

RESOLUTION 182 (REV. BUCHAREST, 2022)

Role of telecommunications/information and communication technologies in regard to climate change and the protection of the environment

The Plenipotentiary Conference of the International Telecommunication Union (Bucharest, 2022),

recognizing

- a)* the fundamental contribution that the approval of Resolution 35 (Kyoto, 1994) of the Plenipotentiary Conference made to initiating ITU's activities in the area of telecommunications/information and communication technologies (ICTs) for environmental protection and sustainable development;
- b)* Resolution 136 (Rev. Bucharest, 2022) of this conference, on the use of telecommunications/ICTs for humanitarian assistance and for monitoring and management in emergency and disaster situations, including health-related emergencies, for early warning, prevention, mitigation and relief;
- c)* Resolution 646 (Rev.WRC-19) of the World Radiocommunication Conference (WRC), on public protection and disaster relief;
- d)* Resolution 673 (Rev.WRC-12) of WRC, on the importance of Earth observation radiocommunication applications;
- e)* Resolution 750 (Rev.WRC-19) of WRC, on compatibility between the Earth exploration-satellite service (passive) and relevant active services;
- f)* Resolution ITU-R 60-2 (Rev. Sharm el-Sheikh, 2019) of the Radiocommunication Assembly (RA), on reduction of energy consumption for environmental protection and mitigating climate change by use of ICT/radiocommunication technologies and systems;

- g)* Resolution 73 (Rev. Geneva, 2022) of the World Telecommunication Standardization Assembly (WTSA), on ICTs, environment, climate change and circular economy;
- h)* Resolution 66 (Rev. Kigali, 2022) of the World Telecommunication Development Conference (WTDC), on ICT, environment, climate change and circular economy;
- i)* Resolution 34 (Rev. Kigali, 2022) of WTDC, on the role of telecommunications/ ICT in disaster preparedness, early warning, rescue, mitigation, relief and response;
- j)* Resolution 54 (Rev. Dubai, 2014) of WTDC, on ICT applications;
- k)* Resolution 1307 adopted by the ITU Council at its 2009 session, on ICTs and climate change;
- l)* the outcomes of ITU Telecommunication Standardization Sector (ITU-T) Study Group 5 in relation to electromagnetic fields, environment, climate action, sustainable digitalization and circular economy;
- m)* the outcomes of ITU Radiocommunication Sector (ITU-R) Study Group 7 in relation to Earth observation and climate;
- n)* the outcomes of ITU Telecommunication Development Sector (ITU-D) Study Group 2 in relation to the environment and climate change;
- o)* the Luxor Call to Action on Building a Water Resource Efficient Green Economy, adopted at the ITU Workshop on ICT as an Enabler for Smart Water Management held in Luxor, Egypt, in April 2013;
- p)* Resolution 79 (Rev. Geneva, 2022) of WTSA, on the role of telecommunications/ ICTs in handling and controlling e-waste from telecommunication and information technology equipment and methods of treating it;

q) Resolution 1353 adopted by the Council at its 2012 session, which recognizes that telecommunications and ICTs are essential components for developed and developing countries¹ in achieving sustainable development, and instructs the Secretary-General, in collaboration with the Directors of the Bureaux, to identify new activities to be undertaken by ITU to support developing countries in achieving sustainable development through telecommunications and ICTs;

r) the 10th open consultation of the Council Working Group on international Internet-related public policy issues, which focused on the environmental impacts and benefits of the Internet and during which the participating stakeholders expressed strong interest in the impact of telecommunications/ICTs on climate change and the environment;

s) the outcomes of conferences under the United Nations Framework Convention on Climate Change (UNFCCC), in particular the Paris Agreement of the 21st session of the Conference of the Parties (COP), which sets out a global framework to avoid dangerous climate change by limiting at that time global warming to well below 2°C and pursuing efforts to limit it to 1.5°C, and the Glasgow Climate Pact of COP26, which reiterates the urgency of scaling up action to limit the impact of climate change;

t) that limiting global warming requires rapid, deep and sustained reductions in global greenhouse gas (GHG) emissions, including reducing global carbon dioxide emissions by 45 per cent by 2030 and to net zero by 2050, as well as deep reductions in other GHG,

recognizing further

a) the importance of international collaboration on innovative climate action, including technological advancement, across all actors of society, sectors and regions, in contributing to progress towards the goals of the UNFCCC conferences;

