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Spectrum Management towards Sustainability Goals

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Moderator

Kamal Tamawa
SSA Policy Director
GSMA

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Agenda

Agenda

Moderator: Kamal Tamawa, SSA Policy Director, GSMA

Welcome Remarks *Luciana Camargos, GSMA, Head of Spectrum, GSMA*	11:30 – 11:35
Introduction: GSMA Views and the New Study *Carol Sosa Leguizamón, Spectrum Policy Director, GSMA*	11:35 – 11:45
Regulator Perspective *Garrett Blaney, Commissioner, ComReg, Ireland*	11:45 – 11:55
Global trends, studies and plans *Alexia Gonzalez-Fanfalone, Telecommunication Policy Analyst OECD Spectrum*	11:55 – 12:05
Roundtable Discussion	12:05 – 12:55
Closing Remarks	12:55 – 13:00

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Welcome Remarks

Luciana Camargos
Head of Spectrum
GSMA

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A New Study

Carol Sosa Leguizamón
Spectrum Policy Director
GSMA

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Spectrum Management towards Sustainability Goals

How can Spectrum Policy help reduce carbon emissions?

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Mobile Context

Today, 96% of the world's population is covered by mobile broadband networks and more than half of the world is using mobile internet

- The mobile industry became the first industry to commit to the 17 UN Sustainable Development Goals (SDGs)
- MNOs around the world aim to reach net zero carbon emissions by 2050
- Spectrum policies have a direct impact in network energy efficiency

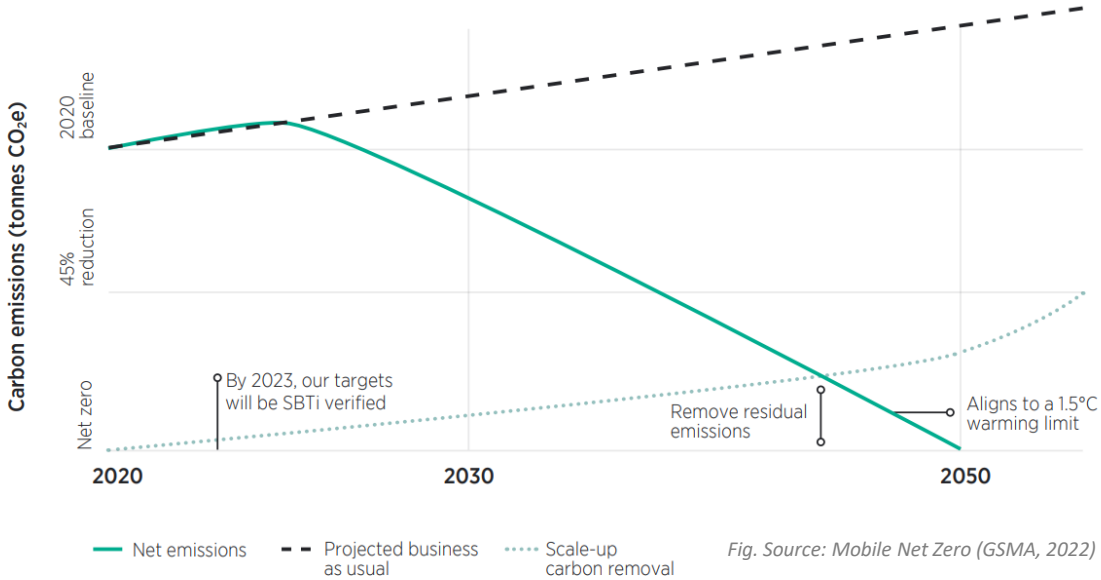

Fig. Source: Mobile Net Zero (GSMA, 2022)

Emissions impact by modelling spectrum policies

Late 5G assignments	Restricted spectrum	Fragmented spectrum	Lack of Technology Neutrality
▪ Reliance in older mobile generations with higher energy consumption ▪ Low benefits through enablement effect	▪ Throughput per base station depends on available spectrum ▪ More base stations are needed increasing energy consumption	▪ Spectrum underutilization due to guard bands and increased signalling overhead ▪ Also, more base stations are needed increasing energy consumption	▪ Prevent energy efficiency and spectral efficiency improvement ▪ MNOs are forced to maintain old technologies with higher energy consumption

