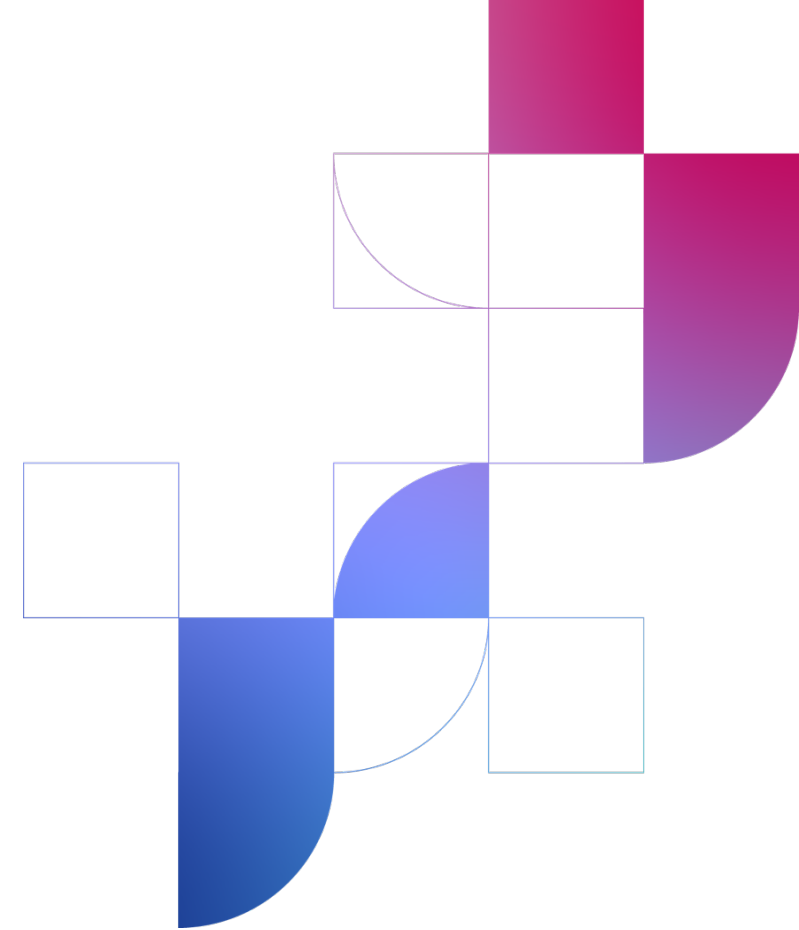


# Public debriefing

Outcomes of the 57<sup>th</sup> BEREC ordinary meetings  
7-8 December 2023

14 December 2023



# Public debriefing plan

## First part

- BEREC Work Programme 2024
- Draft BEREC Report on the authorisation-related framework for international connectivity infrastructures
- BEREC Report on empowering end-users through environmental transparency on digital products and services
- BEREC Report on the Current Cybersecurity Challenges and Dependencies in Electronic Communication Networks

## Q&A session

## Second part

- BEREC Study on evolution of competition dynamics of tower and access infrastructure companies not directly providing retail services
- External study on the trends and policy/regulatory challenges of cloudification, virtualisation and softwarisation in telecommunications
- BEREC updates

## Q&A session



# BEREC Work Programme 2024

**Incoming BEREC Chair 2024  
Tonko Obuljen (HAKOM)**

#empowering  
EUconnectivity

# Public Consultation procedure

- PC from 3 October to 6 November 2023 (extension of the time limit was granted upon request)
- Comments (13) received from:
  - OPEN FIBER; VANTAGE TOWERS; EWIA; AMAZON Project Kuiper;
  - BEUC; LIBERTY GLOBAL; ETNO; ECTA;
  - GSMA; MVNO; EENA; FTTH EUROPE; GSOA

# Public Consultation – General Comments

- More transparency and involvement of stakeholders
- Longer public consultations and better planning of the BEREC's internal work
- Focus on the activities prescribed by EECC
- Retaining BEREC's independence vis-à-vis policy makers and private stakeholders

# Public Consultation – General Comments 2

- Concern is the limited emphasis on promoting efficient investment
- The increasing amount of work streams should not reduce BEREC's focus on its key tasks, especially those related to consumer protection
- BEREC should place the promotion of competition at the center of its consideration
- One major gap in the Work Programme is the lack of emphasis on demand side measures
- BEREC should separately assess how its planned key activities contributes to achieving the targets of the “Digital Decade”

# Changes in Work Programme related to public consultation

- In introductory text on the page 7: “while ensuring a smooth transition from the legacy infrastructures and **access and end users interests**” text in bold has been inserted
- In the description of Work item 1.1.Report on the regulation of physical infrastructure access, the text “ **the (perceived) quality of the access offer by the SMP operator** has been added
- In Work item 1.5. Managing copper network switch-off, a public consultation is envisaged and timeline has been changed accordingly
- In introductory text on the page 20 new paragraph: “The open Internet has been considered an important building block in the EU telecommunication rules. Thus BEREC will continue monitoring this aspect in several work items.” has been inserted
- In Work item 2.5. BEREC Report on the entry of large CAP’s into the markets for electronic communications the timeline has been moved forward

# What comes next?

- Execution of the Work Programme 2024



# **Draft BEREC Report on the authorisation- related framework for international connectivity infrastructures**

**Regulatory Framework Working Group**

**Filipe Prista Lucas (ANACOM), Ervin Kajzinger (NMHH), Antonio De Tommaso (AGCOM)**

## Purpose and working plan

**Purpose:** analysing the regulatory and authorisation frameworks applicable to international submarine cable systems and identifying solutions to promote international submarine connectivity in the EU.

