disaggregation of software and hardware. This is likely to offer possibilities to reconfigure most electronic communications assets, hence leading to an optimisation of the value chain. In turn, hardware facilities will be

subject to increasing network shared use between market actors, not only among electronic communications operators but also involving industry sectors. In particular, network slicing will enable new market actors in the sector to operate virtual networks almost as they would operate a proprietary physical network. Overall this could lead to the future network architecture becoming more a platform type of architecture.

European critical entities are more interconnected and interdependent, which makes them stronger and more efficient but also more vulnerable in case of an incident. In this context, the Commission recently proposed a Council Recommendation on a coordinated approach by the Union to strengthen the resilience of critical infrastructure. Furthermore, to respond to the increased exposure to cyber threats due to the increasing degree of digitalisation and interconnectedness of our society and the rising number of cyber malicious activities at global level, the Commission proposed in 2020, a directive introducing updated rules on cybersecurity of network and information systems. The NIS 2 Directive[7] entered into force in January 2023. The increased cyber threat may nevertheless trigger additional needs and increased costs for strengthening the cybersecurity, and the resilience and redundancy of networks.

Network virtualisation and cloudification is expected to have a similar impact on the business model of providers of ECNs as cloud computing has produced on the IT sector, i.e. transforming a large proportion of incremental investment costs into linear operational expenses (shifting CAPEX to OPEX). In this new context, other (specialised) players are likely to concentrate on hardware infrastructure investments (similarly to cloud service platforms at the moment) while a wide diversity of other players, incumbents as well as many new entrants, are likely to address market needs in the upper layers: namely software development, virtual connectivity services, and the actual applications. Already now there are new types of operators and business models (e.g. wholesale-only, independent tower companies (“towercos”), infrastructure sharing, co-investment). New cooperation models or consolidation trends might emerge from business ecosystems. Existing providers of ECNs will likely need or want to adapt to the new paradigm, possibly not only as connectivity providers but also as infrastructure-as-a-service provider or even innovative software provider.

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[6] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 29 January 2020 on Secure 5G deployment in the EU - Implementing the EU toolbox, COM(2020) 50 final, 29.1.2020.

[7] Directive (EU) 2022/2555 of the European Parliament and of the Council of 14 December 2022 on measures for a high common level of cybersecurity across the Union, amending Regulation (EU) No 910/2014 and Directive (EU) 2018/1972, and repealing Directive (EU) 2016/1148 (“NIS 2 Directive”), OJ L333, 27.12.2022, p. 80.

Questions

1. Which technological developments do you expect will have the largest impact on the electronic communications sector in the next 10 years? [We plan to report on the top 5 developments]

Use drag&drop or the up/down buttons to change the order or accept the initial order.

- Network virtualisation
- Open networks / network disaggregation and cloud RAN
- Edge cloud
- Artificial intelligence
- Terahertz communications (6G)
- Low orbit satellite communications
- Super precise geo-location
- Blockchain technology
- Quantum encryption
- Longer lasting battery technology
- Non cellular technologies[8]
- Other

Please specify "Other"

100 character(s) maximum

Cloudification: network functionalities are being migrated to cloud infrastructure

Please explain your answer

1000 character(s) maximum

All of these technological developments are relevant to consider in the light of the future of electronic communication networks, next to a lot of other technological developments. We consider these developments interrelated and of different orders. Therefore we cannot put these in a meaningful hierarchical order. Rather than reporting on distinct developments in isolation, we would welcome a more holistic approach of the technical (and social) developments in relation to one and other.

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[8] Examples of cellular networks are the well-known 2G, 3G, 4G and 5G mobile communication networks. In addition to these networks, other, non-cellular ones, exist in which the service area is not divided in separate and distinct cells. Some examples of these technologies are Wi-Fi and DECT. These non-cellular technologies are already in use for IoT and M2M connectivity (for example LoRa and Sigfox technologies) and are expected to act as predominant enablers of IoT in the future.

2. From a global/strategic perspective, which challenges and opportunities will these technological advances entail for the electronic communications sector?

1000 character(s) maximum

It's important to not define the 'electronic communication sector' to narrowly, this sector already entails much more than just the traditional telecom operators. Going forward boundaries between the traditional telecom operators and other players are likely to get more blurred. This should be reflected in the scope.

3. What are the most urgent problems to address in terms of unleashing the full technological potential of electronic communications and what (structural) impact will the future developments identified in Q.1 have on electronic communications networks? (e.g. on the type/quality of the connectivity, on the networks' architecture /functioning, on the provision model for connectivity, other)

1000 character(s) maximum

One of the largest challenges regarding unleashing the full technological potential of electronic communications is to ensure the supportive regulatory framework that's pro-competitive and aimed at promoting innovation rather than protecting existing business models.

The long term trends will likely change the roles of traditional telecom operators and other market players in the value chain. A defensive, protectionist approach can look attractive at the short run but is likely to much more harm than good on the longer run as these changes are inevitable and imply both opportunities and threats.

4. What impact will the future developments identified in Q.1 have on providers of ECNs or on other infrastructure investors? (e.g. role, business models, investment efforts, transformation/development opportunities) [Multiple answers possible]

- [x] Role
- [x] Business models
- [ ] Investment efforts
- [ ] Transformation/development opportunities
- [ ] Other

Please explain your answer

1000 character(s) maximum

See our previous answer. Roles and business models have changed and will inevitably continue to change, although traditional telecom operators are likely to keep their strategic position stemming from their termination monopoly. We expect attractive business models will remain for both ECN's (regardless of which shape or form these will take) and other infrastructure investors.

5. What impact will the future developments identified in Q.1 have on digital/online players or on other industrial players? (e.g. role, business model, investment efforts, development opportunities, other) [Multiple answers possible]

- [x] Role
- [x] Business models
- [ ] Investment efforts
- [ ] Transformation/development opportunities
- [ ] Other

Please explain your answer

1000 character(s) maximum

See our previous answer, as boundaries between various players get blurred, the distinction between 'providers of ECNs or on other infrastructure investors' and 'digital/online players or on other industrial players' is not necessarily the most useful. The implicit assumption in this question seems to be that 'digital /online players or on other industrial players' don't invest in infrastructure (as the previous question (Q4) covers explicitly 'ECNs or other infrastructure investors'. However, it's likely that both 'of ECNs or other infrastructure investors' (Q4) and 'digital/online players or other industrial players' (Q5) will contribute to investments in infrastructure in terms of both hardware and software.

6. What are your views with regard to the evolution of the energy consumption and the respective environmental footprint (notably CO2 emissions) of the main technological blocks of the future networks (copper, fibre, 5G, 6G, edge clouds, etc.), notably in terms of their operation? [Substantiate your answer as much as possible.]

1000 character(s) maximum

We consider it important that any conclusion in this area will not be based on just stakeholder views, but on facts from independent research. On FttH networks higher traffic loads generally do not lead to higher energy consumption. For mobile networks the relation between increased network loads and higher energy consumption is stronger, but at the same time consecutive generations of mobile technologies have succeeded in managing high growth of the network load while keeping energy consumption in check. The edge-cloud continuum might also facilitate further optimization of energy consumption as distributed architecture will make it possible to process and store data closer to end-user, avoiding transmission to higher network levels. In general we have observed that despite consistently strong data growth of the past 20 years, energy consumption has been kept in check relatively well. NL telecom operators have reported significant reductions in the last decade

7. Digitalisation is an important enabler of green and sustainable ambition. The increased use of digital technologies is expected to reduce the environmental footprint of many sectors. At the same time, the expected increase in data traffic may increase the environmental footprint of electronic communications. In your view, what will be the overall impact on the environment? [Only one option can be selected]

- (•) Significantly positive

- Moderately positive
- Negative
- Significantly negative
- Do not know

Please explain your answer, and if possible, support your answer with concrete figures and/or measurements

1000 character(s) maximum

As pointed out before, over the past decades we have observed that energy consumption has been kept in check, despite the impressive, consistently high year on year data growth rates. There seems to be no reason to assume that this will not hold for the foreseeable future. We need to strive to not just keep energy consumption in check, but rather decrease the total energy consumption. It's important to approach this in a holistic manner, and look at the entire ecosystem, including devices.

The attention to making networks and devices more energy efficient (which is very important) should not deflect from the fact that the footprint of networks is dwarfed by the potential reductions in the footprint of other sectors it can help reduce. Furthermore, we should be aware that particularly the energy consumption associated with connected end-user devices can be substantial, compared to energy consumption of networks.

More reliable data on energy consumption is desirable.

8. How do you expect ECNs to evolve/transform in the next 10 years and how will this evolution affect your business?

Please explain your answer

1000 character(s) maximum

It's likely that traditional ECNs will keep a strong position in the internet ecosystem as they are likely to continue their control over the last mile and as such can exert market power as gatekeepers between end-users and online service providers. This will likely allow them to keep on maintaining and expanding their access networks. At the same time it's likely that the trend of other market players building out their infrastructure nearer and nearer towards the end-user will continue.

Depending on how this will play out – there are a lot of different scenario's conceivable –questions will be raised relating to market structure, competition and strategic autonomy.

9. What are in your view the key future market developments that are likely to significantly impact the electronic communications networks, their architecture and/or their function? [We plan to report on the top 5 developments]

Use drag&drop or the up/down buttons to change the order or accept the initial order.

⠿ Development of independent infrastructure management companies

⠿ Emergence of virtually integrated network management entities (virtual network operators)

⠿ Network slicing services

⠿ Private local networks

⠿ Other

Please specify "Other"

100 character(s) maximum

Please explain your answer

1000 character(s) maximum

We need to abstain from providing such a 'top 5' as we feel this would not pay justice to the larger picture we need to look at. Rather than zooming in on a relatively idiosyncratic selection of developments (which are not clearly defined here) it would be more relevant to describe the developments on a higher aggregation level and reflect on possible scenario's rather than trying to make predictions. The developments mentioned are also highly intertwined and should not be regarded as separate developments. These developments might be considered particularly relevant from the current perspective of traditional telecom operators, but do not necessarily capture the developments from a broader, more holistic perspective. As stated before, the electronic communication markets entail much more than just traditional telecom operators.

10. Are there major obstacles to establish standards in relation to network access protocols and application programme interfaces (APIs) in order to support new service models and/or new network architectures?

- ○ Yes
- ◉ No

Please explain your answer

1000 character(s) maximum

We don't not recognize any major obstacles to establish new standards or, as is our more preferred option, evolve existing network protocol standards, considering those discussions take place in the appropriate organizations and involves all stakeholders.

One of our key concerns on this topic is that the established mandates of the consortia, partnerships, multi-stakeholder organizations and international multilateral SDOs need to be respected and - where a topic under consideration for standardization involves multiple organizations - the matter is resolved in the spirit of full and open collaboration instead of competition around competencies.

We're a keen supporter of the multistakeholder model and we like to see this reflected in matters concerning standardization in the digital domain. Such standards should be developed in an open, transparent process that involves all stakeholders, with the decisions based on consensus amongst all participants.

11. What additional needs compared to today's baseline do you expect will be needed for strengthening cybersecurity / network resilience and the related expected costs (e.g. in terms of CAPEX, other) for the next five years, including as regards replacement of high-risk vendors? [Fill in the table and substantiate your answer as much as possible.]