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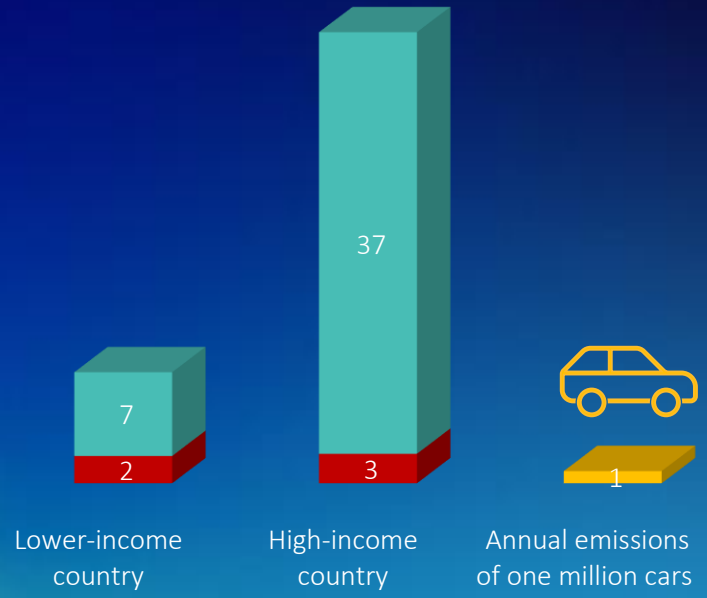
Results – Carbon emissions Impact

Late 5G Assignments

(millions of CO2e tonnes, cumulative over 2022-2031)



Restricted Spectrum

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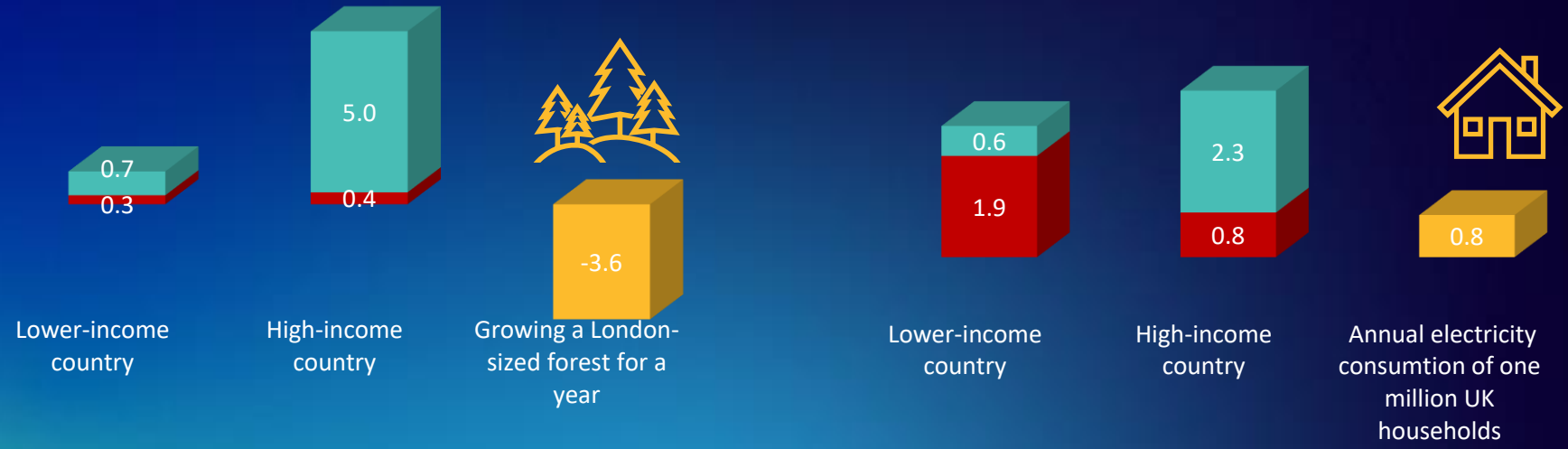
Results – Carbon emissions Impact

Fragmented Spectrum

Lack of Technology Neutrality

(millions of CO2e tonnes, cumulative over 2022-2031)



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Regulator Perspective

Garrett Blaney
Commissioner
ComReg, Ireland

Spectrum, Communications Networks & Environmental Sustainability

Spectrum Management towards Sustainability Goals
Ministerial Programme 2023 Roundtable