¹ These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition.

b) § 20 of Action Line C7 (E-environment) of the Geneva Plan of Action of the World Summit on the Information Society (Geneva, 2003), calling for the establishment of monitoring systems using ICTs to forecast and monitor the impact of natural and man-made disasters, particularly in developing countries;

c) the Nairobi Declaration on the Environmentally Sound Management of Electrical and Electronic Waste, and the adoption by the ninth Conference of the Parties to the Basel Convention of the Work Plan for the Environmentally Sound Management of E-waste, focusing on the needs of developing countries and countries with economies in transition;

d) the outcome document adopted by the United Nations Conference on Sustainable Development (Rio de Janeiro, 2012), entitled "The Future We Want", reflecting the renewed commitment to advancing sustainable development and achieving environmental sustainability,

considering

a) the United Nations Intergovernmental Panel on Climate Change and the reports of its working groups, which aim to assess scientific, technical and socio-economic information regarding climate change, in particular the report of Working Group III, in its sixth edition in 2022, which calculated that that global GHG emissions had continued to grow at high absolute rates, albeit with a decline from 2.1 per cent per year between 2000 and 2009 to 1.3 per cent per year between 2010 and 2019, and the report of Working Group II, in its sixth edition in 2022, which concluded that climate-resilient development prospects will be increasingly limited if current GHG emissions do not rapidly decline, especially if 1.5°C global warming is exceeded in the near term;

b) that climate change is acknowledged as a potential threat to all countries, having an effect on global warming, changing weather patterns, rising sea levels, desertification and shrinking ice cover, and other long-term effects, such that it needs a global response, and that telecommunications/ICTs can contribute to that response;

c) that the impact of climate-change effects will be severe for developing and least developed countries that are less prepared for climate change and its consequences, and that these countries could be exposed to incalculable dangers and considerable losses, including the consequences of rising sea levels for many of their coastal areas,

considering further

a) that telecommunications/ICTs play an important and significant role in protecting the environment and in promoting innovative and sustainable development activities presenting relatively low risk to the environment, through varied activities in monitoring, observing, detecting, responding to and mitigating the various threats associated with climate change and in disaster prediction and relief, and that the use of telecommunications/ICTs can help to achieve the Sustainable Development Goals;

b) that there is growing research considering the environmental impact of telecommunications/ICTs; however, it is still difficult to estimate the total net effect of ICTs on climate change, including both positive and negative aspects;

c) the role ITU can play in assisting Member States in the use of ICTs for monitoring, observing, detecting, responding to and mitigating the various threats associated with climate change and for disaster prediction and relief, and through the consideration of telecommunication/ICT solutions for efficient water-resource and e-waste management, and that the strategic plan for the Union gives clear priority to combating climate change using ICTs;

d) that, since telecommunications/ICTs also contribute to climate change through GHG and other emissions, the necessary priority must be given to reducing GHG emissions and energy consumption;

e) that other environmental impacts associated with use of ICTs are worth considering, in particular the amount of raw material and natural resources (fossil energy sources and minerals) needed by manufacturers of devices and network equipment that could be mitigated through equipment design and measures to extend the lifespan of digital equipment;

- f)* that the use of telecommunications/ICTs can have an enabling effect in reducing GHG emissions generated by other sectors of the economy, through the use of telecommunications/ICTs in ways that replace services or increase efficiency in the sectors concerned, although there is the risk that this positive effect might be offset by an increase in the use of telecommunications or "rebound effect" in the sectors concerned;
- g)* the decarbonization trajectory for the ICT sector developed jointly by ITU-T, the Global System for Mobile Communications Association (GSMA), Global Enabling Sustainability Initiative (GeSI) and the Science Based Targets initiative (SBTi), stipulating a 45-per-cent reduction in carbon emissions by 2030 and the associated recommendation defining net zero;
- h)* that remote-sensing applications on board satellites and other radiocommunication systems are important tools for climate monitoring, environmental observation, disaster prediction, detection of illegal deforestation, tracking the extent, pace and acceleration of climate change, and detection and mitigation of the negative effects of climate change;
- i)* that other technologies are currently being developed and deployed for climate monitoring, including, but not limited to, oceanic sensing technology, which may be deployed through or using submarine cables, including the Science Monitoring and Reliable Telecommunications (SMART) initiative, for better knowledge of climate evolution;
- j)* the Our 2050 World campaign, backed by the United Nations' Race to Zero campaign, which advances the London Declaration, as defined by the International Organization for Standardization, which commits signatories to embed climate considerations in all standards to accelerate the achievement of climate goals,