	Description of additional needs	Expected costs in EUR million for next 10 years
1		
2		
3		
4		
5		

Please explain your answer

1000 character(s) maximum

The responses to this question should be taken with extreme caution, as it's difficult for individual businesses to make an accurate estimate of these figures. From a methodological point of view, it's a concern that the scope / definition of 'cyber security' or 'network resilience' costs is not clearly defined. This will likely lead to very different interpretations among respondents. In addition CAPEX are investments and cannot be considered to be costs. The inputs on this question cannot be considered sufficient reliable or meaningful to draw conclusions from.

12. What are the strengths, weaknesses, opportunities, and threats ("SWOT") for the providers of electronic communications networks that shape their current and future operations?

Please describe Strengths, and explain your answer

1000 character(s) maximum

Strengths:

- Solid margins thanks to decreasing costs and stable ARPU's over the last decade.
- Predictable data growth and CAPEX requirements.
- Strategic position ("gate keeper role") between end-user and CAP's ("termination monopoly") through the last mile.
- Indispensable service for every consumer and business.

Please describe Weaknesses, and explain your answer

1000 character(s) maximum

Weaknesses:

- ECNs are traditionally good in technology deployment but innovation mainly driven by suppliers – this is inherent to most network industries.

Please describe Opportunities, and explain your answer

1000 character(s) maximum

Opportunities

- Continue to capitalize on crucial position in ecosystem to adapt to and support the digital transformation.

Please describe Threats, and explain your answer

1000 character(s) maximum

Threats

- Other types of players have been getting more and deeper involved in parts of the traditional telecommunication value chain, it can be expected that this trend where traditional boundaries get blurred will continue going forward. This can raise threats to some traditional providers, but also opportunities given their strategic position in the ecosystem.

13. How could providers of electronic communications networks best adjust to the on-going and future technological and market changes and be able to better compete globally and attract investors? [We plan to report on the top 5 developments]

Use drag&drop or the up/down buttons to change the order or accept the initial order.

- By delayering / asset reorganisation
- By entering new segments across the internet value chain
- By entering into cooperation/partnerships with actors from other segments of the internet value chain
- By network sharing
- By implementing innovative changes to the networks architecture or function
- No structural change required
- Other

Please specify "Other"

100 character(s) maximum

Please explain your answer

1000 character(s) maximum

The underlying assumption seems to be that telco's are facing a situation fundamentally different from the past, which is far from obvious. In addition, the notion that telco's should "be able to better compete globally and attract investors" both includes an unsubstantiated underlying assumption that European telco's compete (or should compete) on a global scale and that they should 'better attract investors'. We consider ECN providers perfectly capable of determining their own strategies. We therefore don't find it appropriate for us or the European Commission to reflect too much on strategies these private companies should pursue. It's also important to keep in mind that protecting current or future business models of ECN providers should never be a goal in itself. By not defining any problem first there's a significant risk that the Commission will not focus on individual interests of ECNs rather than addressing market failures, to the detriment of European consumers and businesses

14. What would be the barriers to achieve the needed transformations [Use the number scale to select the level for each option]

Legal /administrative

0

Economic

0

Technological

0

Lack of R&D

0

Other

0

Please specify "Other"

100 character(s) maximum

Please explain your answer, in particular specifying how significant the barrier would be in your view

1000 character(s) maximum

This question refers to “the needed transformations” and presumes there are “barriers to achieve these”. We don’t see a priori that there are any “needed transformations” and we consider it preconceived that the question already presumes that there are all kinds of ‘barriers’. By assuming that there are barriers, the question seems to imply there must be some form of market failure. However, without a clear and validated problem definition and problem analysis no conclusions can be drawn regarding any market failure. The consultation should therefore have focused on questions to objectively explore whether there is a problem in the first place, and if so what that problem is, and what its causes are.

15. What would be the expected yearly investment required to achieve the needed transformation of your company over the next five years? (In EUR million, and in % as percentage to the company yearly revenue).

% of yearly investment required relative to company yearly revenue

0

Average yearly investment required in EUR million

Please explain your answer

1000 character(s) maximum

This question is unlikely to lead to any accurate or meaningful answers. Most likely outcome of this question is that we will see relatively high, unreliable and unverifiable figures for the ‘needed transformation’ (which we consider too unconcise).

16. In your view, in which areas will investments be most required to achieve the needed transformation? Please quantify, where possible, the investment in each area [Use the number scale to select the level for each option]

Connectivity infrastructure

0

Edge cloud

0

Cybersecurity

0

Network management

0

Other

0

Please specify "Other"

100 character(s) maximum

Connectivity infrastructure investment required in EUR million

Edge cloud investment required in EUR million

Cybersecurity investment required in EUR million

Network management investment required in EUR million

Other (as specified above) investment required in EUR million

Please explain your answer

1000 character(s) maximum

This question is unlikely to lead to any accurate or meaningful answers. A likely outcome of this question is relatively high, unverifiable figures for the 'needed transformation' (which we consider too unconcise).

In addition the categories are also not clearly defined and leave considerable room for interpretation.

17. What will be the sources of revenues of the electronic communications sector and the ways to monetise the investments in business transformation over the next 10 years?

Please explain your answer

1000 character(s) maximum

This question is unlikely to lead to verifiable or meaningful answers. As pointed out above, we don't expect that the estimated investments for the 'needed transformations' are sufficiently sound to be used for policy decisions. In addition, the questions offer much room for respondents to give an answer which is in their specific interest.

18. Which cooperation models would you expect to see emerging or growing the most in the next 10 years?

Use drag&drop or the up/down buttons to change the order or accept the initial order.

- Network sharing
- Co-investment
- Cooperation with towercos
- Cooperation with vertical industries
- Cooperation with online players
- Cooperation with neutral hosts
- Mergers & acquisitions
- Other

Please specify "Other"

100 character(s) maximum

Please explain your answer, and describe what would be the challenges of these cooperation models?

1000 character(s) maximum

This question asks respondents to reflect on specific forms of co-operation of traditional ECN providers with other market participants. However as there's no clear, verifiable problem definition and problem analysis, we fail to see why it's relevant to explore these types of co-operation.

19. What funding mechanisms do you foresee as being currently able to finance the needed extra investments?

Please explain your answer

1000 character(s) maximum

The answer seems to presume that there are 'needed extra investments', despite the fact that over the last decades providers of electronic communication networks have been able to make the required investments. We consider it crucial that before this type of questions are asked, it is carefully substantiated why at this point in time – as a break with the past - it would no longer be possible for providers of electronic communication networks to fund their investments. In addition, we don't consider this consultation suitable to collect reliable, meaningful quantative data on 'needed investments'.

20. Do you expect vertical industries to contribute significantly to investments in new digital infrastructures (e.g. for automated driving, manufacturing & logistics, health applications)? If so, please describe how this may develop in terms of business /cooperation models. Mention also any obstacles that may exist to the development of such forms of raising financing, and how they could be resolved.

- Yes
- No

Please explain your answer

1000 character(s) maximum

At this stage there's no reason to assume investments in new digital infrastructures cannot be funded by providers of electronic communication networks, CAPs or vertical industries. Any claim that, contrary to the last decades there will be a market failure related to network investment need to be carefully substantiated. We expect that some respondents will claim that net neutrality prevents monetization of investments, as this has been consistently claimed over the last decade but has never been substantiated.

Section 2. Fairness for consumers

Under the current regulatory framework for electronic communications, the universal service rules ensure that the public sector provides a safety net, set at the Union level, to ensure that at least the minimum electronic communications services (broadband internet access and voice communications) are available to all consumers and at an affordable price. Member

States can fund these "**universal service obligations**" using public funds or by setting up a sharing mechanism between providers of electronic communications.

Universal service focuses on the **affordability** to consumers with low income or special social needs. The current rules require Member States to ensure that consumers have access at an affordable price to an available adequate broadband internet access service at a fixed location. Affordability is ensured with support to consumers or with special tariff options or packages. The adequate broadband has been defined in different Member States to correspond to different bandwidths currently up to 30 Mbps for download.

To ensure general coverage, the market has a leading role to play in ensuring the **availability** of broadband. In areas where the market would not deliver, there are Union and national funds available. Universal service is used for the availability of a connection only where neither the market nor public funds have provided a connection and following an end-user request.

According to the 2022 Digital Economy and Society Index ("DESI") report,[9] at least one broadband internet access network is **available** to all households in the EU when considering all major technologies. Coverage of next generation access ("NGA") technologies capable of delivering download speeds of at least 30 Mbps reached 90% in 2021. Fixed very high capacity networks covered 70% of EU homes in 2021. Mobile 4G coverage of populated areas reached 99.8%. Broadband coverage of rural areas remains challenging as 8.5% of households are not covered by any fixed network. The **take-up** of fixed broadband was 78% of EU households in 2021. In 2021, 87% of people used a mobile device to access the internet.

However, some consumers, in particular persons with disabilities, still face barriers to access those networks and technological developments on equal basis with others.
In relation to **affordability**, at EU level, retail prices of fixed and mobile broadband offers became cheaper than previous year among all household baskets in 2021 [10] in each usage /speed category. The price decreases varied between different baskets from around 6.4% to over 13%.

The availability and affordability of broadband to European consumers benefit a wide range of players, including providers of online content, applications and services that also benefit from the opportunities and increased demand.

However, the current economic conjuncture, the rising inflation and cost of energy for the businesses, and some of the technological and market developments indicated in the previous section are likely to lead to upwards pressure on costs for consumers at least in the short term.

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[9] Available at https://digital-strategy.ec.europa.eu/en/policies/desi.

[10] See, the 2022 Digital Economy and Society Index, Connectivity study, “Mobile and Fixed Broadband Prices in Europe 2021”, available at https://digital-strategy.ec.europa.eu/en/library/mobile-and-fixed-broadband-prices-europe-2021.

Questions

21. In your opinion and considering the overall economic context, is the access to broadband at an affordable price for consumers likely to evolve in the next 10 years?

	Price	Likely to increase	Likely to remain the same	Likely to decrease	Do not know
Broadband speed up to 30 Mbps					
Broadband speed between 30 and 100 Mbps					
Broadband speed 1Gbps or above					

Please explain your answer

1000 character(s) maximum

We have seen prices increase moderately over the past 10 years, and as the total costs incurred by telecom operators have declined considerably (next generation networks are more cost efficient to maintain), margins have increased. As until now network costs have remained relatively constant over a long term - despite consistently high data growth - from a cost perspective there's no reason to expect higher prices. In addition, weve seen a consistent trend where subscriptions offer more bandwidth at the same price.

However, the future price development highly depends on the policy choices that will be made at the EU level. An EU policy approach aimed at protecting the private interests of large telco's (less competitive pressure) is likely to lead to significantly higher consumer prices. In other regions we observe that regulatory approaches that are less aimed at promoting competition, such as the US, lead to prices that can be more than twice as high as current EU price levels.

22. In your view, has the universal service regime been an efficient and effective tool in protecting consumers with low income or special social needs? [Only one option can be selected]

- (●) Significantly
- ( ) Moderately
- ( ) Little
- ( ) Not at all
- ( ) Do not know

Please explain your answer

1000 character(s) maximum

Universal service is an important last resort instrument when affordable connectivity services cannot be achieved through instruments that are aimed at promoting well-functioning markets. The EECC provides an adequate regime with good checks and balances for protecting consumers and promoting investment.

