PAVING THE WAY TOWARDS SUSTAINABLE NEXT GENERATION NETWORKS

one6G Open Lecture – Sustainability in 6G

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digital4planet.org

WHO WE ARE

DIGITAL FOR PLANET

D4P is a non-profit organisation supporting the **development and adoption of green digital technologies and solutions** for sustainable development of our economy and society.

TOGETHER, WE CAN MAKE A DIFFERENCE

YOUR EUROPEAN HUB FOR DIGITAL SUSTAINABILITY

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THE EUROPEAN HUB FOR DIGITAL SUSTAINABILITY

- **D4P IS AN OPEN NETWORK** facilitating collaboration and promoting awareness about green digital initiatives – **you can join at any time our association!**
- **D4P GATHERS KNOWLEDGE, EXPERTS AND TOOLS** to accelerate the green digital transition and save our planet
- **D4P HELPS RESEARCHERS AND INNOVATORS** to acquire funding for green digital projects and initiatives
- **D4P IS YOUR IDEAL HORIZON EUROPE** partner to realise your project's sustainability objectives

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WE ARE RUNNING SEVERAL HORIZON EUROPE PROJECTS

6GNTN

SPIRIT

COROB
COOPERATIVE ROBOTICS FOR FLEXIBLE PRODUCTION CELLS

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WHAT DOES IT TAKE TO ENSURE WE BUILD RUN AND DEPLOY SUSTAINABLE NEXT GENERATION NETWORKS?

PAVING THE WAY TO SUSTAINABILITY

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KEY INGREDIENTS

- Awareness and education
- Financial means
- Innovative technologies
  - Green by design
  - Affordable and accessible
  - Trustworthy and secure
- New business models
- Policies and regulations
- (Open) Standards
- Fiscal incentives
- A beyond-the-borders mindset

WHEN IT COMES TO TECHNOLOGIES

Great potential across several sectors

Access to essential (and not only) services

Optimisation of processes

Environmental monitoring

More efficient use of resources

However, technology

- Drives electricity demands
- Damages the environment
- Induces overconsumption

TOWARDS SUSTAIINABLE 6G NETWORKS

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AS SKELETON OF OUR FUTURE DIGITAL SOCIETY 6G MUST:

- **Be sustainable by design**
  - Minimising impact of manufacturing and operating the networks
  - Enabling improvements in sustainability across all verticals and for all public and private organisations, as well as individuals

  -> Direct and indirect rebound effects must betaken into account
- **Deliver societal and environmental values, beyond economic**
  - Measuring and assessing Key Values Indicators
  - Developing new business models
- **Secure EU technological sovereignty and leadership**
  - Align with our societal values
  - Allow Europe to lead in the global race

WHAT IS EXPECTED FROM 6G

TO SUPPORT SUSTAINABLE NEXT GENERATION NETWORKS

- **ENABLING LOWER CO2 EMISSION**
- **MINIMISE REBOUND EFFECTS**
- **EMISSION REDUCTION**
- **HIGH ENERGY EFFICIENCY**
  - First order effect. Often referred to as footprint, associated with existence of ICT equipment throughout its lifecycle
  - Second order effect associated with the induced effect created by the usage of ICT in non-ICT sectors
  - Other effects including rebound and indirect effect associated with behavioural and societal changes induced by the widespread adoption of ICT