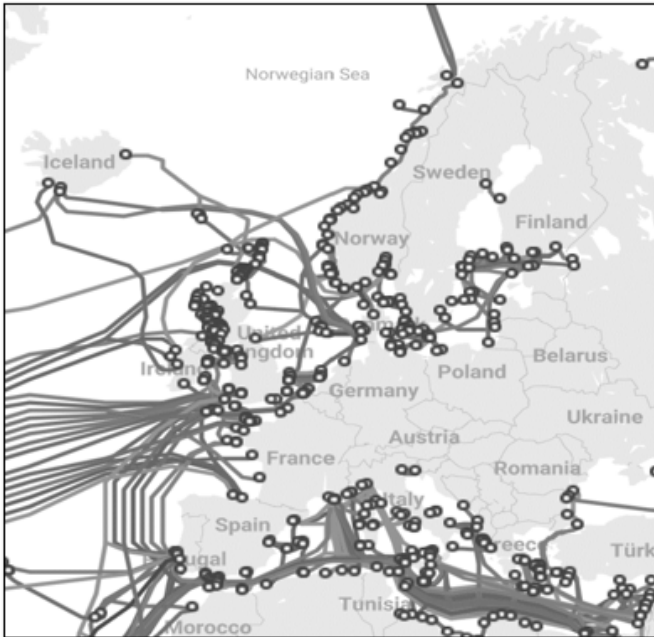
### Working plan included:

- First questionnaire sent on 5 April 2023 (replies from 20 countries);
- Online workshop on 21 September 2023 (+200 participants from 30 countries);
- Second questionnaire sent on 9 October 2023 (replies from 19 countries).

# Context

- Growth of global Internet bandwidth;
- Content providers: from key users to key owners;
- Growth in single ownership models;
- Shift from city to data centre connections;
- Emergence of open cables and open stations.

# Submarine cable systems in the EU



All active & planned systems

© Telegeography, Updated 27.09.2023



Systems ready for service in 2023

© Telegeography, Updated 27.09.2023



Systems planned for 2024-2026

© Telegeography, Updated 27.09.2023

# Structure

In this context, this draft report:

- Describes the activities involved in the deployment and operation of submarine cable systems (**Part 2**);
- Outlines the applicability of the ECNS framework to international submarine cable systems and the powers and experience of NRA in this field (**Part 3**);
- Identifies other national administrative authorisation procedures applicable to international submarine cable systems (**Part 4**);
- Gathers information on initiatives taken at European and national level to promote international submarine connectivity (**Part 5**).

## Main findings (I)

- The definitions of public ECN and publicly available ECS are crucial for determining the regime applicable to each network or service. However and despite its relevance, the EECC does not provide a definition of publicly available ECS and, at national level, there is currently no robust harmonisation in the definition – where it exists – and the interpretation of what qualifies as a publicly available ECS.
- Submarine cable systems operated by ECNS providers to ensure the international capacity needed to support their retail national business and to sell capacity to third parties at wholesale and/or retail level would probably be qualified as public ECN and/or publicly available ECS.
- Submarine cable systems operated by content and application providers connecting their data centres to exploit the capacity exclusively for their own use, without prejudice to a case-by-case analysis, could be qualified as non-public ECN and/or non-publicly available ECS.

## Main findings (II)

- Deployment of submarine cable systems depends on the compliance with a significant number of national authorisation administrative procedures in fields beyond the ECNS sector, involving a total average duration that can exceed one year.
- Single points of contact and national cooperation mechanisms between competent authorities are not a generalised policy across Europe, which also lacks international mechanisms or points of contact at European level.
- Existing measures to promote the development of international submarine connectivity include, at European level, mostly financial support, and, at national level, a varied and fragmented set of legal, administrative, institutional, security and financial measures.

# **Draft BEREC Report on empowering end-users through environmental transparency on digital products and services**

**Sustainability Working Group**

**Kateřina Děkánovská (CTU), Sandrine Elmi Hersi (Arcep)**



# Objectives of the workstream

## BEREC Work Programme 2023 and PRD on Environmental Transparency for End-Users

- ✓ Raising the level of knowledge on existing initiatives to provide reliable information to end-users and promote their empowerment in the green transition (NRAs' initiatives, EU activities, other relevant/competent authorities' work).
- ✓ Exploring the means to reach out to end-users on the environmental footprint of digital products (i.e., goods and services), as well as the potential role of BEREC and NRAs.
- ✓ Preparing BEREC communication campaign materials that regulatory authorities can use on a voluntary basis, based on the report and previous work of BEREC, with special attention to circular economy and life cycle approach of end-user devices.