23. In your view, has the universal service regime been an efficient and effective tool to ensure equal access for persons with disabilities, including access to assistive equipment? [Only one option can be selected]

- (●) Significantly
- ( ) Moderately
- ( ) Little
- ( ) Not at all
- ( ) Do not know

Please explain your answer

1000 character(s) maximum

Significantly, in combination with innovative terminal equipment and applications.

24. In your view, does the universal service regime answer the future connectivity needs that should be ensured for all consumers? [Only one option can be selected]

- (●) Yes
- ( ) No
- ( ) Do not know

Please explain your answer. In case of a negative reply, please indicate which are are the possible shortcomings of the universal service regime.

1000 character(s) maximum

Yes: The question seems to imply that the universal regime is meant to ensure all of the future needs. However to the extent that the universal service regime can contribute to the wider objective to ensure access to future connectivity the universal service regime is fit for purpose.

25. In your view, what do the expected market and technological developments described in Section 1 mean for the universal service regime? [Only one option can be selected]

- (●) The current universal service regime should be maintained
- ( ) The universal service regime should evolve
- ( ) The universal service regime will not be needed
- ( ) Do not know

Please explain your response. In case of a positive reply, please indicate why the universal service should be maintained or in what ways the universal service regime should evolve? (e. g. its scope, its purpose, the contributors to its financing, the users that benefit from it, etc.)

1000 character(s) maximum

The basic principles of the current universal service regime are fit for purpose and should be maintained. Article 84 ensures that the bandwidth enjoyed by the majority of end users in the Member State - which evolves - is taken into account. The review procedure of article 122 of the EECC may be used to update the minimum set of services the adequate internet broadband access service should be capable of supporting EU wide (Annex V of the EECC).

26. The current source for financing the universal service in electronic communications is public general budget and/or financing from providers of electronic communications networks and services. What should be in your view the appropriate way for financing the universal service in electronic communications in the next 10 years? [Multiple options can be selected]

- [ ] Public general budget (as currently)
- [ ] Providers of electronic communications networks and services (as currently)
- [ ] Widen the range of providers to include online digital players or data generators that benefit from connectivity or only a set of them
- [ ] Other ways of financing

Please explain your answer

1000 character(s) maximum

We see no need for changes in the current financing of universal services.

Regarding Q.27: The questionnaire excludes us from replying to Q27. Although we answered that there is no justification to "widen the range of providers to include online digital players or data generators that benefit from connectivity or only a set of them" we would like to stress that any traffic related levy would be harmful to the European digital transition, as in Europe we want to promote the deployment and use of high capacity networks.

28. Outside universal service, could other means of support to consumers to ensure their affordable access to broadband be envisaged? [Only one option can be selected]

- (•) Yes
- ( ) No
- ( ) No opinion

Please explain your answer; if you reply yes, please explain which other means of support could be envisaged.

1000 character(s) maximum

Yes, from a policy perspective there are many ways to ensure affordable access to broadband. The most important set of instruments is to ensure effective competition. Limiting competition is likely to lead to higher prices and less incentives to invest.

29. Would a dedicated EU-wide fund be useful? [Only one option can be selected]

- ( ) Yes, it would be useful for support to ensure that consumers have affordable access to broadband in general
- ( ) Yes, it would be useful for support to ensure that consumers have affordable access to broadband only in specific crisis circumstances to address acute but temporary difficulties
- ( ) Yes, it would be useful for network deployment, especially in rural areas
- (•) No, it would not be useful

Please explain your answer; If you reply yes, please explain whether a distinction should be made between all consumers and those with low income or special social needs.

1000 character(s) maximum

No, at this stage there's no problem definition and problem analysis that indicates that an additional EU-wide fund is necessary or appropriate.

We consider it premature that such implementation details are asked about an instrument, without there being any problem definition. It's not possible to justify or reflect on such implementation details in any meaningful way if this cannot be related to any underlying problem definition. What is the market failure, and why is this instrument effective, efficient and necessary to address this particular market failure?

This question actually introduces a solution ("dedicated EU-wide fund") and then asks respondents what justification the Commission can use to justify the application of this instrument. This is clearly the wrong order. The consultation should not be about "solutions in search of problems" but about "finding solutions to clearly defined problems".

31. From an affordability perspective, what is your view regarding the retail price cap on intra-EU communications (i.e. EUR 0.19 per minute for calls and EUR 0.06 per SMS message, both excluding VAT) introduced by an amendment to the Open Internet Regulation, and which is set to expire on 14 May 2024?

- ○ No need for retail price regulation in the future
- ○ The current retail price regulation should be extended for some years
- ◉ The current retail price regulation should be maintained and adjusted
- ○ Other

Please explain your answer

1000 character(s) maximum

Section 3. Barriers to the Single Market

Regulatory intervention has so far been quite successful in lifting barriers to market entry in electronic communications fixed networks. The emergence of competition after regulatory intervention made it possible to reduce the number of markets that national regulators need to assess ex-ante from 18 retail and wholesale markets in the 2003 Recommendation to two fixed wholesale markets currently identified in the 2020 Recommendation. Still, some barriers persist in the fixed markets. As regards mobile markets, the ex-ante regulation of termination markets is no longer recommended due to the introduction of single Union-wide termination rates.

Looking at on-going and future developments, such as, Machine to Machine services, internet of things (IoT) deployment, virtualisation of networks, etc., the case for a full integration of the single market for electronic communications appears to be stronger. However, despite the Commission's aim to promote the EU single market, EU electronic communications markets remain essentially national, which prevents certain economies of scale from being achieved.

Roaming policy, an important step in lowering barriers to the EU single market, reflects the existence of separate national markets by allowing "roam like at home" to address periodic travel needs. The Roaming Regulation provides for safeguards to prevent abusive or anomalous use of roaming services abroad at domestic prices (such as permanent roaming); this is because, in the absence of a full integrated telecoms single market, such practices might put at risk the financial sustainability of such calls.

In addition, radio spectrum policy is a key element to boost EU competitiveness and innovation. Without pre-empting the need for a thorough analysis of the radio spectrum market in the EU, the question emerges to what extent the potential development of a more coherent radio spectrum market in the EU as opposed to the current fragmented national radio spectrum management practices (including e.g. concerning satellite communications and vertical use cases), can lead to more favourable investment conditions. Furthermore, in the context of a challenging geopolitical climate, the question arises whether it is necessary to update the existing spectrum governance framework so as to strengthen the EU strategic autonomy and reduce precarious dependencies.

Questions

32. What future developments in terms of technological developments, new applications, network architecture or functioning (or other) could further promote the development of the digital single market?

1000 character(s) maximum

Whereas connectivity, by nature, is usually still offered as a national proposition, just as utility services such as water, electricity and gas, content and services are increasingly offered on a pan-European and even global scale. Although this question asks how the development of the 'digital single market' could be further promoted, in reality the question seems to be about a subset of the 'digital single market', namely the markets for electronic communication services. Before the question can be asked how a single market for ECS can be promoted, it's important to assess whether the current lack of "pan-European" connectivity propositions / telecom operators is hindering the wider digital single market. However, the consultation leaves open why and how these developments are making the case for "full integration of the single market for electronic communications" stronger.

33. In your view, are there obstacles to the full integration of the single market for electronic communications? If so, please explain what, from your point of view those obstacles are (do they relate to the rules governing the general authorisation, the application of the country of origin/country of destination principle with respect to supervisory rules, the bodies in charge of monitoring and enforcement, etc.)? If you consider no obstacles to the full integration of the single market exist, what would be in your view the reasons why providers of ECNs generally do not offer their services EU-wide?

1000 character(s) maximum

It's important to clearly define what's exactly meant by 'full integration'. 'Full integration' can mean a lot of different things, and a more extreme interpretation would be a situation where there would be only room for a handful very large pan-European network operators, offering a uniform service portfolio across all member states. Such a market structure would then more resemble the market situation in the United States. By their very nature, access networks have a local presence. IAlthough it's likely that through cross-border mergers some synergies can be achieved, these will be likely to be confined to very specific activities such as R&D and procurement (and therefore relatively small). We see no major obstacles to cross-border mergers, however synergies seem relatively limited.

34. Are there identifiable/expected cost savings or other efficiencies that could arise from the EU-wide deployment of infrastructure and/or provision of services by providers of ECNs? If so, please describe the type/category of cost savings (e.g. in terms of network management, service provision, regulatory cost savings, administrative burdens, etc.).

[Fill in the table and substantiate your answer as much as possible.]

Type/category of cost savings	Expected cost savings in EUR million for the next 10 years
Network management	
Service provision	
Regulatory	
Administrative burdens	

Provide further responses if necessary

	Type/category of cost savings	Expected cost savings in EUR million for the next 10 years
1		
2		
3		
4		

Please explain your answer and provide a quantification, if possible.

1000 character(s) maximum

As pointed out before, it's widely agreed that the synergies of cross-border mergers of telecom operators is relatively limited compared to in-market consolidation. The reason for this is that most costs are related to the access network. In-market consolidations allow for a more efficient use of the access network (cost synergies) and for reducing competition (price synergies).

We would urge the Commission to interpret the estimates of respondents with caution. This question is unlikely to lead to any accurate or meaningful answers. We cannot rule out that the outcome of this question is that we will see relatively high, unreliable and unverifiable figures for cost savings – despite the commonly accepted insights that cross border synergies are relatively limited.

35. In your view, do obstacles exist to cross-border consolidation of electronic communications providers in the EU? If you consider that obstacles exist, please describe the type/category of obstacles and indicate what steps/actions could be taken to remove these. What opportunities for cost savings could result from cross-border consolidation if those obstacles were removed?

1000 character(s) maximum

We see no major obstacles to cross-border consolidation and technical and commercial integration, but the synergies of this are also relatively limited.

36. In your view, could there be benefits from a (more) integrated radio spectrum market in the EU? If yes, please explain what those benefits would be and, as far as possible, quantify those benefits. What steps/actions could be taken to promote a more integrated radio spectrum market in the EU?

1000 character(s) maximum

The current system of EU harmonization of spectrum followed by authorization by MS strikes to a good balance between need for common European spectrum policy and need to differentiate between MS. The current system of harmonization within the EU ensures that frequency use between MS is aligned, so that same equipment can be used throughout EU to create economies of scale, and interference issues are minimized. Authorization by the MS makes it possible to tailor the award policy to individual MS. Due to differences in eg population density or existing frequency use not all MS will have same need for same spectrum at same time. Further integration of radio spectrum market will result in less flexibility to adapt to specific situation in a MS.
A more central approach will favour large parties to which spectrum licenses have been awarded. This will reduce possibilities for competition in market by smaller players, which is likely to result in higher prices, less innovation and investment

37. In your view and without prejudging any policy direction, what would be the added value, risk and cost of implementing a common EU-level licensing/authorisation scheme for spectrum use in well justified cases (e.g. cross-border reach of infrastructure/service, significant added value of an EU joint authorisation scheme compared to individual Member State authorisations)? Please indicate the areas in which such a scheme would be most useful (e.g. in cases of satellite communications and/or vertical use cases).