27th February 11:30 – 13:00 (GMT+1)

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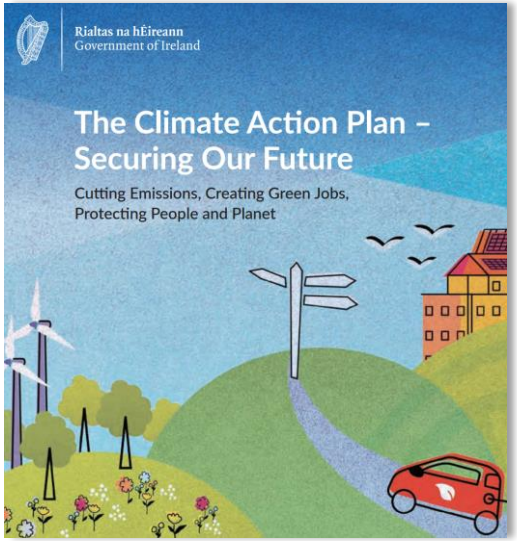
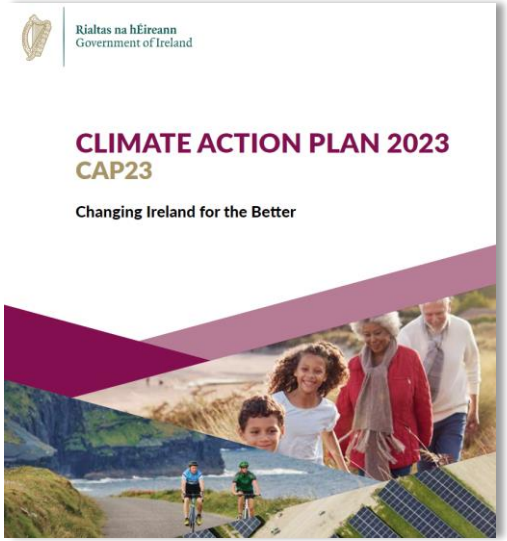
Ireland's Climate Action Policies

An Coimisiún um Rialáil Cumarsáide
Commission for Communications Regulation

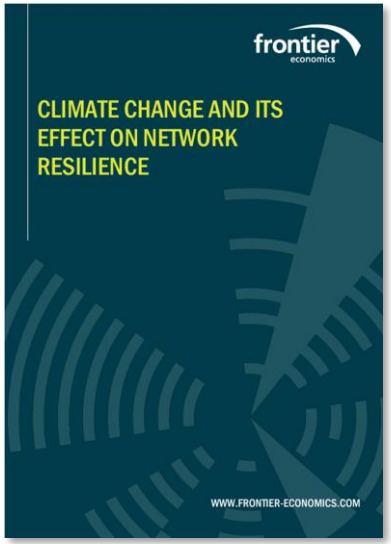
2021/22



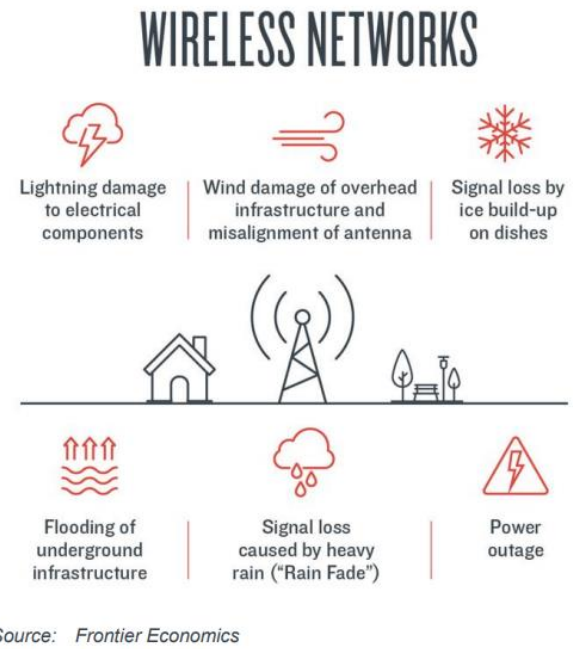
2022/23



ComReg Commissioned Study



Climate Change & Effect on Network Resilience



Source: *Frontier Economics*

Reduced Power Consumption for ECN operators:

- Support resilience of networks
- Reduce costs
- Promote climate change objectives

Environmental Sustainability & Telecoms

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Balancing Regulatory Objectives

Technology Neutrality
Flexibility for efficient solutions

Economic Processes

Consider vulnerable consumers when sunsetting (e.g. 3G)

At European Level

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BEREC
Body of European Regulators for Electronic Communications

- Workstream on environmental impact of ECN/S
- Current lack of standardised data available from industry
- Need for harmonised methodologies & indicators

Radio Spectrum Policy Group RSPG (Climate)

- Workstream to assess how efficient spectrum policies can facilitate twin green and digital transition of Europe

The ‘Twin Transition’

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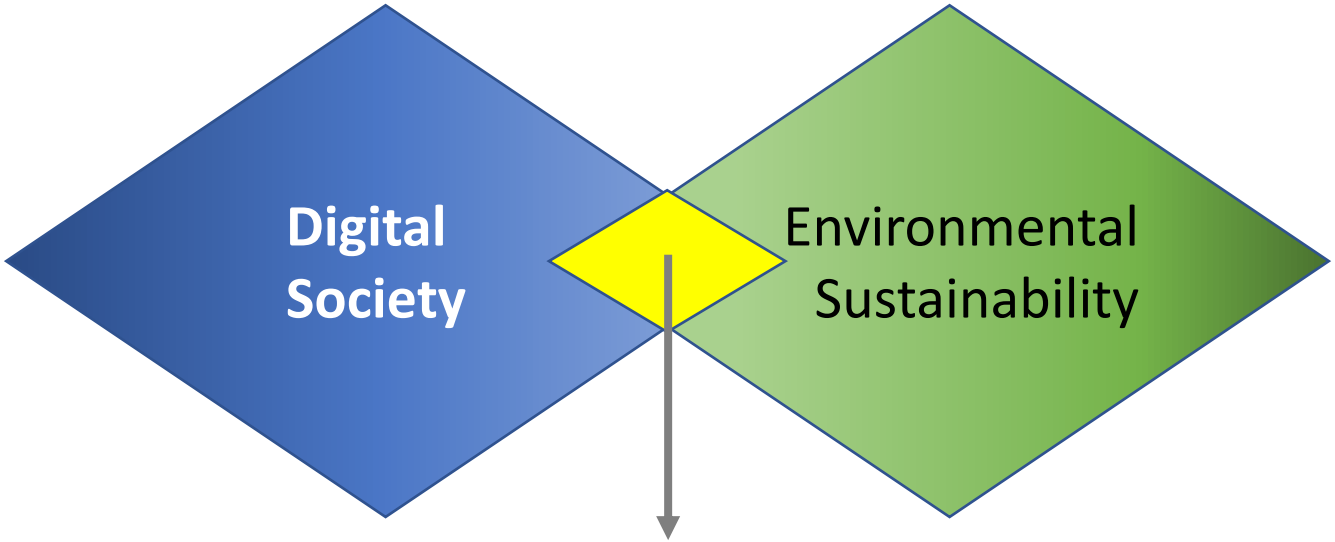
Communications Regulation



‘Green’ ICT & Data
facilitating further reduction
of environmental impact
across sectors

Thank you

Go raibh maith agaibh!

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Global Trends

Alexia Gonzalez-Fanfalone
Telecommunication Policy Analyst
OECD Spectrum

SPECTRUM MANAGEMENT AND SUSTAINABILITY

MWC23 Ministerial Programme Roundtable “Spectrum management: towards sustainability goals”

Alexia González Fanfalone
Economist/ Policy Analyst - Communication policy and regulation
CISP