### Deliverables :

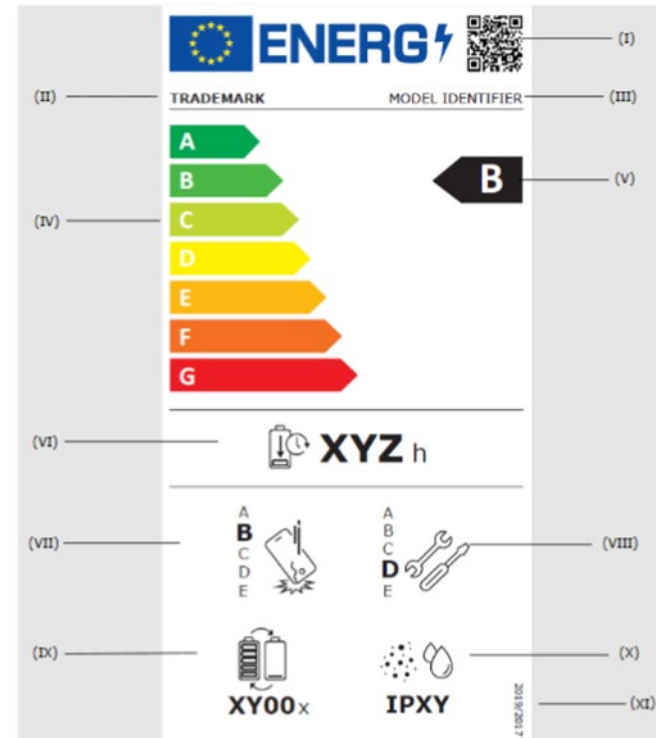
- **Workshop** with EEB, BEUC and consultants working with the European commission (recording and internal summary report)
- **BEREC report** including the review of existing initiatives, analysis of means to reach out to the end-users on the topic, and learnings from the workshop (Draft Report presentation on CN/P4 2023, final report for CN/P2 2024 with the report on the outcomes of the PC)
- A **communication campaign** in S2 2024 (in collaboration with BEREC Communications ENG)

# Environmental transparency on ICT footprint and data-driven regulation



## Key findings

- Environmental transparency on ICT goods and services' environmental footprint as part of “data driven regulation”
  - i.e. with clear information, end-users can integrate the environmental criteria in their consumption choice. Complementary to traditional tools of regulators, this approach creates positive incentives for most sustainable products through information. (Source: BEREC Strategy 2021-2025 and previous BEREC reports)
- Different tools : **labelling scheme, scoring mechanism, comparability tools.**
- Challenges: **profusion of schemes, readability, reliability, harmonisation of practices.**
- **EU regulation and initiatives** : Green Claims, Energy Labelling Regulation, EU digital passport...



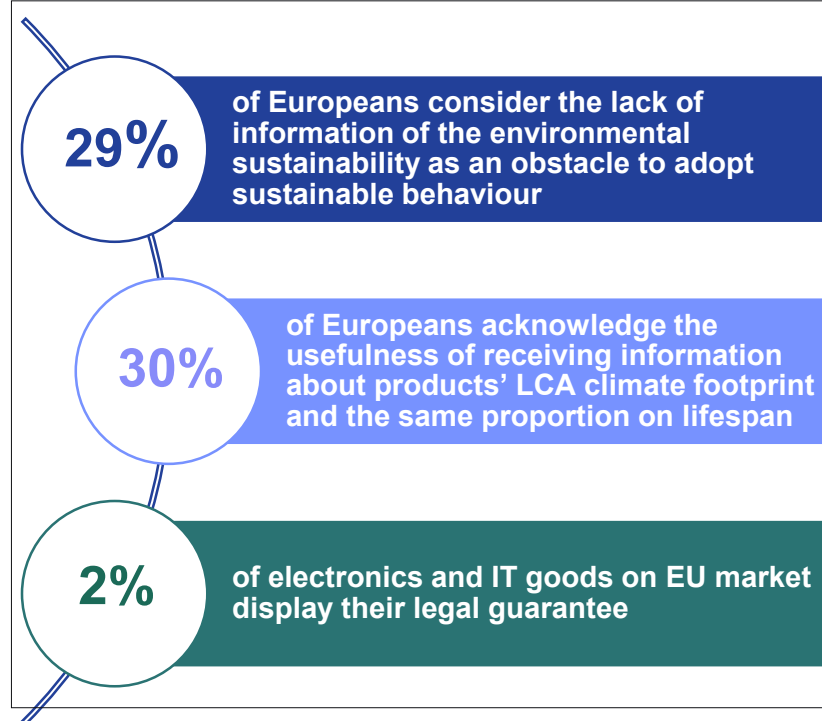
Example : Label for smartphones introduced by the Energy labelling of smartphones and tablets Regulation (2023)

# Informing about environmental rights to empower end-users



## Key findings

- Environmental transparency to inform end-users about their **environmental rights as consumers**.
  - Examples: guaranteed conformity, right to repair, protection against unfair commercial practices
- **Facilitate implementation of new EU regulations** that harmonise the realms of consumer protection and environmental compliance.
- Specially relevant in the context of **circular economy targets**.
  - Examples: right to repair, regulation on ecodesign of sustainable products .....