1000 character(s) maximum

We are of the opinion that the risks and costs of a common EU-level licensing/authorization scheme are likely to outweigh the benefits. A common EU-level licensing/authorization scheme could in principle make it easier to arrange the spectrum use for applications with an international footprint, such as satellite communications or transport. However, not all EU member states will have the same spectrum need at the same time. It is unclear if a common EU-level licensing/authorization scheme can deal with such differences between member states. For instance, even applications with a strongly international footprint will often not be used in all EU countries. Furthermore, the current system of EU harmonization of spectrum and licensing on the national level can already ensure similar results, as illustrated by the fact that e.g. trains can use the same frequency band throughout the EU.

38. Do you consider the participation of non-EU countries or entities in technical preparatory work for EU decisions on spectrum harmonisation or international negotiation matters on spectrum (such as e.g. within the European Conference of Postal and Telecommunications Administrations (CEPT)) as a potential issue of concern for EU sovereignty, resilience or security? If yes, to what extent is it a concern? Please indicate what institutional structures or mechanisms would be best suited to allow the EU to monitor spectrum policy matters in international organisations, and to undertake the technical preparations concerning the Union's decision-making process including before and during international negotiations concerning spectrum policy matters?

1000 character(s) maximum

The current participation of non-EU countries in technical preparatory work for EU spectrum decisions (such as e.g. in CEPT) is not an issue for EU sovereignty, resilience or security. Current geopolitical developments should not be reason to change way in which we cooperate in area of spectrum use. On the contrary, it's important EU neighbours remain involved in this work, and are committed to the EU harmonization decisions. Involving experts and representatives of the 46 CEPT administrations in spectrum harmonization and related matters remains key. Being part of a larger region strengthens the EU in international negotiations. We note CEPT in the context of the ITU is recognized as the RTO and in this role remains the most important interface for the European administrations to ITU. The current process of preparing a EU Council decision for a WRC is based on advice of the RSPG, the high-level advisory group of the EU member states which takes care of any specific EU interests.

39. In your view, what would be the added value, risk and cost of addressing cases of radio frequency interference in EU Member States from third countries (notably those that may potentially have serious effects on more than one Member State) only at EU level (i.e. whereby the EU acts in unity) instead of at the level of each affected Member State (acting individually)?

1000 character(s) maximum

The added value of addressing radio frequency interference issues from third (non-EU) countries is specifically seen for those cases where the issues concern more than one member state. In such cases, a coordinated approach at EU level could provide added value. In cases where the issues concern only one member state, these issues could in principle be addressed by this member state and an approach at EU-level should be considered only if this does not lead to a solution for the issue, or if the affected member state requests assistance. Following up on question 38, please note that a continued focus to align EU and -among others- CEPT harmonization interests contributes to better cross-border coordination amongst EU Member States and countries outside the EU with less probability of unwanted interference.

Section 4. Fair contribution by all digital players

The amount of data exchanged – and harvested – is larger than ever and will increase, as the global consumer internet traffic has grown with 34.4 % CAGR since 2015.[11] The metaverses and virtual worlds, the rapid move towards cloud, the use of innovative technologies online are making this even more evident. However, there also seems to be a paradox between increasing volumes of data on the infrastructures and alleged decreasing returns and appetite to invest in network infrastructure. Some electronic communications operators, notably the incumbents, call for the need to establish rules to oblige those content and application providers (“CAPs”) or digital players in general who generate enormous volumes of traffic to contribute to the electronic communications network deployment costs. In their view, such contribution would be “fair” as those CAPs and digital players would take advantage of the high-quality networks but would not bear the cost of their roll-out.

Conversely, CAPs and other digital players argue that any payments for accessing networks to deliver content or for the amount of traffic transmitted would not only be unjustified, as the traffic is requested by end-users and costs are not necessarily traffic sensitive (notably in fixed networks), but would also endanger the way the internet works and likely breach net neutrality rules.

Other stakeholders caution against rushed regulatory intervention. Some stakeholders argue that an accurate management of data traffic could have a positive impact on the environmental footprint of data traffic. This discussion has to be seen also in light of the European Declaration on Digital Rights and Principles,[12] which includes a statement according to which all market actors benefiting from the digital transformation should 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. In the

European Declaration on Digital Rights and Principles, emphasis is also put on the protection of a neutral and open internet where content, services, and applications are not unjustifiably blocked or degraded, which is already enshrined in the Open Internet Access Regulation.

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[11] GSMA: The Internet Value Chain 2022 – May 2022.

[12] Chapter II, 2(c) of the European Declaration on Digital Rights and Principles for the Digital Decade, available online at: https://ec.europa.eu/newsroom/dae/redirection/document/92399.

Questions

40. Quantify (in EUR million), as in the format below, your direct investments in network infrastructure and/or other digital infrastructure capable of optimizing network traffic within or relevant for the EU Member States for every year between 2017 and 2021. Please provide separate figures for each infrastructure category, both in absolute terms and as percentage of the revenues generated within the EU each year (here "network infrastructure" is to be understood in broad terms, e.g. at several different network layers, core, distribution and access network, including even undersea cables; "other digital infrastructure" is also to be interpreted broadly, e.g. hosting, data transport, data centres, CDNs, etc.)

Please provide estimates for every year between 2017 and 2021.

	Specify other network /digital infrastructure you provide data for	2017	2018	2019	2020	2021
Core network						
Distribution network						
Access network						
Undersea cables						
Other network infrastructure (please specify)						
Other network infrastructure (please specify)						
Other network infrastructure (please specify)						

Hosting infrastructure						
Content delivery networks						
Data centres						
Data transport						
Other digital infrastructure (please specify)						
Other digital infrastructure (please specify)						
Other digital infrastructure (please specify)						

Total direct investment in network infrastructure and/or other digital infrastructure made in 2021 capable of optimizing network traffic in EUR million within or relevant for the EU Member States.

million EUR

In 2021, as a percentage to the revenues generated within EU Member States:

- 0-5%
- 6-10%
- 11-15%
- 16-20%
- Over 20%

Please explain your answer

1000 character(s) maximum

This question seeks to retrieve reliable, complete and accurate data on network investment by European actors. It would be highly advisable to collect this information through regulatory authorities as they not only have considerable experience with reliable methodologies, but also have the legal competence to require data, including the possibility to enforce. If this is not feasible, the Commission could revert to publicly available data, which is likely to be more reliable and allows for using multiple sources. We see no possibility for the Commission to validate the input from individual respondents. Respondents are likely to make different interpretations as there are no definitions provided. It's not clear how the Commission will ensure completeness, in the sense that all parties will submit their investment data, including alternative operators. Many investments are done by other entities such as public bodies, joint ventures or financial institutions such as pension funds.

41. What are your total planned future investments in network infrastructure and/or other digital infrastructure capable of optimizing network traffic from today until 2030 within or relevant for the EU Member States? Please specify both in absolute terms (in EUR million) as well as percentage increase compared to previous years.

Please provide estimates for every year between 2022 and 2030.

	Specify other network /digital infrastructure you provide data for	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core network										
Distribution network										
Access network										
Undersea cables										
Other network infrastructure (please specify)										
Other										

network infrastructure (please specify)										
Other network infrastructure (please specify)										
Hosting infrastructure										
Content delivery networks										
Data centres										
Data transport										
Other digital infrastructure (please specify)										
Other digital infrastructure (please specify)										

Other digital infrastructure (please specify)										

Total direct investment in network infrastructure in million EUR within or relevant for the EU Member States in 2022

EUR million

Planned future total direct investment in network infrastructure in million EUR within or relevant for the EU Member States in 2023

million EUR

In 2023, as a percentage to the revenues generated within EU Member States:

- 0-5%
- 6-10%
- 11-15%
- 16-20%
- Over 20%

Please explain your answer, and upload proof of data justifying it (e.g. official presentations to financial investors, board of directors, etc.)

1000 character(s) maximum

See our previous answer: This question is unlikely to lead to reliable, complete and accurate data on network investment by European actors. There's no possibility to validate the input from individual respondents. It would be highly advisable to collect this information through regulatory authorities.

In addition the reported input to this question will not show whether the traffic distribution is done in an optimal way by the network making the investment. Some telecom operators have caches of streaming services and CDNs deep in their network. Others chose to route everything centrally and spend significantly more as a result on backbone capacity. What is most optimal is in practice decided by network engineers and finance departments.

42. Indicate how much the share of network investments that you indicated in response to Q40 has exceeded the investments you planned, including when they depended on regulatory obligations (e.g. radio spectrum), over the last 5 years.

For fixed network investment costs:

- 0 - 20%
- 21 - 40%
- 41 – 60%
-

61 - 80%

Over 80%

For mobile network investment costs:

0 - 20%

21 - 40%

41 – 60%

61 - 80%

Over 80%

Please explain your answer, providing a separate assessment for fixed and mobile networks

1000 character(s) maximum

From a methodological point of view, spectrum fees cannot be mixed with network investment. The prices bidders are willing to pay in spectrum auctions are based on the expected future returns. From a methodological point of view spectrum fees should therefore be isolated from the network investments.

This question to what extent network investments have exceeded expectations can be very easily answered. As pointed out above, network CAPEX by telco's has been surprisingly stable over the last >10 years. The fluctuations between predicted CAPEX and realized CAPEX are therefore generally relatively low, in particular for the ETNO members.

43. Quantify the increase of traffic transmitted (inbound/outbound) through your networks over the last five years on a year-on-year basis. Please indicate the main sources of data and the share of traffic using CDNs. Please reply to this question by indicating the 10 largest contributors by name and provide the % of total traffic they generated in your network.

1st largest contributor:

100 character(s) maximum

Share of 1st largest contributor:

Only values between 1 and 100 are allowed

%

2nd largest contributor:

100 character(s) maximum

Share of 2nd largest contributor:

Only values between 1 and 100 are allowed

%

3rd largest contributor:

100 character(s) maximum

Share of 3rd largest contributor:

Only values between 1 and 100 are allowed

%

4th largest contributor:

100 character(s) maximum

Share of 4th largest contributor:

Only values between 1 and 100 are allowed

%

5th largest contributor:

100 character(s) maximum

Share of 5th largest contributor:

Only values between 1 and 100 are allowed

%

6th largest contributor:

100 character(s) maximum

Share of 6th largest contributor:

Only values between 1 and 100 are allowed

%

7th largest contributor:

100 character(s) maximum

Share of 7th largest contributor:

Only values between 1 and 100 are allowed

%

8th largest contributor:

100 character(s) maximum

Share of 8th largest contributor:

Only values between 1 and 100 are allowed

%

9th largest contributor:

100 character(s) maximum

Share of 9th largest contributor:

Only values between 1 and 100 are allowed

%

10th largest contributor:

100 character(s) maximum

Share of 10th largest contributor:

Only values between 1 and 100 are allowed

%

Please explain your answer

1000 character(s) maximum

The requested traffic data will not give a meaningful insight in any incremental costs that can be associated with the reported volumes. Total amount of traffic is not relevant from a network cost point of view. Peak traffic, not 'total traffic' is driving network costs . Apart from this, it's important to distinguish between types of traffic, as the costs of traffic highly depend on the specific characteristics. Streaming traffic that can be buffered (not time critical) is very cost-efficient (highly adaptive in case of congestion). More costly from a network perspective is traffic that is time critical, such as a real time stream of a sports event or a video call. Also more costly is relatively peaky and unpredictable traffic. Even if this burst-like traffic has a relatively low average bit rate, the sudden peaks imply the network needs to be dimensioned relatively large. And of course costs of fixed and mobile traffic differ significantly.

