

Question 7/5 – E-waste, circular economy, and sustainable supply chain management

(Continuation of Question 7/5)

1 Motivation

Digital technologies are at the centre of a new economic model that is based on a knowledge and information society. Mobile phones, tablets, computers, are giving people access to social, public, and financial services that otherwise would not be available to them. ICTs also provide the communication functions to a wide range of digital technologies, allowing digital platforms and IoT devices to communicate with one another.

All this implies there is a steady growth in global production and sale of electrical and electronic equipment (EEE), particularly those related to ICT - computers, printers, cell phones, fixed phones, and tablets. Compounded by rapid innovation and lowering costs, this increasing demand for EEE has become a major source of waste (e-waste).

E-waste has already become the fastest growing waste stream. Over 50 million tonnes of e-waste were recorded in 2018 and only about 20% of this e-waste is managed in an environmentally sound manner¹. Improperly disposing e-waste poses serious risks to both the environment and human health.

This Question seeks to address the e-waste challenge by identifying the environmental requirements of digital technologies including IoT, end-user equipment and ICT infrastructures or installations, based on the circular economy principles and improving the supply chain management.

The circular economy creates and captures new value for businesses and adds extra dimensions to supply chains.

Since supply chain management involves the management of the entire lifecycle process of goods or services, from the selection of raw materials, design principles to the final product, supply chain management plays a critical role in improving the environmental performance of digital technologies including ICTs.

Developing a 21st-century, high-quality recovery process for the valuable materials from electronic waste is very important, especially when considering the global e-waste volumes and their flows. This offers a variety of potential opportunities in urban mining which are based on the global quantities of e-waste as well as measures that can be taken to establish appropriate infrastructures to reduce the toxicity of some of e-waste fractions.

By promoting sustainable urban mining and recycling, such valuable resources not only support a more circular economy but also drive new opportunities in social businesses.

In addition, it is recognized that counterfeit telecommunication/ICT products and devices have become a growing problem in the world. This is known to adversely affect all stakeholders in the ICT field (vendors, governments, operators, and consumers).

NOTE – Counterfeit ICT devices include counterfeit and/or copied devices and equipment as well as accessories and components.

In this regard along with impeding innovation, these counterfeit devices affect economic growth and intellectual property rights. These counterfeit devices are also often hazardous to health and safety and have a negative impact on the environment and the increasing amount of harmful e-waste. In addition, this Question will work on the development of eco-rating programs which will help users to make more informed choices. This will offer opportunities for companies to define a common approach regarding the enhanced environmental performances of goods, networks, and services in line with the principle of conscious development and user information.

¹ http://www3.weforum.org/docs/WEF_A_New_Circular_Vision_for_Electronics.pdf

This Question is also in line with the Sustainable Development Goal 12, target 12.5: by 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse.

Promoting circular design combined with responsible e-waste management will not only reduce e-waste but will also help curb the other negative impacts related to the use of ICTs worldwide.

The following Recommendations, Handbooks and Supplements, in force at the time of approval of this Question, fall under its responsibility:

- ITU-T L.24, L.1000, L.1001, L.1002, L.1005, L.1006, L.1007, L.1010, L.1015, L.1020, L.1021, L.1022, L.1023, L.1030, L.1031, L.1032, L.1033, L.1060, L.1100, L.1101, L.1102;
- L-series Supplements 4, 5, 20, 21, 27, 28, 32;
- Handbooks on the Preservation of Wooden Poles carrying Overhead Telecommunication lines;
- Handbooks on Protection of Telecommunication Buildings from Fire.

2 Questions

Study items to be considered include, but are not limited to:

- How to ensure the safety and environmental performance of digital technologies, ICT products, equipment, and facilities, including the avoidance of virgin and hazardous materials and final disposal through standards?
- How to ensure that digital technologies, ICT products, equipment and facilities cause minimum environmental and health impact on the entire life cycle including production and use of materials?
- How to mitigate the environmental and health impacts caused by improper handling of e-waste?
- How to measure and predict the e-waste reducing effect of ICT induced by dematerialization?
- What are the guidelines and design framework required to develop EEE that are in favour of end-of-life easy dismantling and high level of re-use of its components and materials (e.g., to promote eco-designs)?
- How to implement the circular economy principles (reduce, reuse, recycle and recover) into e-waste management with a special focus on developing countries?
- How to implement the circular economy principles (reduce, reuse, recycle and recover) to achieve a sustainable supply chain?
- How to implement the circular economy principles in product design phases?
- How to include circular design criteria into product design and manufacturing?
- What are the requirements and sustainable solutions to deal with counterfeit ICT devices and reduce e-waste?
- What are the programs (such as eco-labels) that would encourage users to take responsible purchasing decisions?
- What rare metals or materials are the prime targets for urban mining? What guidelines or Recommendations are needed to ensure safe extraction of these metals when urban mining?
- What guidelines or Recommendations are needed for battery recycling and optimizing battery solutions?
- How to provide guideline to involved stakeholder on give a correct information on e-waste management effect and opportunities?