Source: EC study to gather evidence on ways to empower consumers to play an active role in the green transition (2022)

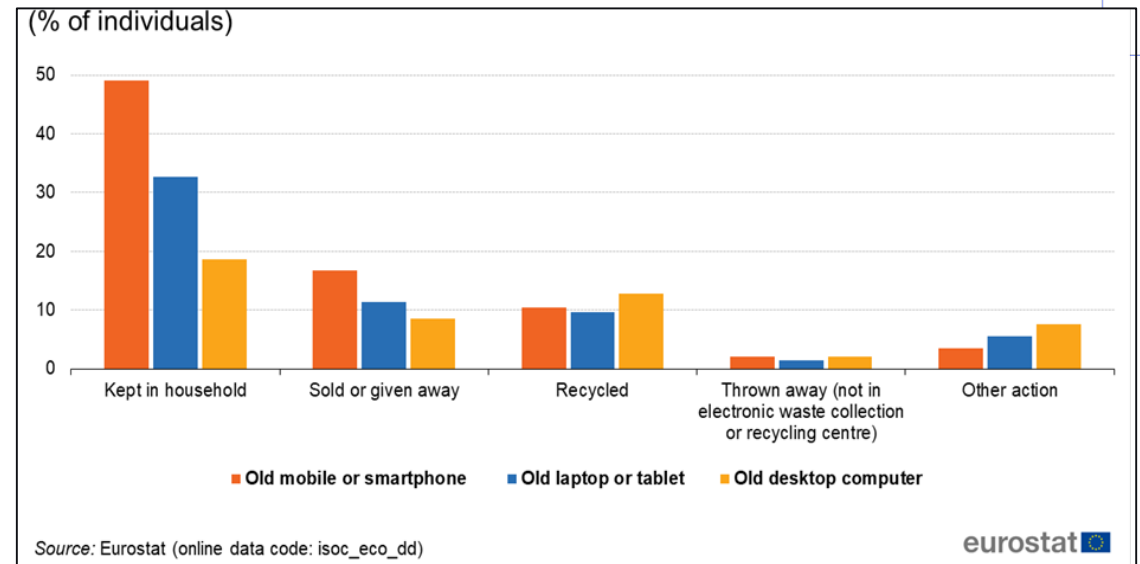
# Transparency to promote sustainable digital services and devices



## Preliminary findings

- Digital services life cycle has an impact on infrastructures and devices footprint.
- **Challenges:** immateriality, obsolescence practices, attention economy.
  - ➔ Existing work of the European Commission (recent study: “*Assessment of the energy footprint of digital actions and services*” and upcoming campaign).
- Devices constitute the major part of the environmental footprint of digital technologies (60-80% of ICT GHG emissions).
- **Information delivered to end-users** can enable to promoting **sustainable consumption choices to extend the durability of their devices.**
  - Summary of practices to increase devices lifespan based on literature.
  - Focus on the communication campaign in Q2 2024.

## METHODS OF DISPOSING ICT DEVICES NO LONGER IN USE



Extract from the article Green ICT – digital devices in households based on DESI 2022 statistics

# Role of regulators and stakeholders (e.g. industry, scientific community and consumer/environmental organisations)



## Key findings

- Benchmark based on the feedback of 25 national regulatory authorities.
- **7 NRAs with activities related to end-users empowerment and environmental transparency.** Feedback from experts: other projects are expected among BEREC members.
- NRAs also reported around **70 external initiatives** from national authorities, industry players, consumer and environmental associations.

**Importance of a multi-stakeholder approach** for science-based and actionable tools.

**A role for telecom regulators** (with OCAs and third parties) especially where ECN/ECS are concerned. Also experience in reaching and protecting users.

Publications (including data, surveys & reports)	Public Campaigns	Best Practices/ Info on Website
Arcep, NMHH, NKOM, RAK, SPRK, RTR	NKOM, RTR	Arcep, NMHH, Traficom, RTR

Recent example: communication campaign by RTR (2023)

**SMARTPHONES**  
So sehr wirken sie sich auf die Umwelt aus

**Bis zu 110 kg CO<sub>2</sub>e**  
Im Durchschnitt verursacht ein Smartphone 37 kg an CO<sub>2</sub>-Äquivalenten über den gesamten Lebenszyklus hinweg. Manche Studien gehen von bis zu 110 kg CO<sub>2</sub>e aus.