44. New compression algorithms can (partly) compensate for the increase in data traffic demanded by the upgrades and the advancements in the relevant products and technologies. Over the last 5 years, what are the changes in your volume of data transmitted over your part of the "network layers" resulting from the evolution of compression algorithms?

- No significant change
- Decreased up to 5%
- Decreased by 6-10%
- Decreased by 11 – 15%
- Decreased by over 15%

Please explain your answer

1000 character(s) maximum

This question is unlikely to lead to reliable, complete and accurate data on network investment by European actors. There's no possibility to validate the input from individual respondents. See also the concerns we raised regarding the previous questions in this section.

45. In your view, what is the future outlook in terms of annual peak time traffic growth until 2030?

- No change
- Compound Annual Growth Rate (CAGR) up to 10 %
- CAGR 11-20 %
- CAGR 21-30 %
- CAGR 31-40 %
- Over 40% CAGR

Please explain your answer

1000 character(s) maximum

This question is unlikely to lead to accurate or meaningful insights. Traffic growth has been relatively consistent over many years, in case respondents assume that this consistent growth trend will be broken this needs to be extensively substantiated. It would have been logical if the questionnaire also had asked from respondents to report their historic growth, this would have allowed for a comparison between past growth and projected growth for individual stakeholders.

46. Please specify the fees paid to providers of ECNs within EU Member States cumulatively for the last 5 years and provide an outlook for the next 5 years.

	2017 (actual)	2018 (actual)	2019 (actual)	2020 (actual)	2021 (actual)	2022 (actual)	2023 (planned)	2024 (planned)	2025 (planned)	2026 (planned)	2027 (planned)
Transit fees (Euros)											
Transit fees as % of total revenues in EU MS											
Paid peering fees (Euros)											
Paid peering fees as % of total revenues in EU MS											

Please explain your answer, and if possible indicate the data source

1000 character(s) maximum

The Commission should be aware that it will be difficult to ensure this auto reported data is complete and reliable.

In addition it’s evident how this data needs to be interpreted. Transit is the cost of carrying traffic over one network to all other networks and as a result is only there to cover the costs of the intermediairies. Paid peering can in practice be the result of exercising market power by the terminating peer. On the other hand paid peering can sometimes be presented as a transit fee.

47. Indicate your share of traffic (sent or received) through transit and peering for the last 5 years and provide an outlook for the next 5 years.

	2017 (actual)	2018 (actual)	2019 (actual)	2020 (actual)	2021 (actual)	2022 (actual)	2023 (planned)	2024 (planned)	2025 (planned)	2026 (planned)	2027 (planned)
% of transit within inbound traffic											
% of free peering within inbound traffic											
% of paid peering within inbound traffic											
% of transit within outbound traffic											
% of free peering											

within outbound traffic											
% of paid peering within outbound traffic											

Please explain your answer

1000 character(s) maximum

The Commission should be aware that it will be difficult to ensure this auto reported data is complete and reliable.

As to our knowledge almost all of the of peering relations are on a handshake basis and the direction of traffic being irrelevant to the cost of networks, it’s not evident to us how this question can lead to meaningful insights.

48. Indicate your charging methods and the general pricing trend(s) on the IP market (increases/decreases/stable), particularly the proportion of paid peered traffic for the previous 5 years and provide outlook for the following 5 years.

Transit price change:

	2017 (actual)	2018 (actual)	2019 (actual)	2020 (actual)	2021 (actual)	2022 (actual)	2023 (planned)	2024 (planned)	2025 (planned)	2026 (planned)	2027 (planned)
Decrease by more than 10 %											
Decrease by 1 - 10 %											
No change											
Increase by 1 - 10 %											
Increase by more than 10 %											

Paid peering price change:

	2017 (actual)	2018 (actual)	2019 (actual)	2020 (actual)	2021 (actual)	2022 (actual)	2023 (planned)	2024 (planned)	2025 (planned)	2026 (planned)	2027 (planned)
Decrease by more than 10 %											
Decrease 1 - 10 %											
No change											
Increase by 1 - 10 %											
Increase by more than 10 %											

Please explain your answer

1000 character(s) maximum

The Commission should be aware that it will be difficult to ensure this auto reported data is complete and reliable.

49. Specify the threshold above which you would consider a company to constitute a so-called large traffic generator ("LTG") based on the percentage level of traffic loaded on your network during peak time traffic (or any other classification that you may use). You should refer to this categorization method in all questions referring to LTGs.

Please explain your answer

1000 character(s) maximum

See before, the term LTG is not a neutral term as traffic is generated by end-users. In addition, there are numerous different traffic characteristics that determine the incremental costs as pointed out before (fixed vs mobile, streaming vs. burst, realtime vs not time-crtical, etcetera)

50. In your view, over the last 5 years how have LTGs' investments in digital infrastructure and other innovations (e.g. evolution of compression algorithms) impacted the costs of network deployment investments of the network operators related to the increase of data traffic?

- They increased by 20% or more
- They increased up to 20%
- They did not change
- They decreased by up to 20%
- They decreased by 20% or more

Please explain your answer

1000 character(s) maximum

Instead of asking this from respondents with a) limited visibility on the relationship between network costs and investment by third parties and b) specific interests that might influence the answers this information can be best gathered from independent sources / experts.

From a methodological point it's a concern that every respondent will hold a different definition of LTG's, which will in itself lead to unreliable answers.

51. What is today the share of your network investment incremental costs caused by the increases of data traffic coming from LTGs, you defined in Q49? What was this share 10 years ago and how is it expected to evolve in the next 10 years? Please provide a separate assessment for fixed and mobile networks.

For fixed network investment costs:

	In 2012	In 2022	In 2032
0 - 20%			
21 - 40%			
41 – 60%			
61 - 80%			
81 - 100%			

For mobile network investment costs:

	In 2012	In 2022	In 2032
0 - 20%			
21 - 40%			
41 – 60%			
61 - 80%			
81 - 100%			

Please explain your answer, providing a separate assessment for fixed and mobile networks

1000 character(s) maximum

Estimating incremental costs is a highly complex, time-consuming and specialized activity as this information cannot be simply derived from cost accounting data. Usually this is done by regulators. A much more reliable way to get these answers on cost-volume relationships is to study existing literature and consult regulators and independent researchers. In addition it can be helpful to study the information that telecom operators share with investors, which is generally more reliable. The short run incremental costs are insignificant for fixed networks and relatively limited for mobile networks On the longer run, both fixed and mobile network costs tend to be more or less constant over time despite data growth.

52. Are there any obstacles preventing providers of ECNs from charging digital players for increased data traffic through their networks? [Only one option can be selected]

- No
- Yes
- I do not know

Please explain your answer. In particular, if you reply is yes, please explain the reasons (e.g. legal, regulatory, other)

1000 character(s) maximum

No. We find this question preconceived. There is no need for providers of ECNs to charge for increased traffic to 'digital players' as 1) increased data traffic has so far never led to significantly increased costs (why would providers of ECN's charge for increased data if this data does not lead to additional costs?) and 2) end-users already pay for the traffic they use through their subscription.

We see no economic or legal basis for providers of ECN's to charge for these costs, but we would not define the lack of a justification as an 'obstacle'.

53. What could be the effect on the environmental footprint of the services provided over electronic communications networks of a potential mechanism whereby the largest generators of traffic would contribute to network deployment, and/or would be subject to obligations regarding data delivery mode?

Please explain your answer

1000 character(s) maximum

From an economic perspective it would be misguided to apply a levy on data usage in order to decrease the footprint. To provide the right pricing signals / incentives to increase data efficiency, energy prices should reflect the external costs. Any argumentation to put a levy on data usage (rather than on energy consumption itself) seems quite very far-fetched and not supported by sound arguments.

54. The European Declaration on Digital Rights and Principles states that all digital players benefiting from the digital transformation should contribute in a fair and proportionate manner to the costs of public goods, services and infrastructures to the benefit of all people living in the EU. Some stakeholders have suggested a mandatory mechanism of direct payments from CAPs/LTGs to contribute to finance network deployment. Do you support such suggestion and if so why? If no, why not? [Only one option can be selected]

- (●) No
- ( ) Yes
- ( ) I do not know

Please explain your answer

1000 character(s) maximum

No. The statement in the European Declaration on Digital Rights and Principles puts investments in infrastructure on the same footing as investments in services (content and applications). This statement therefore favors in no way network investments over investments in content or applications. Both types of investments are highly important in the light of the digital transformation. This statement justifies or endorses in no way a transfer from players that mainly invest in content and applications to players that do invest in infrastructure.

See for the Oxera report commissioned by our Ministry re the negative impact of direct payments: https://www.government.nl/ministries/ministry-of-economic-affairs-and-climate-policy/documents/reports/2023/02/27/proposals-for-a-levy-on-online-content-application-providers-to-fund-network-operators.

We don't understand why respondents critical on this controversial policy direction have been excluded from answering Q55-Q57.

58. Do you see any possible risks of a contribution to finance network deployment in the form of direct payments and if so, which? Please substantiate your answer, including with data.

Use drag&drop or the up/down buttons to change the order or accept the initial order.

- ⠿ Negative effects on the incentives for innovation
- ⠿ Sustainability within the internet ecosystem
- ⠿ Negative consequences for consumers
- ⠿ Negative consequences on medium/small traffic generators
- ⠿ Negative consequences on the competition between large and small providers of ECNs

Other

I do not know

Please specify “Other”

100 character(s) maximum

Please explain your answer

1000 character(s) maximum

However, based on objective economic analysis it’s clear that there’s a considerable negative impact to be expected on European end-users, both businesses and consumers (although negative impact on European businesses is again not highlighted as a possible option to choose from). We refer to the Oxera report for the full assessment of the positive and negative impacts.
We note that this question regarding the negative impacts of a network fee explicitly asks to substantiate the response with data, whereas the previous questions - on the positive impacts - did not require such. This could come across as a bias in the consultation.
We also don’t understand why negative impact on larger CAP’s is not included as one of the options to choose from. It seems to us it’s important to get a full picture of the impact in order to be able to make informed decisions.

59. What mitigating measures could be put in place to avoid the risks indicated in Q58? [Multiple answers are possible]

- [ ] Excluding medium/small traffic generators
- [ ] Mandatory ratio into green (lower energy consumption) investment
- [ ] Other
- [ ] I do not know

Please explain your answer

1000 character(s) maximum

There are no mitigating measures possible as any manifestation of a network fee will harm end-users, innovation and investment in the broader ecosystem. We refer to the Oxera report.

60. The European Declaration on Digital Rights and Principles states that all digital players benefiting from the digital transformation should contribute in a fair and proportionate manner to the costs of public goods, services and infrastructures to the benefit of all people living in the EU. To achieve this, some stakeholders have suggested to introduce a mechanism consisting of a EU/national digital contribution or fund. Do you support such suggestion and if so why? If not, why not? [Only one option can be selected]

No

Yes

I do not know

Please explain your answer

1000 character(s) maximum

No. First of all, the statement from the Declaration puts infrastructure costs at equal footing as costs of services (content and applications), see above. A priori, we don't consider it appropriate to use this statement to suggest that providers of content and applications should contribute to infrastructure cost, as we also don't find it appropriate that telecom providers would need to contribute to the costs of content and application providers.