SUSTAINABLE NETWORKS FOR SUSTAINABILITY THROUGH KVIS

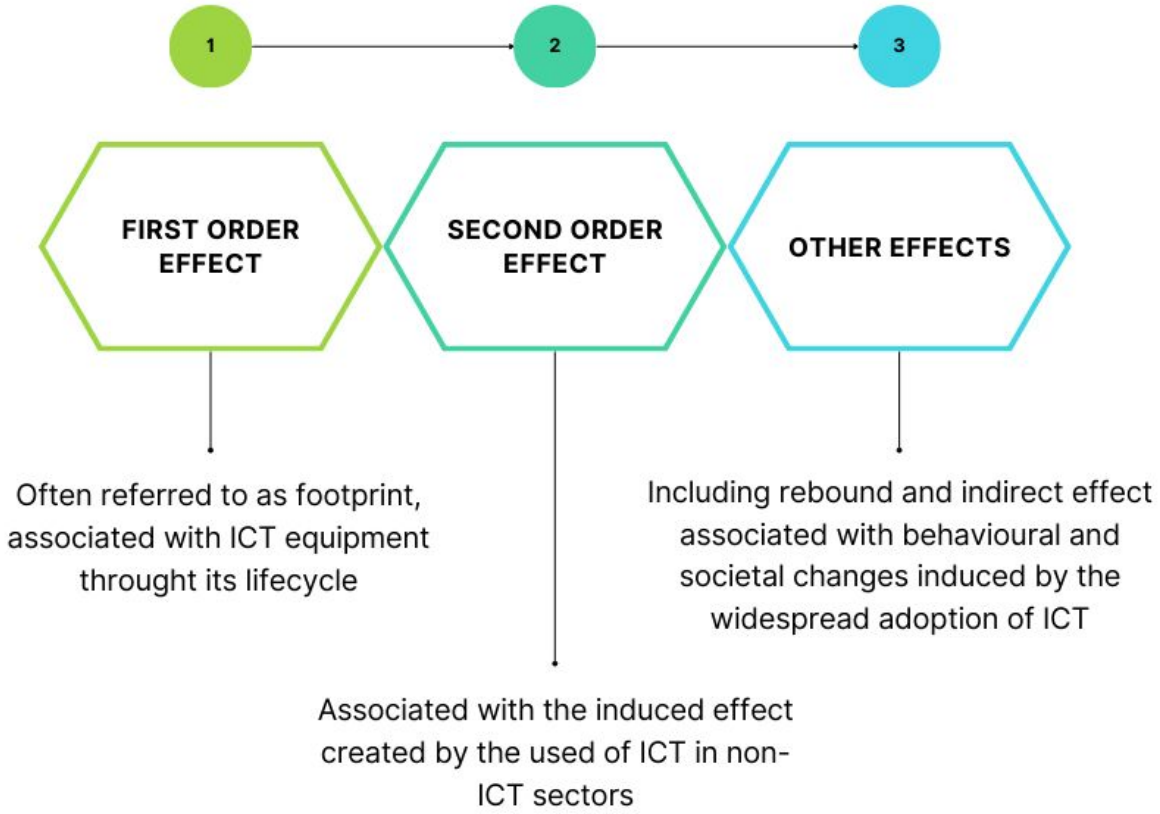
Illustration of the UN SDGs ordered in three areas

To reach consensus and facilitate acceptance and further development of **sustainable 6G networks**, it must be possible **to measure and promote the environmental, societal and economical values** they deliver

- ➔ A technology is valuable for the society if it enables **Key Values**
- ➔ **KVIs** provide metrics to allow its value to be measured and assessed
- ➔ We need **common and measurable KVIs** – several bodies, projects and groups working on a standardised approach, e.g., ITU-T L.1480, ITU-T L.1470, ITU-T L410, etc.

STANDARDISED APPROACH

We need a **consistent methodological framework** to assess the indirect environmental effects and explore the integration of sustainability and KVIs into future 6G standards.



From ITU L.1410 Methodology for environmental lifecycle of networks and services

HOW DO WE MAKE IT HAPPEN?

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WE GATHERED FORCES WITH SEVERAL PARTNERS TO ADDRESS THE TENSION BETWEEN PARALLEL NEEDS IN TERMS OF 6G TECHNOLOGICAL DEVELOPMENT

- Securing technology performance objectives, while
- Ensuring societal and sustainable values are embedded into technology

CORE PILLARS

- **Ethics and value-based approach by conception** – regulations, policies and standards promote and enforce these key values
- **A multi-stakeholder dialogue in technological developments** as of the beginning – good quality information is necessary, although not sufficient to create acceptance
- **Overcome the lack of a trusted relationship between societal actors**, where the lack of trust in the institutions releasing the information totally invalidates the transformative potential of such information.
- **Address the perception of no sufficient transparency or completeness regarding available information**. The lack of available and accessible, or complete and comprehensive information, often results in a sense of suspicion, as if the information was concealed.

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WITH 6G WE CAN AND MUST ACT NOW!

"During the early stages of technology development, when [a technology] can be controlled, not enough can be known about its harmful social consequences to warrant controlling its development; but by the time these consequences are apparent, control has become costly and slow."

Collingridge, D., 1980. The Social Control of Technology. Pinter, London.

DIGITAL FOR PLANET IS WAITING FOR YOU!

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Become a part of a strong community for the development and adoption of sustainable digital technologies! Digital For Planet Welcomes Both Organizations And Individuals:

- **SMEs / Startups**
- **Large industry players**
- **Academic institutions and research centres**
- **Municipalities and public authorities**
- **Associations / Grass roots communities**
- **Committed people!**

Our planet calls for action! JOIN the movement now!

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THANK YOU FOR YOUR ATTENTION

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