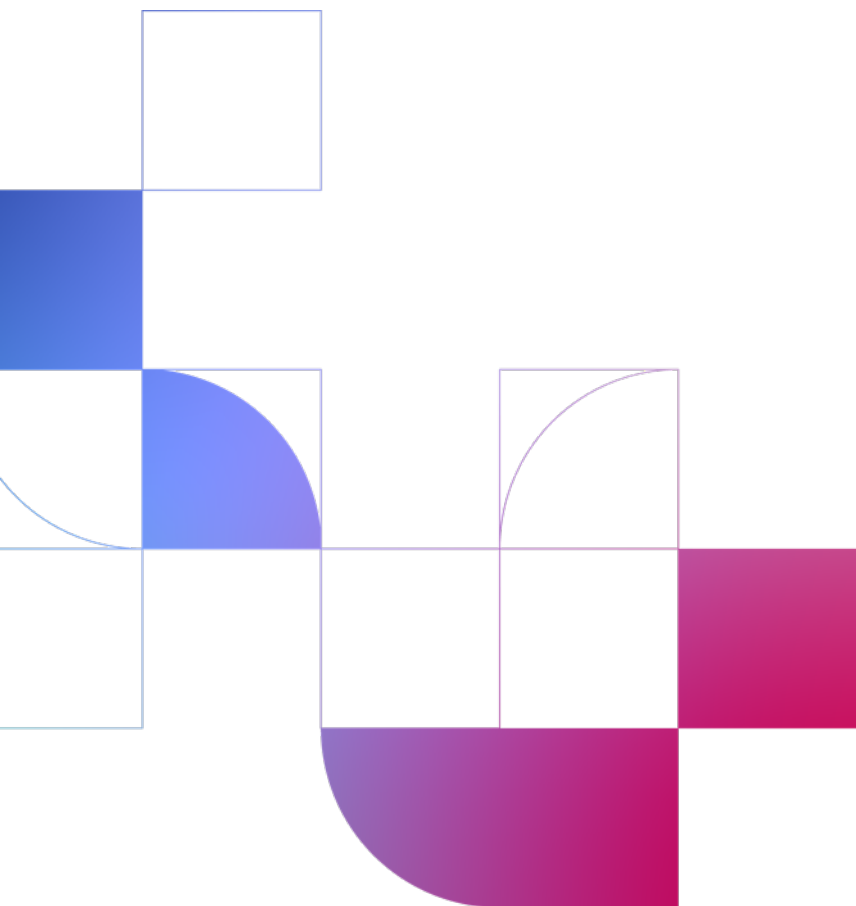
**Was bedeutet CO<sub>2</sub>e?**  
CO<sub>2</sub>e steht für Kohlendioxid-Äquivalente. Das ist ein Maß, das die Vereinten Nationen definiert. Damit sollen Umweltauswirkungen vergleichbar gemacht werden. Denn verschiedene Treibhausgase bleiben unterschiedlich lange in der Luft und tragen unterschiedlich stark zum Treibhauseffekt bei.

**63**  
Die Produktion eines einzigen Smartphones braucht genauso viel Wasser wie 63 Wienerinnen an einem Tag.

9,1 Millionen Menschen leben in Österreich.  
Rund 10 Millionen Smartphones liegen ungenutzt in Schubladen.

**968 TWh**  
Etwa 968 Terawattstunden wurden für die Herstellung von Smartphones zwischen 2007 und 2017 eingesetzt. Das entspricht dem Stromverbrauch Indiens im Jahr 2014.

**75 Elemente**  
Bis zu 75 verschiedenen Elemente bzw. Rohstoffe sind in Smartphones enthalten: Aluminium, Kupfer, Magnesium, Lithium, Silber, Gold und Platin sind darunter. Im Durchschnitt sind 7% kritische Rohmaterialien wie Palladium, Kobalt oder Iridium enthalten. Diese Rohstoffe wachsen nicht nach, sind schwierig zu extrahieren und daher mit hohen Umweltkosten behaftet. Einige davon, wie z.B. Gold und Kupfer, können mit vergleichsweise wenig Aufwand wiedergewonnen werden, während bei anderen Recyclingverfahren erst entwickelt werden.



## Public Consultation

EU Survey portal

14 December 2023 – 12 February 2024

**Contributions are very much welcomed!**

**Thank you for your attention.**



# **BEREC Report on the Current Cybersecurity Challenges and Dependencies in Electronic Communication Networks**

**Cybersecurity Working Group**

**Katja Kmet Vrčko (AKOS), Zdravko Jukić (HAKOM)**

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EUconnectivity**

# Thank you!

- For your participation in the Survey and your contribution with the valuable information
- For sending your comments and feedback to us!



# BEREC Report on the Current Cybersecurity Challenges and Dependencies in Electronic Communication Networks (draft)

- The objective: to understand the present status of resilience and security in electronic communications networks within the participating countries.
- The survey, prepared by BEREC in collaboration with ENISA, the Commission, and the NIS CG, comprised two questionnaires - one for National Regulatory Authorities (NRAs) and another one for operators.

# Findings

- On the **emergency power supplies (EPS)**;
- On the use of the **renewable sources** of energy and **reduction of energy consumption**;
- On the **IXPs**;
- On the **subsea cables**;
- On satellite;
- On **NIS-2 Directive (NIS-2)**;
- On the **CPE** and other customer related security measures;
- On smishing and vishing;
- On mitigating DDos attacks.