We would have welcomed it if this consultation would have focused instead on exploring potential problems and appropriate instruments to address these, rather than using the consultation to reflect on interpretations of certain stakeholders regarding the Declaration.

We note that Q62 is asking proponents for reasons to justify a preconceived solution ("a solution in search of a problem"). Such an approach is incompatible with basic principles of good policy procedures and in contradiction to the better regulation principles.

You may upload a written contribution that you think is relevant to better explain your views (max. 10 pages). Please, mark those contribution as "Confidential", which you do not wish to be published.

Please upload your file.

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/NL_Paper_accompanying_exploratory_consultation_FINAL_VERSION.pdf

Confidentiality

* The Commission will publish all contributions to this exploratory consultation. Your contribution will be published as submitted. If you consider that your replies to certain questions of the questionnaire are confidential, please mark those questions as confidential here. Responses to questions marked as confidential will not be published.

Question 1

Question 2

Question 3

Question 4

Question 5

Question 6

Question 7

- Question 8
- Question 9
- Question 10
- Question 11
- Question 12
- Question 13
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- Question 15
- Question 16
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- [ ] Question 56
- [ ] Question 57
- [ ] Question 58
- [ ] Question 59
- [ ] Question 60
- [ ] Question 61
- [ ] Question 62
- [x] None

Background Documents

Protection of your personal data

Contact

Contact Form

NL Position paper accompanying the consultation response "The future of the electronic communications sector and its infrastructure"

Summary

- The Netherlands welcomes the effort of the Commission to collect opinions on the electronic communications sector and its infrastructure through this consultation.
- Before a meaningful policy debate can take place, it's important to first clearly establish that there's an actual market failure and carefully analyze the causes and potential solutions.
- From a factual perspective there's not an investment gap between the EU as such and other regions in the world. Rather there are performance gaps between member states that require a customized approach instead of a 'one-size-fits-all' approach.
- The claims that the financial situation of large European telecom operators is increasingly under pressure - and that therefore the digital decade goals cannot be met - are not supported by facts.
- The consultation is well suited for opinions, but to obtain reliable, meaningful and verifiable data on past and future costs and investments, these opinions need to be complemented by factual data from independent sources.
- The consultation has a strong focus on "challenges, investments and costs" faced by traditional telecommunication operators. This disbalance could lead to biased outcomes towards this specific stakeholder group.
- Protecting large telecom operators should not be a goal in itself, as the interests of European consumers and businesses should be leading.
- By creating ever larger, pan-European telecommunication champions, and shielding these off from innovation and competitive challenge from other players, the European digital transition process is likely to be impeded, leading to considerable harm to European end-users.
- The current system of EU harmonization of spectrum leads to a good balance between harmonization and flexibility.
- The current co-operation with non-EU countries and NGO's in standardization procedures is important to maintain.
- There is no justification for direct payments (also referred to as 'fair contribution' or 'network fee') from video streaming companies and other online service providers to telecom operators.
    - Such direct payments are unjustified as end-users already pay for their access line including network traffic costs.
    - This suggested intervention will also deeply affect the functioning of the internet as a complex, vital ecosystem. As such it can have a profound, negative impact on European consumers and businesses and Europe's competitive position vis à vis other regions.
- Although the Netherlands has considerable concerns regarding the explored policy directions in this consultation, it fully endorses the underlying ambitions.
- The Netherlands looks forward to contributing constructively and working with the Commission to build on the important achievements driven by the Commission, in particular the Digital Decade policy programme.

Introduction

We welcome the effort of the Commission to collect opinions on the electronic communications sector and its infrastructure through this consultation. We would like to stress that it's very important to also collect factual information from independent sources to facilitate an evidence-based approach. We underline the importance of a robust and evidence based trajectory, including a public consultation and broad impact assessment, before publishing any proposal.

The Commission has in the past years worked on very important initiatives, including the Digital Decade policy programme. The Netherlands highly appreciates the role of the Commission as a driving force behind the ambitious connectivity goals for Europe, guiding Europe's digital transformation. In the context of this consultation, the 'Gigabit for everyone' target is particularly relevant.

We would strongly support that any future European policy regarding electronic communications will be guided by the following principles:

- Apply an evidence based approach, with a clear problem definition and a careful analysis and neutral impact assessment to pick instruments that are fit and proportionate in relation to any defined problem.
- Keep competition as the corner stone of European telecommunications policy, and keep addressing significant market power of large telco's and other large relevant market players.
- Avoid a one size fits all approach to connectivity: Make available multiple instruments to allow for a tailored approach that can vary across member states. This reflects the fact that member states are in different stages of digital development, and face different bottlenecks with different underlying causes.
- Continue and if necessary expand public funding for network roll-out in unserved or underserved areas, based on open access models.
- Tackle administrative bottlenecks that unnecessarily complicate network roll-out.
- Where appropriate member states should consider to include minimum coverage and Quality of Service obligations in spectrum allocations.

While electronic communication providers play a very important part in the ecosystem, it's important to avoid that protecting the current or projected business models of large electronic communication providers becomes a goal in itself for policy makers.

Before exploring specific instruments we need a solid problem analysis

Before there can be a meaningful discussion on new policy instruments to apply to the electronic communication sector it's necessary to have a clear, objective and fact-based analysis on problems ('market failure') that need to be addressed. The exploratory consultation focuses however mainly on specific policy instruments and on alleged challenges for traditional telecom operators, without making clear whether there's any market failure to justify the new policy instruments. Various stakeholders have expressed their concern with this approach and its conformity with the better regulation guidelines. We should avoid having solutions in search of problems.

The better regulation guidelines also stress the importance of a transparent procedure. Against this backdrop we note that the consultation seems to be based on a multitude of implicit assumptions, which are not transparent to respondents. This is an important area of attention, as this impairs the ability of respondents to provide meaningful input on proposed policy instruments. The appropriateness of policy instruments can only be considered in the context of the problem they're supposed to address.

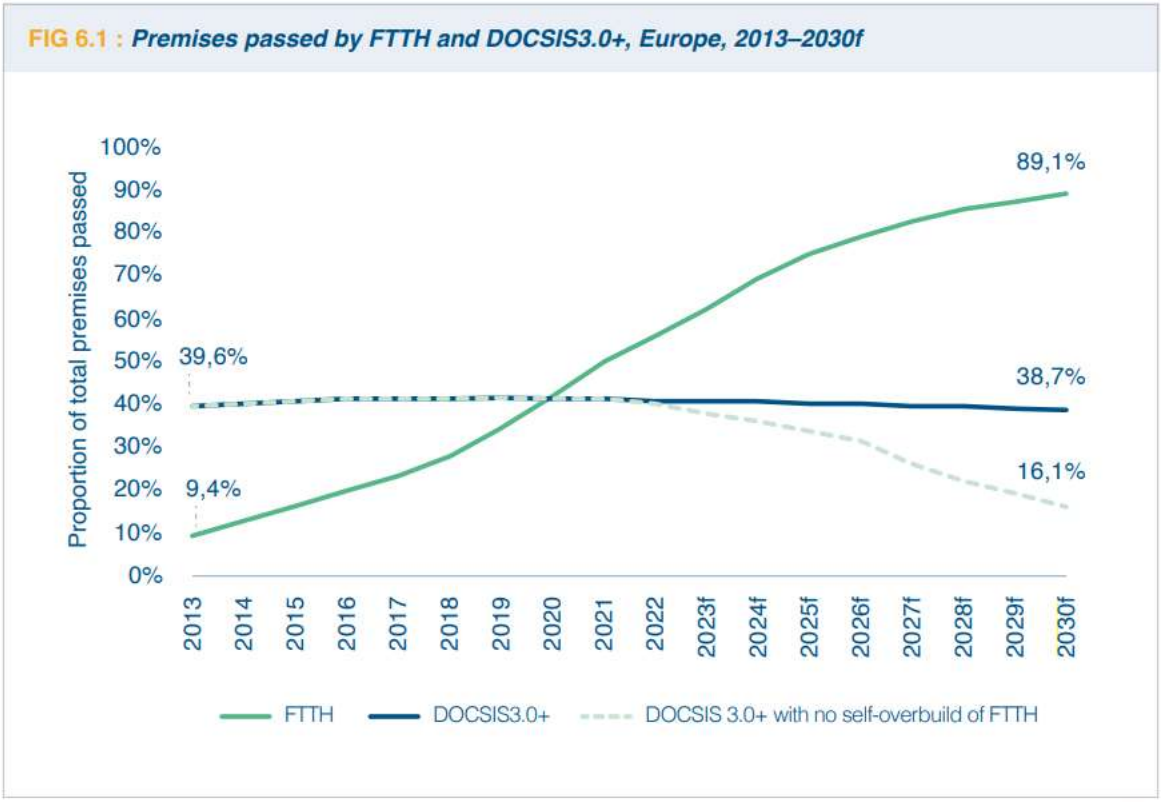
As a result of this, although the exploratory consultation contains many interesting perspectives, it cannot be used as a basis to inform any concrete policies in the area of electronic communication It's particularly important in this policy area to obtain facts and evidence from independent sources, in addition to opinions. In addition, the policy directions explored in the consultation - such as creating very large pan-European telecom champions, European co-ordination of spectrum policy and the introduction of a 'fair contribution' (also referred to as 'negotiation framework') - strongly echo previous European policy debates on spectrum, cross-border consolidation and net neutrality. The Netherlands has been one of the first countries to adopt net neutrality regulation to safeguard the open internet (2012), and has been a strong advocate for the European open internet regulation (2015).

There's a risk these old, familiar policy debates will be repeated all over again, which could be at the expense of a constructive debate on how we can ensure that all European member states will achieve the connectivity targets from the Digital Decade policy programme. This means we need to

first carefully take stock of any gaps in the various member states and consequently assess what tailored approach is best fit to address these gaps.

There are performance gaps between member states that require a customized approach

One of the implicit assumptions behind the consultation seems to be that there's an investment gap between the EU and other regions in the world. However, in our opinion there's not an investment gap between the EU and the rest of the world, as many member states take prominent positions in global rankings. Rather there are gaps within the EU between high performing and less high performing member states, and this needs serious attention. Any claim that Europe as a whole lags behind other leading regions (and that we need far-reaching, undifferentiated measures to fix this) is distracting from the real, more complicated story about gaps between member states which do need our attention. In order to achieve the ambitious connectivity targets from the digital decade programme we need to acknowledge that every member state needs a targeted approach. And although there are gaps within the EU that need to be closed, the EU is not standing still. The EU is for example already well underway to meet the target that every household should have access to Gigbit connections by 2030. According to ETNO, even without any additional interventions, almost 90 percent of households will have at least a fixed connection of 1 Gigabit at their disposal in 2030.[1] The remaining 10 percent is not the result of the alleged inability of European telecom operators to invest, but more likely reflects the fact that some households are commercially less interesting to connect.