27 February 2023

BETTER POLICIES FOR BETTER LIVES

The twin transitions: Key questions for policy makers

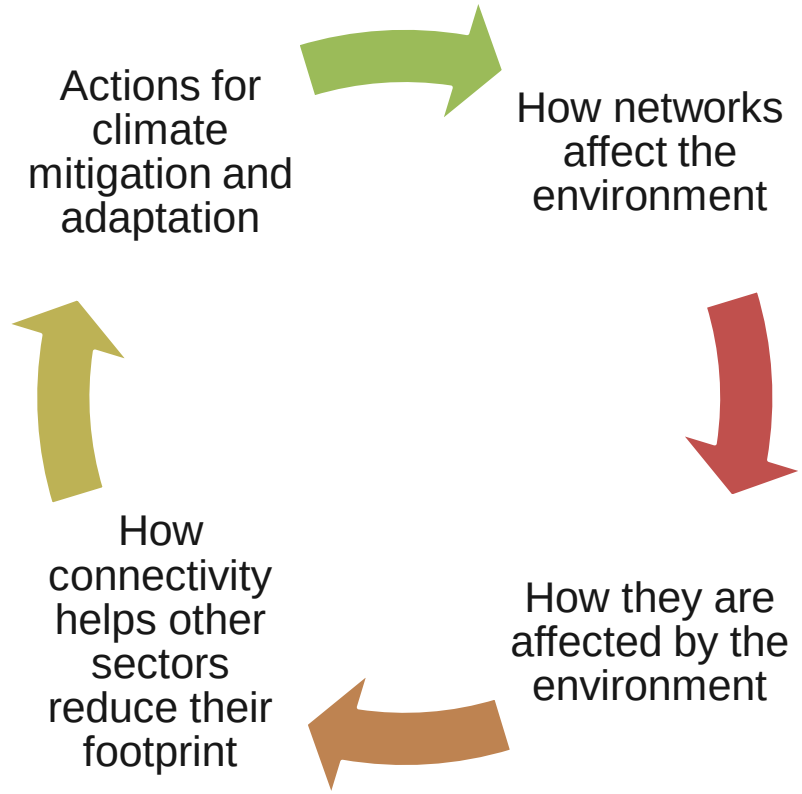
What is the **role of digital technologies** and the **enabling infrastructure** to leverage the **opportunities of the "twin transitions"**?

How to **measure the impact** of **digital on green**?

- Whole lifecycle approach
- Impact of networks and devices

Are there **potential trade-offs** to consider between policy objectives?

- Assessing the **impact of communication networks:**



“Twin transitions”: Leveraging connectivity to promote green

- **OECD Recommendation on Broadband Connectivity** (2021) underscores the importance of reducing the negative **environmental impact** of communication networks
- Boosting the **transition to future proof technologies for environmental sustainability**
- **5G and AI systems:**
  - On the one hand: Optimising network management and reducing energy consumption
  - On the other: Data traffic and compute demand increases
- Will “**beyond 5G” technologies** (6G) become the “green G”?
  - Key values being discussed in 6G visions include sustainability and inclusion.
- **Net Zero commitments** by communication operators
  - Vodafone, Telefonica, Orange, GSMA, etc.
- **Promoting smart cities and devices** (IoT)

Report on “Developments in Spectrum Management for Communication Services”

The report explores **spectrum policy objectives**, **developments** in spectrum management and assignment, and **future considerations** in spectrum management for communications services.

Future considerations in spectrum management

New horizons:

Fostering innovative use cases, drones, HAPS, NGSO satellite constellations, THz & beyond 5G

Environmental sustainability of networks

Spectrum management and environmental sustainability

OECD countries have started to **study the impact of communication networks on the environment,** including with respect to spectrum management decisions (e.g. Ireland, France)

Two facets when considering **environmental sustainability of networks** and **the interplay with spectrum policy**:

1. Ensuring that communication networks are sustainable (how networks are rolled out)
2. The role of spectrum in monitoring our natural environment