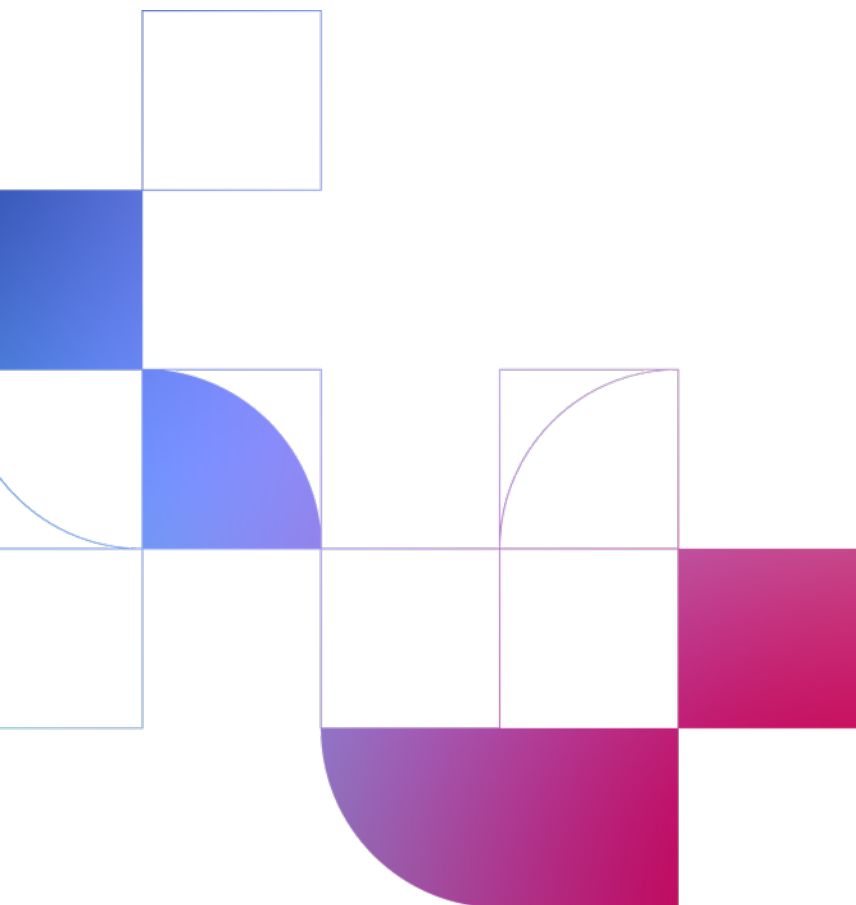
# Open issues – possible topics to focus more in the future

- Emergency power supplies in emergency situations caused by natural disasters e.g. floods or earthquakes
- Energy consumption reduction, promoting the use of sustainable energy sources
- Further IXP landscape investigation
- NIS2 transpositions in the EU – follow impact on the markets
- CPE cybersecurity regulations



# **BEREC Study on evolution of competition dynamics of tower and access infrastructure companies not directly providing retail services**

**Market and Economic Analysis Working Group  
Iulia Zaim-Grigore (ANCOM), Jordi Canadell (CNMC)**



# Contents

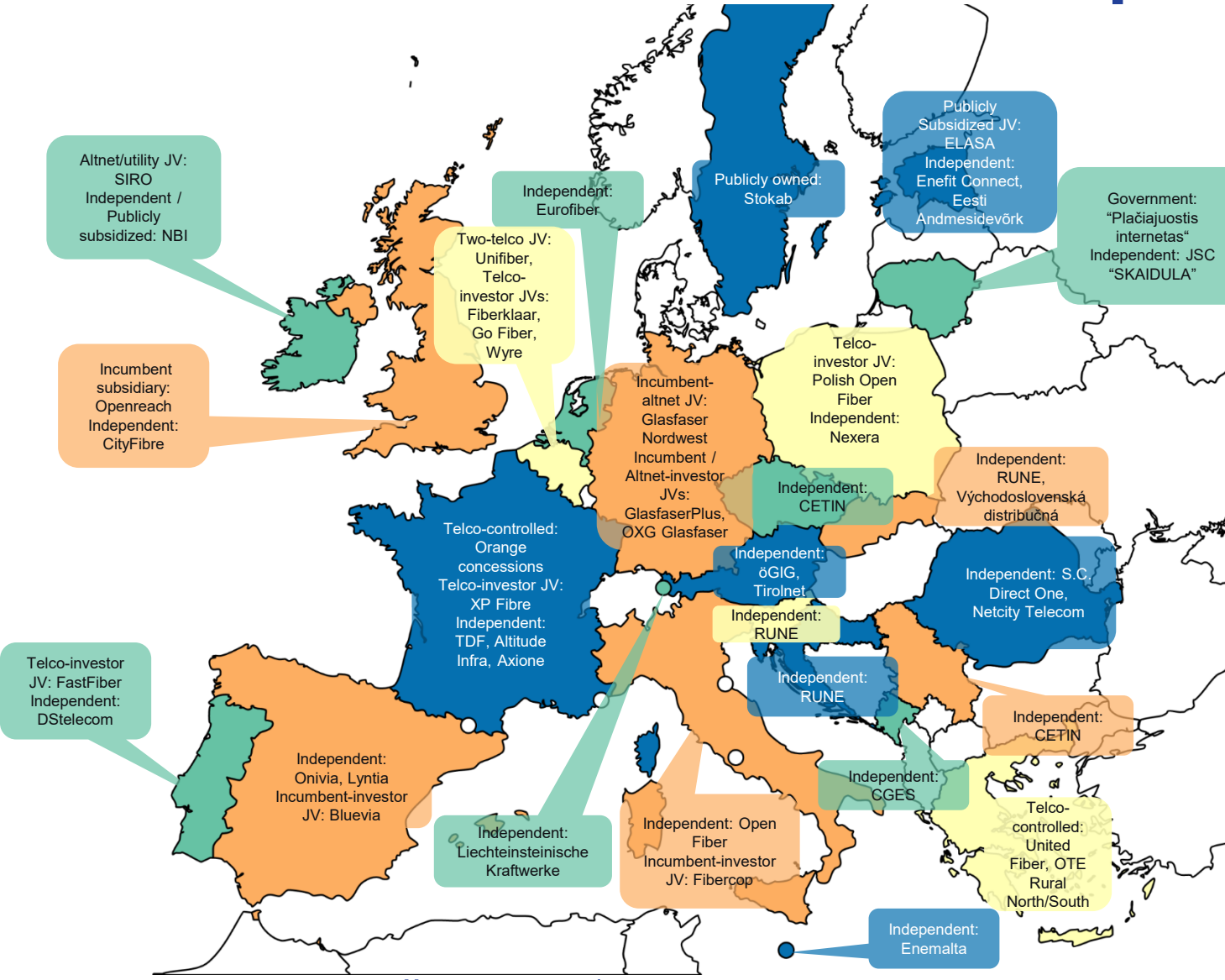
1. Introduction
2. Overview of infracos (incl. business models)
3. Competition, investment and deployment
4. Recommendations