Source: Analysys Mason, 2022

The one-size-fits all approaches explored in the consultation such as direct payments from video streaming companies to telecom operators cannot be regarded as appropriate to address a range of potential market failures (to be investigated) at member states level. Rather than focusing on specific instruments we need to ensure the availability of a set of different instruments ('a tool box'), so that for each less performing member state a tailored approach can be applied. First of all

[1] ETNO, THE STATE OF DIGITAL COMMUNICATIONS 2023, January 2023, page 58.

it's important to assess whether the existing instruments are sufficient. Underinvestment will typically be caused by a combination of different factors. In some member states it could be that the incumbent operators are not sufficiently challenged to replace their legacy infrastructure, whilst in other member states the spectrum requirements might lack coverage obligations, and in yet other member states there can be geographical or demographical bottlenecks (e.g. rural areas) that need to be addressed. It would be an unfortunate oversimplification that there would be some one-size-fits-all solutions to get less performing member states at par with the best performing member states. Such inappropriate solutions would be detrimental to digital development across member states, and affect higher and lower performing member states alike.

The claims that the financial situation of large European telecom operators is increasingly under pressure are not supported by facts.

If we interpret the explanations in the exploratory consultation correctly, an immediate cause of the consultation can be found in various claims regarding the allegedly weak financial situation of large telecom operators and how this affects network investments. A central claim seems to be that there's an investment gap in Europe compared to other regions in the world, notably the US. It has been suggested that this is the result of thei weak financial situation of large telecom operators compared to their peers in other regions. Allegedly the financial situation of large telecom operators would have deteriorated over the last years due to the fact they've not been able to raise their end-user prices, despite the considerable data growth as a result of the popularity of streaming services. As we will show these claims are not supported by facts and should be dismissed:

- In reality, contrary to all these persistent claims, the strong growth of Internet data in the past did not confront large telecom operators with higher network costs. This is because network equipment becomes ever more powerful at the same price. By omitting this crucial insight, a problem is suggested that does not exist: networks cost have not at all grown out of control as a result of the impressive, continuous data growth. See also the graph below from a report by AnalysysMason, which conclusion is in line with the information that telecom operators share with their investor communities.

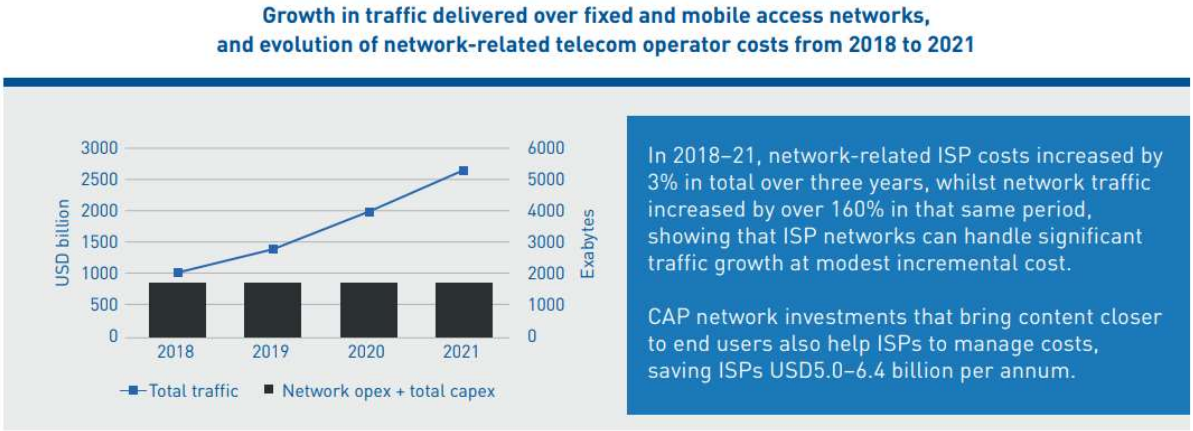


Figure 1: Network costs remain constant despite high data growth. Source: AnalysysMason "THE IMPACT OF TECH COMPANIES' NETWORK INVESTMENT", October 2022. https://www.analysysmason.com/contentassets/b891ca583e084468baa0b829ced38799/main-report---infra-investment-2022.pdf

- The persistent but inaccurate narrative also leaves aside the fact that the other costs, not related to traffic, have developed particularly beneficial to telecom operators. This is among others due to network modernization (next generation networks are more cost efficient and generally require less staff) and historically low costs of capital. Bottom line, telecom operators saw their margins improve considerably. Notably, this is also confirmed by recent research commissioned by the large telecom operators. It shows that the margins of large European telecom operators have increased very substantially since 2015. Even more notable, the margins in Europe turn out to be the highest compared to their peers in other

countries such as the US, Japan, South-Korea and China. Based on the figures they publicly report, the gloomy image pictured is very hard to maintain.[2]

- In addition, the suggestion that Europe is lagging behind other regions in terms of investment is incorrect as well. If we for example look at the US, end-users pay more than twice (!) as much for their fixed and mobile subscriptions than the average European end-user. However, if we look at Europe as a whole, according to ETNO's report it e.g. outperforms the US in terms of FttH coverage (55.6 % in Europe versus 43.9% in the US). If we would zoom in on individual member states, we would see that various member states are among the top performing countries worldwide. In terms of mobile speeds, EU member states also rank amongst the highest in the world, although we see a large variability among different member states.

Figure 2: margins of European telecom operators have improved significantly since 2015. These margins are higher than other regions with advanced networks (US, Japan, China, South Korea). Source: ETNO, THE STATE OF DIGITAL COMMUNICATIONS 2023, January 2023, page 32.

The consultation has a strong focus on "challenges, investments and costs" faced by traditional telecommunication operators which could lead to biased outcomes

We observe that many of the consultation questions ask for the "challenges, investments and costs" faced by traditional telecommunication operators. This leads to a disbalance in the consultation questions. We consider it not unlikely that this disbalance will lead to consultation outcomes that overstate the 'problems' faced by large telecom operators. This risk of biased outcomes could be amplified by methodological challenges in the consultation. We therefore urge the Commission to correct for such unintentional bias in the analysis of the inputs, in order to ensure the situation of the large telecom operators is not presented in an unrealistically dire way. If

[2] ETNO, THE STATE OF DIGITAL COMMUNICATIONS 2023, January 2023, page 32: "In fact, ETNO members had the highest average EBITDA margins of all groups included in this report in 2021 (35.3%); they were fractionally higher than those of US operators (33.1%), higher than those of Chinese operators (28.7%) and substantially higher than those of Japanese and South Korean operators (26.7% and 20.8%, respectively)."

this bias is left unchecked, it can lead to wrong policy choices that are based on perceptions rather than facts.

The consultation is well suited for opinions, but less suited to obtain reliable, meaningful and verifiable data on past and future costs and investments

The consultation is very well suited to collect opinions from various stakeholders, in particular traditional telecom operators. However, we consider the consultation less suited to collect meaningful, reliable and verifiable data on past and future costs and investments. Such data should in our opinion not be primarily obtained by auto-reporting stakeholders (such as either video streaming services and other online service providers or telecom operators), but mainly through sources from independent experts or by regulators. In addition, there are various methodological concerns regarding the questions on past and future costs and investments, as specified in our submission. As a result, the quantitative answers should be interpreted with great caution and need to be checked against data from impartial sources.

It's also important to acknowledge that there are limitations to making accurate predictions for both market players and policy makers. In the context of policy making processes, it could be more sensible to think in terms of scenario's, rather than to gamble on specific bold outcomes based on relatively 'bullish' expectations regarding e.g. "the metaverse". In addition, as policy makers we cannot ignore the fact that over the past 20 years we've seen very consistent patterns despite the disruptive development of the internet economy. These consistent patterns are likely to continue in the coming years, although the consultation seems to implicitly assume a strong rupture. For example, data growth has been consistently high whilst telecom operators have managed to keep costs of data in check. Annual investment of telecom operators is another parameter that has been remarkably constant over the years. These historical data are in many respects more reliable and verifiable than data on projected investment figures provided by respondents. It's important that we don't let ourselves be carried away too much by unfounded, unverifiable hype-based claims about unchecked data growth, exploding network costs or investments for 'needed transitions'. To avoid a 'pie in the sky' approach we therefore urge the Commission to have itself also informed by historic patterns and projections from independent sources, rather than rely too much on unverifiable future projections from respondents. These independent sources of data should also be the basis of any upcoming impact assessment.

The interests of European consumers and businesses should be leading; protecting large telecom operators should not be a goal in itself

One of the focuses of the consultation is how large telecom operators should respond to future challenges and be protected against disruption. However, in our opinion protecting the current and future business models of large telecom operators should not be a goal in itself. Instead, the interests of European consumers and all businesses (not just specific groups of companies) should be leading. And it would be good to particularly focus on how to further the digital decade connectivity targets for each member state. The questions, particularly in section 1 ("Technological and market developments: impacts on future networks and business models for electronic communications") seem to be written primarily from the specific perspective of large European operators. The ETNO members are very important, but the electronic communications market is very dynamic and involves many more players, both at the infrastructure and services layer. In addition, we need to take into account the wider internet ecosystem. Although it's very interesting and relevant to get the perspective from large telecom operators, it would be important to avoid a bias towards specific groups of stakeholders, and acknowledge that the future of electronic communications is not just shaped by these incumbents.

By focusing on the interests of large telecom operators we would also fail to recognize the importance of alternative telecom operators. Alternative operators have been instrumental in promoting a competitive environment. These smaller telecom operators have been punching above their weight in terms of infrastructure investment. According to figures from AnalysysMason these alternative operators responsible for one third of the European investments,[3] despite their limited market share compared to the incumbent operators.

[3] ETNO, THE STATE OF DIGITAL COMMUNICATIONS 2023, January 2023, page 30.

There seems to be an underlying assumption in the questions that it would be desirable to create a handful of very large pan-European telecommunication champions. This would call for an unprecedented number cross-border mergers. Although this idea of creating such pan-European champions is not new, this idea is considered to be controversial and cannot be a central assumption for new legislation on investments in the market. These companies can make their own decisions about the optimal economic scale of their operations and decide whether to engage in cross-border integration. In our opinion there's no justification for intervention. The synergies for such cross-border mergers to telecom operators are generally considered relatively limited, whilst there don't seem to be convincing benefits to wider society. On the contrary: by creating ever larger, pan-European telecommunication champions, and shielding them off from innovation and competitive challenge from other players, we will most likely impede the European digital transition process and could severely harm the interests of European consumers and businesses.

Competition is key for reaching the Gigabit targets and to guarantee high quality, affordable internet access services for end users. The instruments for National Regulatory Authorities in the European Electronic Communications Code (EECC) to guarantee competition are very important in this regard. These instruments should be reinforced and not weakened by the proposed Gigabit Recommendation, which should be subject of a public consultation.[4]

The current system of EU harmonization of spectrum leads to a good balance between harmonization and flexibility

The consultation also explores the possibility to adopt a more centralized approach (at the EU level) towards spectrum awarding. Also here, it would be important to start first with a problem analysis before exploring the kind of solutions. We are of the opinion that the current system of EU harmonization of spectrum followed by authorization by the member states already leads to a good balance between the need for a common European spectrum policy and the need to differentiate between member states. The current harmonization within the EU ensures that the frequency use between member states is aligned, so that the same equipment can be used throughout the EU and interference issues are minimized. Authorization by the member states, on the other hand, makes it possible to tailor the award policy to the specific situation of individual countries. Due to differences in e.g. population density or existing frequency use, not all EU countries will have the same need for the same spectrum at the same time. Further integration of the radio spectrum market will result in less flexibility in adapting award policy to the specific situation in a member state. A risk of a more integrated radio spectrum market in the EU is that this market will be dominated by those parties to which the spectrum licenses have been awarded. This will reduce the possibilities for competition in the market by smaller players, which is likely to result in higher prices, less innovation and fewer investments.