3 Tasks

Tasks include, but are not limited to:

- Develop Recommendations and/or Supplements and Technical Reports to determine processes to minimize the environmental (including health) impact of products (including avoidance of hazardous and virgin materials). This may also include Recommendations and/or Supplements on manufacturing processes, operational procedures, and disposal of end-of-life equipment;
- Develop Recommendations, Supplements and/or Technical Reports to identify new technologies and/or compounds/materials and operational processes to use that minimize environmental (including health) impact. This may require the ITU-T Study Group 5 to identify the market needs and provide timely standardization solutions;
- Develop Recommendations, Supplements and/or Technical Reports on solutions to mitigate e-waste, which encourage the re-use of product common parts and helps to unlock the full potential of the circular economy;
- Develop Recommendations, Supplements and/or Technical Reports on battery optimization including recycling impacts and solutions to reduce battery waste. This should cover the stationary battery in ICT networks and battery packs external to devices as well as internal batteries;
- Develop Recommendations, Supplements and/or Technical Reports on circular lifecycle approach for ICT equipment to minimize environmental and health impact;
- Develop Recommendations, Supplements and/or Technical Reports on material supply chains, including rare metals, and guidance and solutions to reduce the impact in digital technologies organizations and achieve a circular economy;
- Develop Supplements and/or Technical Reports which provide effective guidelines on e-waste management for different regions and aim to achieve a circular economy;
- Develop standardized training modules to provide guidance on e-waste management/circular economy standards and guidelines;
- Develop Recommendations, Supplements and/or Technical Reports on circular economy requirements and how digital technologies could contribute to a circular economy;
- Develop Recommendations, Supplements and Technical Reports on safe and eco/energy-efficient re-use and recycling practices and technical requirements for managing e-waste in a socially responsible manner including guidance to the informal sector on environmentally sound management of e-waste;
- Develop Recommendations, Supplements and/or Technical Reports to study and analyse the effects of counterfeit equipment in relation with e-waste and their environmental impact;
- Develop Recommendations, Supplements and/or Technical Reports on KPI/metrics related to circular economy application at digital technologies;
- Develop Recommendations, Supplements and/or Technical Reports on key eco-rating programs aimed to raise awareness on sustainability with a view to harmonize existing eco-rating schemes;
- Develop Recommendations, Supplements and/or Technical Reports that assess and promote environmental sustainability within the ICT supply chain moving to a circular economy;
- Develop Recommendations, Supplements and/or Technical Reports that promote and provide guidance on digital technologies procurement practices that enhance environmental sustainability moving to a circular economy;

- Develop Recommendations, Supplements and/or Technical Reports related to implement the circular economy principles in product design phases;
- Develop Recommendations, Supplements and/or Technical Reports related to circular design criteria into product design and manufacturing;
- Develop Recommendations, tools, Supplements and/or Technical Reports on guidelines to stakeholders giving correct information on e-waste management effects and opportunities;
- Maintenance and revision of existing Recommendations, Supplements and Technical Reports.

An up-to-date status of work under this Question is contained in the ITU-T SG5 work programme (https://www.itu.int/ITU-T/workprog/wp_search.aspx?sp=17&q=7/5).

4 Relationships

WSIS Action Lines:

- C2, C4, C7

Sustainable Development Goals:

- 11, 12, 13

Recommendations:

- ITU-T L-series
- ITU-T K-series

Questions:

- Q1/5, Q6/5, Q9/5, Q11/5, Q12/5, Q13/5

Study Groups:

- ITU-T SGs
- ITU-D SGs
- ITU-R SGs

Other bodies:

- IEC TC46, TC100, TC 111
- CENELEC TC111X, CEN/CENELEC JTC 10
- IEEE
- ETSI TC EE, TC ATTM
- GSMA
- UNEP/Secretariat of the Basel Convention
- UNU
- ISO