# Introduction - Study highlights

- Motivation -> overview and future outlook of:
  - **Divestitures/spin-offs** of key network assets
  - Infracos **business models** associated with those assets
  - Impact on **competition, investment** and **deployment**
  - Implications for **regulatory and policy decisions**
- 7 focus countries -> **FR, DE, IT, PL, ES, UK, US**
- Analysis mainly based on: 4 towercos (3 pan-European), 7 national netcos and 3 pan-European operators + an NCA
- Data sources: surveys + interviews + workshop + desk research



# Overview of netcos in Europe



Country	Company	Number of access lines (newest data available) covered	Ownership / type of towerco	Establishment
IT	Open Fiber	13 mln real estate units	Independent	Created by energy Enel, after acquired by banks and investment firms
	Fibercop	5 mln households	Incumbent-investor JV	
UK	Openreach	10 mln premises	Incumbent subsidiary	Carved out from BT
	CityFibre	2.2 to 2.5 mln premises	Independent	
ES	Onivia	3.6 mln	Independent	Investment firms acquired assets from Masmovil
	Bluevia	4 million premises covered	Incumbent-investor JV	
	Lyntia	2.5 mln households covered	Independent	
FR	XP Fibre	3.6 mln	Telco-investor JV	Altice/SFR, after also investment firms
	TDF	750,000 premises	Independent	
SE	Stokab	>90 percent of premises in the Greater Stockholm area	Independent, publicly-owned	
DE	Glasfaser Northwest	700,000 premises	Incumbent-altnet JV	
PL	Nexera	600,000	Independent	Investment firms
IE	SIRO	500,000 premises passed	Altnet-utility JV	
CZ	CETIN	250,000 households	Independent	Carved out from incumbent



# Presence and business models of infrastructure companies

## ■ TOWERCOS

- Majority of physical mobile infrastructure controlled by towercos
- Steps in divestiture -> wholly owned, JV to independent
- Divesting telcos remain as “anchor tenants” / favourable conditions
- Focus on passive infrastructure

## ■ FIBER NETCOS

- Presence and role of fibre netcos varies by country
- Often local / addressing commercial fibre gaps and/or State Aid zones
- Mostly altnet / funds / municipalities, but some SMP operators have legally separated (e.g. UK) or created JVs for new deployment (e.g. DE, IT)
- Fibre netcos typically offer active access; not all offer dark fibre

# Impact on competition, investment and deployment

## TOWERCOS

- Towercos do not drive 5G coverage / densification decisions;
- Tower consolidation / sharing reduces cost, but limits the incentive to compete on coverage;
- Can support competition in mobile networks and services, but depends on access terms.

## FIBER NETCOS

- Netcos involving altnets / inv. funds (majority of cases) are generally positive for fibre coverage;
- Should be positive for competition in broadband networks & services, but depends on wholesale products & degree of fragmentation in offers.

## Common points

- Infrastructure companies may have the **power to increase wholesale prices where there are limited alternatives**. Telcom ownership of infrastructure companies adds risk of discrimination;
- **Incumbent JVs and volume commitments may limit infrastructure competition** in areas where viable.

