# Outcome report: Towards a sustainable digital transformation and a net-zero emission with emerging technology

Session Date and Time: Session 3, Thursday, 8 July 2021 (11:00 – 12:00 Geneva time). 60 minutes.

**Moderator and Speakers**:

Moderator: **Virginia Onyara**, Lecturer, Faculty of Business and Economics, Multimedia, University of Kenya

- **Anne Rita** Ssemboga, Programme Officer, ITU
- **Ahmed Dooguy Kora,** Professor at ESMT, Dakar (Senegal)
- **Paolo Gemma**, WP2/5 Chairman, ITU
- **Xiao Wang**, Programme Officer, UNEP DTU Partnership

1. **Session summary:** This session presented selected initiatives that focused on improving environmental efficiency of emerging technology and digital infrastructure. Digital transformation is expected to play a key role for development in LDCs, LLDCs and SIDs. Speakers of this session highlighted that, among other recurring challenges in digitalization such as affordability and security, sustainability is an emerging challenge that demands global attention. This session looked at the global initiatives that aimed at highlighting the need to achieve sustainability in digital transformation and the international standards and other initiatives that were and are being developed to reduce the environmental impacts of ICTs and emerging technologies.

2. **Main outcomes highlighting the following:**
   a. Main issues discussed
      i. Digital transformation can increase the global GDP (14% by 2030, PwC, 2018), reduce poverty (by at least 10%), reduce global carbon emissions (by at least 15%), and contribute to other global development targets. Connectivity is crucial for enabling access to technologies in LDCs, LLDCs and SIDs.
      ii. Affordability, security are among the main barriers to connectivity in LDCs, LLDCs and SIDs. Bridging the digital divide, with a special focus on gender divide, is a key priority in this regard. Additionally, ITU standards for low cost connectivity technologies need to be adopted by developing countries.
      iii. However, there has not been enough discussion on the environmental impacts of digital transformation, from the e-waste challenge (particularly in LDCs, LLDCs and SIDs) to the growing energy demand of data centres and other digital infrastructure.
      iv. To fully realize the potential of digital transformation, it is important to achieve sustainability in emerging technologies themselves and their adoption by countries, mainly in Africa region.

**b.** Key achievements and challenges shared by the panellists and/or the audience

  i. Emerging technologies have a growing environmental cost. To fully realize the potential of emerging technologies for development, net zero emissions within the ICT sector must be achieved.

  ii. Smart energy solutions provided by ITU standards can optimize power supply in data centres, 5G base stations and other critical ICT infrastructure, measure and calculate energy efficiency in emerging technologies such as AI, big data, and machine learning, and deploy low-cost sustainable telecommunication infrastructure, which is particularly useful in LDCs, LLDCs and SIDs.

  iii. Reemphasized on the need for data centres to be climate neutral, from using energy efficiency power solutions to improving uptakes of renewable energy, leveraging reuse and repair services, and purchasing carbon free energy.

**c.** Main conclusions reached during the discussion

  i. Digital transformation has significant potential to provide leapfrogging opportunities for development. However, digital the divide remains to be a key barrier to digitalization in LDCs, LLDCs and SIDs.

  ii. There is also an urgent need to bring 'sustainability' to digital transformation and to achieve net-zero emissions within the ICT sector.

  iii. The e-waste challenge, growing energy demand for operating data centre and emerging technologies such as AI are among the top environmental concerns of digital transformation.

  iv. International standards can provide important guidance to provide low-cost and sustainable connectivity solutions to countries, while reducing the environmental impacts of emerging technologies and ICTs.

**3.** Panelists contributions to the outcome reports

- **What are the opportunities and challenges of emerging technology ( specific to the session topic) for LDCs, LLDCs and SIDS**

- Anne Rita Ssemboga

  o AI, IoT, cloud computing, and Emerging Technologies in general are driving development in the Africa region attracting global interest and investment.

  o The e-waste challenge directly impacts the progress of digitalization in the region as many LDCs, LLDCs and SID still lacking proper infrastructure to manage e-waste, increasing risks to human health and the environment.

- Ahmed Dooguy Kora

  o Digital transformation can reduce poverty (by at least 10%), reduce global carbon emissions (by at least 15%), and contribute to other global development targets such as by increasing the global GDP (14% by 2030, PwC, 2018). Low-cost connectivity solutions are crucial for enabling access to technologies in LDCs, LLDCs and SIDs.

- o Affordability and security remain prominent challenges to connectivity in LDCs, LLDCs and SIDs. Application of low-cost connectivity solutions standards can be of help in that sense.

- Paolo Gemma

  - o The energy demand and carbon footprint of information and communication technology and digital technology are growing.

  - o To achieve sustainability in digital transformation and back on track to reach the SDGs, the ICT sector needs to achieve net-zero.

- Xiao Wang

  - o Digital infrastructure, particularly data centres, are crucial for providing connectivity.

  - o However, there is a growing concern over the environmental performance of data centres. Along with other components of digital infrastructure, they are steadily contributing to the growing environmental impacts of digital technologies and ICTs from increasing energy demands to the e-waste challenge.

- **What are the most important points/aspects of the emerging technology that should be considered in order to accelerate the digital transformation in LDCs, LLDCs and SIDS?**

- Anne Rita Ssemboga

  - o The ICT sector needs to adopt a circular approach to e-waste management and raise awareness on the need for sustainability in the digital transformation in  in LDCs, LLDCs and SIDs.

  - o Policy and other instruments need to be in place to improve data collection on e-waste and support the implementation of e-waste policy at the national level.

- Ahmed Dooguy Kora

  - o Bridging the digital divide is a key priority to digital transformation in LDCs, LLDCs and SIDs; low-cost connectivity solutions are key for success in this regard.

  - o Innovative policies and instruments tailored to LDCs, LLDCs and SIDs are needed to improve access to technologies and enhance cybersecurity in those regions.

- Paolo Gemma

  - o International standards provide authentic guidance to improve energy efficiency of ICTs and facilitate a sustainable digital transformation.

  - o Smart energy solutions provided by ITU standards can optimize power supply in data centres, 5G base stations and other Critical ICT infrastructure, measure and calculate energy efficiency in emerging technologies such as AI, big data,

and machine learning, and deploy low-cost sustainable telecommunication infrastructure, which is particularly in LDCs, LLDCs and SIDs.

- Xiao Wang

  o A successful digital transformation needs to be enabled by green digital infrastructure, particularly data centres.
  o Key features of green data centres include leveraging reuse and repair services, purchasing carbon free energy, improving energy efficiency with measurable targets, and prioritizing water conservation.

- **Takeaway: please provide one key word and one sentence that most fit the session topic**

- Anne Rita Ssemboga, Programme Officer, ITU
  o Sustainable. A successful digital transformation is a sustainable digital transformation.
- Ahmed Dooguy Kora, Professor at ESMT, Dakar (Senegal)
  o Priorities. LDCs, LLDCs and SIDs need to prioritize bridging the digital divide and strengthening cybersecurity.
- Paolo Gemma, WP2/5 Chairman, ITU
  o Standardization. A standardized approach to digital transformation is the most effective way to achieve sustainability in ICTs and digital technologies.
- Xiao Wang, Programme Officer, UNEP DTU Partnership
  o Efficiency. Digital infrastructure, such as data centers, needs to be energy efficient to achieve sustainability in digital transformation.

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