The current co-operation with non-EU countries and NGO's in standardization procedures is important to maintain

There seems to be an underlying assumption in the questions that the current participation of non-EU countries in technical preparatory work for EU spectrum decisions (such as e.g. in CEPT) could be an issue of concern for EU sovereignty, resilience or security. We don't share this assumption. Current geopolitical developments should not be a reason to change the way in which we cooperate in the area of spectrum use. On the contrary, we see it as a benefit that EU neighboring countries remain involved in this work, and that they are committed to the EU harmonization decisions. Involving technical experts and representatives of the 46 administrations of CEPT in the discussions around harmonization of spectrum and related international coordination matters remains very important to us. Furthermore, being part of a larger region such as the CEPT can strengthen the EU position in international negotiations during, for example, a World Radio Conference. We note that CEPT in the context of the International Telecommunications Union (ITU) is recognized as the Regional Telecommunication Organisation and in this role remains the most important interface for the European administrations and other European stakeholders to ITU. A continued focus to align EU and -among others- CEPT harmonization interests contributes to a better cross border coordination amongst EU Member States and countries outside the EU with less probability of unwanted interference.

[4] Gigabit connectivity recommendation | Shaping Europe's digital future (europa.eu)

More in general, the Netherlands does not recognize any major obstacles to establish new standards - or, preferably, evolve existing network protocol standards - considering those discussions take place in the appropriate organizations and involves all stakeholders. One of our key concerns on this topic is that the established mandates of the consortiums, partnerships, multi-stakeholder organizations and international multilateral SDOs need to be respected and where a topic under consideration for standardization involves multiple organizations, the matter is resolved in the spirit of full and open collaboration instead of competition around competencies.

The Dutch government is a keen supporter of the multistakeholder model and we like to see this reflected in matters concerning standardization in the digital domain. Such standards should be developed in an open, transparent process that involves all stakeholders, with the decisions based on consensus amongst all participants.

There is no justification for direct payments from video streaming companies and other online service providers to telecom operators

The consultation pays considerable attention to the desire of large European telecom operators to facilitate direct payments from video streaming companies and other online service providers to electronic communication providers. However, such direct payments are unjustified as end-users already pay for their access line including network traffic costs. Although large telecom operators have argued that without such direct payments they can no longer sustain the needed network investments, this is not supported by facts. As stated earlier in this paper, in reality the total network costs have remained constant despite the consistently high growth over the last decades, whilst the profit margins of European telecom operators have improved significantly over the last decade. Given the lack of a factual basis for these claims, it's unclear why the consultation focuses so strongly on this desire of large European telecom operators to facilitate direct payments. We would have welcomed it if the Commission would have investigated these unjustified claims first, as this understanding would have dissuaded the Commission to further explore this controversial policy direction in the consultation.

It's important to realize that charging toll on the Internet is an intervention that deeply affects the functioning of a complex, vital ecosystem. As such it can have a profound impact on European consumers and businesses. Charging toll is therefore not a policy instrument that should be applied lightheartedly. To contribute to a careful policy procedure, the Ministry of Economic Affairs has commissioned Oxera to investigate whether toll charging could indeed be an instrument fit to promote network investments, and assess the (economic) impact. In the accompanying report, Oxera concludes that from an economic perspective, charging toll on the Internet is not an instrument fit to promote network investments: "promoting investment by network operators is not an economically sound reason for instituting a levy—there are more effective ways of achieving such a goal." For a more elaborate explanation of the impact we refer to the Oxera report.[5]

- Oxera establishes that charging toll would in the first place constitute a welfare transfer from online service providers to benefitting telecom providers. It is expected that only a limited part of the additional revenue stream to telecom operators will be passed on to the Internet subscribers in the form of slightly lower subscription fees. This is offset by price increases on the side of online services, such as video streaming, applications and cloud services, as online providers will seek to pass on the payments to telecom operators. This would effectively imply that e.g. subscriptions to Spotify or Netflix become more expensive. In addition the toll charge could instigate these online services to be less able to invest in the development of e.g. content or new, innovative services.
- Apart from these welfare impacts, Oxera also concludes that the implementation of such an Internet toll charge would be highly complex and will be associated with substantial transaction and regulation costs. Oxera also points out the potential degradation of the quality of the Internet connections, as this was observed in South-Korea where a similar policy was introduced. Furthermore, Oxera pays attention to the negative impact of a toll charge on the digital transition, and states: "Transitions to new technologies (in the

[5] https://www.government.nl/ministries/ministry-of-economic-affairs-and-climate-policy/documents/reports/2023/02/27/proposals-for-a-levy-on-online-content-application-providers-to-fund-network-operators

broadest economic meaning of the word 'technology') are not instantaneous, and policy makers must be careful not to discourage activities with one hand which they are trying to encourage with the other."

The Oxera report does not stand on its own. Many independent sources, such as researchers, journalists and regulators have questioned both the justification of direct payments to telecom operators and have expressed strong concerns regarding the impact. We refer e.g. to the concise BEREC study, and to articles of Telecompaper, just two examples of many critical independent voices. We appeal to the Commission to take note of this stream of independent publications and reflect on the arguments brought forward.[6,7]

Next to the instrument of allowing telecom operators to charge online service providers directly for data traffic, we have heard a call for a 'negotiation framework' to compensate for the alleged disbalance in negotiations between telecom operators and online service providers. However, we consider both instruments as interchangeable, as the call for a 'negotiation framework' by proponents of direct payments will ultimately serve to impose payments from online service providers.

Apart from the above concerns, we also consider it important that this debate is informed by a good understanding of relative orders of magnitude. The combined EU revenues of the large European telecom operators are relatively high, totaling EUR 188 Billion in 2021. However the annual revenue of Netflix, despite being the largest source of internet traffic generated by end-users, is "only" EUR 9 billion. Streaming platforms of the public broadcasters are offering services for free and don't make significant revenues. It's not easy to see how all of these video streaming companies would be financially capable contribute the amounts suggested by large telecom operators (EURO 15 – 40 Billion per year[8]).

In the consultation, the term 'Large Traffic Generator' is introduced (LTG). We would have strongly preferred a more neutral and less controversial term, as video streaming providers don't generate traffic: data traffic is generated and paid for by end-users that demand these services. So the term LTG can only apply to end-users, not to online service providers. In addition, the questions regarding LTG's give the impression that the growth of data traffic ("extra traffic") requested by end-users causes problems for telecom operators. This assumption is however not rooted in facts: so far the consistently high data growth rate over the last decades has not led to higher network costs (as explained below).

The consultation questions in section 4 ("Fair contribution by all digital players") seem to make various kinds of implicit assumptions on the relation between data traffic and network costs. In reality, on FttH networks, traffic costs only account for a very small part of the network costs, and the costs of additional traffic are close to zero (costs are almost 'traffic-insensitive'). This is the reason why subscribers usually pay a flat fee, regardless of their data consumption. Additional data on fixed networks costs next to nothing. On mobile networks, a larger proportion of the network costs is 'traffic-sensitive' compared to fixed networks. As a result, additional mobile traffic leads to additional costs, but these costs are relatively modest and are usually already charged to subscribers in the form of larger data allowances. Therefore there's no factual basis for claims that telecom operators are challenged by data growth. In addition, it's commonly known that in the longer run total network costs haven't increased with growing data traffic. Although data growth

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[6] BEREC, "Preliminary assessment of the underlying assumptions of payments from large CAPs to ISPs," BoR (22) 137, 7 October 2022. https://www.berec.europa.eu/system/files/2022-10/BEREC%20BoR%20%2822%29%20137%20BEREC_preliminary-assessment-payments-CAPs-to-ISPs_0.pdf

[7] Telecompaper, "Why an 'internet traffic tax' doesn't stand a chance," 3 August 2022. Why an 'internet traffic tax' doesn't stand a chance - Telecompaper and Telecompaper, "Fair share contribution (aka internet traffic tax) violates net neutrality, is not fair and tries to fix a system that's not broke," 16 January 2023. Fair share contribution (aka internet traffic tax) violates net neutrality, is not fair and tries to fix a system that's not broke - Telecompaper

[8] Axon Partners Group: "Europe's internet ecosystem: socio-economic benefits of a fairer balance between tech giants and telecom operators," May 2022. https://etno.eu/component/attachments/attachments.html?task=download&id=8193

has been consistently high over the last decade or more, total network costs have been fairly constant. Based on this fact, again there's no factual basis for any claims that data growth causes any challenges to the business cases of telecom operators. We therefore don't see any justification why 'LTG's' should contribute to these relatively modest costs, already borne by subscribers, in the first place. There is no reason why telecom operators should be paid twice for handling the same traffic.

In addition, the costs of data traffic are highly dependent of the type of data traffic. Apart from the distinction between mobile and fixed data, live streams are generally more demanding in terms of network capacity compared to video streams that can be buffered. Real time applications such as voice and video calls demand very low latency, and are therefore much more demanding in terms of network requirements than other services. And even services with a very low average bit rate can be relatively demanding in case they behave as bursts: traffic with sudden peaks are relatively expensive. Apart from all these distinctions, data traffic can be routed in many different ways, and as a result incur more or less network costs. Based on the way the questions are worded, this seems not to be sufficiently acknowledged in the consultation. Some traffic can be e.g. off-loaded at a low network level, and in many cases traffic can be kept onnet through the use of CDNs. The questions of the consultation seem to assume that every single bit is the same in terms of costs, but in reality there are many types of data traffic with widely varying network costs. There's no simple relationship between data volumes and network costs. However, generally speaking network costs are relatively insensitive to traffic growth at the short term, and even less so on the longer term as over time networks grow much more cost-efficient in handling data traffic.

From an economic perspective it would be contradictory to seek to promote on the one hand the deployment of high capacity networks, and to discourage on the other hand the actual use of these high capacity networks by charging usage fees. This is particularly problematic when these usage fees were to be significant (which is suggested by the large telecom operators) given the fact that the real costs for additional data traffic are insignificant (fixed networks) or modest and already paid for by the subscriber in the form of data allowances (mobile networks). This would lead to making data traffic artificially expensive, with a potentially strong impact on the European digital transformation and Europe's competitive position vis à vis other regions. Ultimately, it's the European citizens and businesses that would pay the price for discouraging the actual use of very high capacity networks.

Concluding remarks

The Netherlands highly appreciates the role of the Commission as a driving force behind the ambitious connectivity goals for Europe, guiding Europe's digital transformation. The Commission has in the past years worked on very important initiatives, including the Digital Decade policy programme. We look forward to contributing constructively and working with the Commission to build on these achievements, in particular the Digital Decade policy programme. Although we have considerable concerns regarding the explored policy directions in this consultation, we fully endorse the underlying ambitions. We're confident that a careful, evidence-based approach regarding connectivity policy will lead to widely supported choices that are beneficial to Europe.