# Options to address competition concerns *ex-ante*

<i>Ex-ante provision</i>	Applicable to	Relevant to towercos	Relevant to fibre netcos
<b>SMP regulation (regulated wholesale access conditions) or commitments</b>	Undertakings found to have SMP in a market that meets the 3 criteria test	Potentially, but only if 3 CT can be met for tower infra (likely possible only in discrete geographic areas). <b>No examples</b>	<b>Yes</b> – applied in several cases for incumbent netcos and altnets. <b>Several examples</b>
<b>Symmetric regulation of wiring and cables – terminating segment (Art 61(3) EECC)</b>	ECN providers or owners of wiring, cables and associated facilities	<b>No</b> (except insofar as towercos own cabling)	<b>Yes, but restricted scope</b> (primarily for passive access to in-building cabling / or if justified first distribution point).
<b>Access to physical infrastructure under Art 3 BCRD</b>	Network operators (undertakings providing or authorised to provide ECN)	<b>No</b> (unless operate a network), but would apply to MNOs	Access obligations relate only to physical infrastructure (ducts and poles) and not dark fibre, but <b>incentives to offer wholesale access to fibre on FRAND terms</b>
<b>State Aid conditions</b>	Recipients of State Aid	<b>Yes</b> (see e.g. IT)	<b>Yes</b> (several cases e.g. PT, PL, IT)

# Identified issues and recommendations

Relevant for...	Problem	Solution
<b>Towercos</b>	Do not benefit from measures supporting deployment under BCRD, EECC RoW	<b>Extend the scope of BCRD to cover associated facilities</b> and rooftop access for mobile deployment (as proposed in GIA) and enable passive towercos to benefit from RoW provisions under EECC
	Face challenges with rooftop access, which are not addressed in EU law	
	Access obligations for same assets differ depending on ownership (towerco vs MNO)	
	Limited options to address disputes around access conditions <i>ex-ante</i>	
<b>Fibre netcos</b>	Challenge for telcos to use access from multiple netcos (diff. wholesale products & access rules)	<b>Establish NRA as single co-ordinating body for access rules</b> for SMP / symmetric remedies / State Aid. Set standards and monitor compliance on regular basis
	Perceived lack of monitoring/enforcement in some State Aid areas (especially after the conditions in place expire)	
	Fibre netcos may gain market power in some less dense areas after copper switch-off	<b>Attention needed to geographic segmentation, application of Art 80.</b>
<b>All infrastructure companies</b>	JVs between large telcos and/or volume incentives / commitments can hinder infrastructure competition (where viable)	<b>NRAs / NCAs should limit tie-ups / volume commitments in areas where alternative infrastructures are feasible / likely</b>

**External study on the trends and  
policy/regulatory challenges of cloudification,  
virtualisation and softwarisation in  
telecommunications**

**Planning and Future Trends Working Group  
Bert Klaassens (ACM), Maria Ruiz Merida (CNMC)**

# Trends and policy/ regulatory challenges of cloudification, virtualisation, and softwarisation in telecommunication

- Commissioned to and executed by  
- The report includes an analysis of the technical evolution of electronic communications networks and services, of the markets and a number of case studies
- Analysis of business dynamics and future trends; and of (potential) impacts on competition and regulation

# Conclusions and next steps

- Software defined networking (SDN), network function virtualization (NFV), cloudification (NaaS), containerization have significantly changed the dynamics of networks, and improved efficiency through easier scalability, better reliability and resilience, flexibility, and higher utilisation.
- Standardisation and network security are important preconditions.
- Cloudification has effects on the entire value chain (vendor diversification), adjacent markets, new business models etc.

## Next steps:

- **March 2024:** Workshop with stakeholders about the Plum/Stratix study
- **March 2024, PFT:** Report on cloud services and edge computing
- **March 2024, DM:** Report on the entry of large content and application providers into the markets for electronic communications networks and services



# BEREC updates

**BEREC Chair 2023**  
**Kostas Masselos (EETT)**

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# Second meeting of the Digital Markets Act High-Level Group (DMA HLG)

- On 27 November 2023 in Brussels, Belgium
- 6 BEREC representatives accompanied by Digital Markets Working Group Co-chair
- BEREC contributed in all discussions:
  - Enhancing DMA HLG governance;
  - Identifying areas for further co-operation;
  - The impact of Artificial Intelligence on the regulatory landscape.

# Other recent BEREC documents

- During the 57<sup>th</sup> BEREC Plenary meeting the following documents were also approved and published on our website:
  - ✓ the Regulatory Accounting in practice Report 2023;
  - ✓ the BEREC Report on practices and challenges of the phasing out of 2G and 3G (after the public consultation);
  - ✓ the BEREC Summary Report on the outcome of a BEREC internal workshop on the migration to VHCN and copper switch-off with a focus on the needs of the end-users.

# Public consultations

Document title	Deadline
Draft BEREC Report on the authorisation-related framework for international connectivity infrastructures	24 January 2024
Draft BEREC Report on empowering end-users through environmental transparency on digital products and services	12 February 2024

# Upcoming events

- Next BEREC public debriefing on 13 March 2024 online
- Save the date – 12<sup>th</sup> BEREC Stakeholder Forum on 26 March 2024 in Brussels

# Let's stay in touch!



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