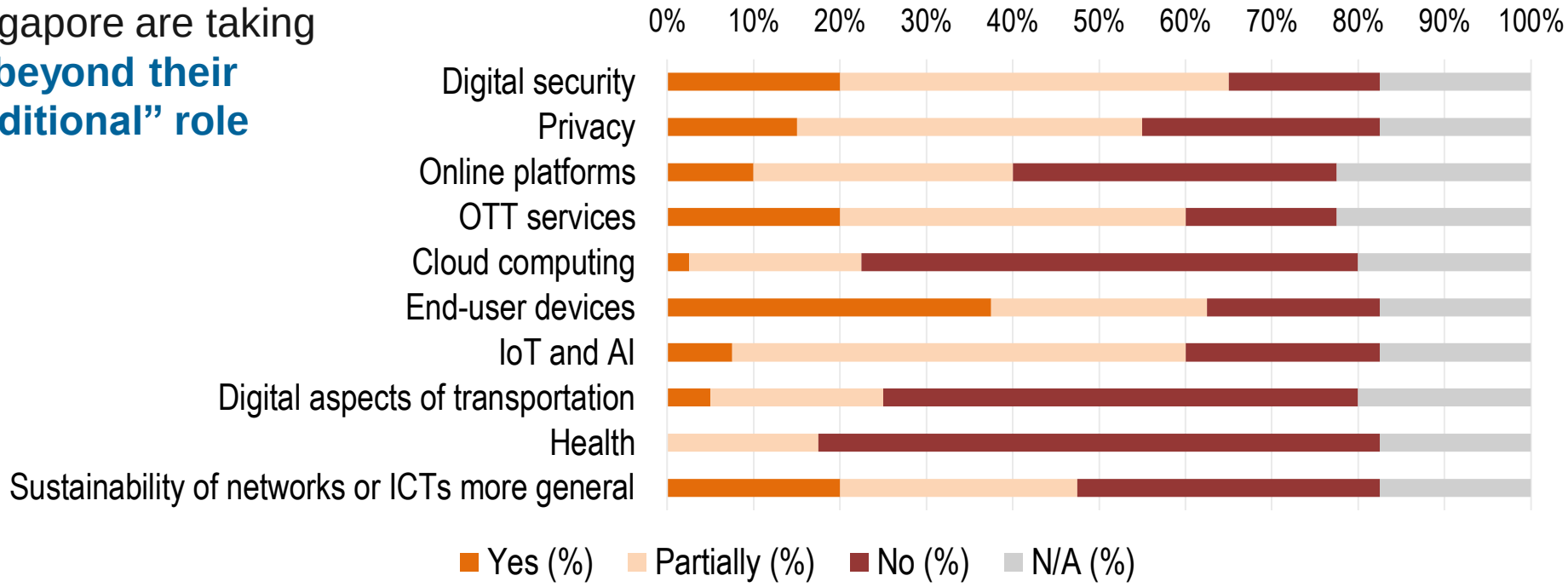
Environmental sustainability considerations in spectrum policy by:

- Availability of spectrum and type of bands,
- the impact of deploying base stations,
- the technology trends in the development of energy efficient networks, higher spectral efficiency,
- Other ways…

The mandate of communication regulators on “green”

There is a **myriad of responsibilities** that communication regulators in OECD countries, Brazil and Singapore are taking on **beyond their “traditional” role**

48% of communication regulators have at least partial responsibility for **environmental sustainability**



Source: OECD (2022), Communication regulators of the future

The mandate of spectrum managers and “green”

- From a sample of 39 countries (comprised of 37 OECD countries, Brazil and Singapore):
  - **49%** take into account **environmental considerations** (at least partially) **when managing spectrum**
- Going forward, **the vast majority (74%) of countries** understand the importance of this issue

Source: OECD (2022), Developments in spectrum management for communication services

Spectrum management and environmental sustainability

Different ways of incorporating environmental considerations in spectrum management decisions:

- Technology neutrality in spectrum auctions
- Analyzing the environmental impact of different bands (e.g. mmWave in France)
- Promoting new technologies mitigating the effects of communication networks (e.g. Portugal)
- Role of infrastructure sharing and co-deployment (Slovenia, Latvia)
- Spectrum to foster IoT for smart grids (Ireland, Germany)
- EMF exposure limits (e.g. Chile, Israel, Lithuania, Poland, New Zealand and the United Kingdom)

OECD countries tackle the intersection of **spectrum policy** and the **environmental sustainability** communication networks in diverse ways.

Some potential **trade-offs**:

Infrastructure sharing & competition?

“Green tech” & technology neutrality?

Energy consumption vs. network performance?

Thank you!

Let’s stay in touch!

alexia.gonzalezfanfalone@oecd.org

[Alexia Gonzalez Fanfalone]

Access our OECD broadband data on: https://www.oecd.org/digital/broadband/broadband-statistics/

Further reading

Developments in Spectrum Management for Communication Services (2022)

Broadband Networks of the Future (2022)

Communication Regulators of the Future (2022)

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Roundtable

Kamal Tamawa
SSA Policy Director
GSMA

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Roundtable Discussion

1) Has your organisation/administration considered how spectrum policies can affect mobile networks carbon emissions?

2) What spectrum plans and policies has your administration to reduce energy consumption in mobile networks?

3)Does your spectrum roadmap tackle climate change aspects?

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Closing Remarks

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