aware

that developing countries face additional challenges in addressing the effects of climate change, including natural disasters related to climate change, and in establishing new telecommunication/ICT facilities in their national networks, whence the need for ITU to provide guidance and assistance, which will vary from one region to another and between countries,

bearing in mind

- a) that 195 countries have ratified the UNFCCC Protocol and have committed to reduce their GHG emission levels to targets that are mainly set below their 1990 levels;
- b) that the countries that have submitted plans in response to the Copenhagen Accord have specified which steps they are prepared to take to reduce their carbon intensity in the current decade,

noting

- a) that the current ITU-T Study Group 5 is the lead ITU-T study group on climate change, electromagnetic compatibility, resistibility and lightning protection, soft error caused by particle radiations, human exposure to electromagnetic field, circular economy and e-waste management;
- b) that there are other international bodies that are working on climate-change issues, including UNFCCC, and that ITU should collaborate, within its mandate, with those entities;
- c) that the development and deployment of telecommunications/ICTs has resulted in innovative outcomes, including, but not limited to, better energy management, recognition of the contribution of the entire lifecycle of telecommunications/ICTs on climate change, and the benefits that accrue from the comprehensive deployment of telecommunications/ICTs,

resolves

that ITU, within its mandate and in collaboration with other organizations, address the causes and effects of climate change through the following:

- 1 to continue and further develop ITU activities on telecommunications/ICTs and climate change, and disaster-management planning, in order to contribute to the wider global efforts being made by Member States and the United Nations to contribute to further preventing and combating the effects of climate change;
- 2 to encourage improvement of the energy efficiency of telecommunications/ICTs in order to reduce the GHG emissions produced by the telecommunication/ICT sector and use of raw materials and natural resources (fossil energy sources and minerals);
- 3 to encourage the telecommunication/ICT sector to pursue minimum emission reductions over the decade (2020-2030), in accordance with the Paris Agreement trajectories, and to adopt SBTi guidance² in the short term and net-zero targets in the long term, and to report publicly on their efforts;
- 4 to encourage the telecommunication/ICT sector to contribute to an annual reduction in GHG emissions, through its own improvement of energy efficiency, and through working with its suppliers, and in the use of ICTs in other parts of the economy;
- 5 to promote awareness of the environmental issues associated with telecommunication/ICT equipment design, energy efficiency and circular economy;
- 6 to include, as a priority, assistance for telecommunication/ICT services and technologies to least developed countries, landlocked developing countries and small island developing states;
- 7 to strengthen human and institutional capacity in developing countries such as those mentioned in *resolves* 6 above in utilizing telecommunications/ICTs to adapt to climate change and increase disaster-management preparedness;

² <https://sciencebasedtargets.org/sectors/ict> and Recommendation ITU-T L.1470 and L.1471.

8 to promote the benefits that accrue to the environment and society from the use of sustainable telecommunication/ICT equipment and services in bridging the standardization gap;

9 to encourage reduction of GHG emissions through the adoption of renewable energy supply in the telecommunication/ICT sector;

10 to support the use of telecommunications/ICTs in implementing smart grid, which helps reduce the waste of energy in transmission and distribution and regulate peak energy demand from consumers;

11 to continue working towards supporting smart sustainable cities and communities (SSC&C), and promote circular economy principles in the face of increasing urbanization and the use of the ICT sector in harnessing digital technologies to combat climate change;

12 to support work towards identifying the environmental protection requirements of digital technologies and towards developing strategic frameworks for assessing their environmental impacts,

instructs the Secretary-General, in collaboration with the Directors of the three Bureaux

1 to continue liaising with appropriate organizations in activities related to climate change, in order to avoid duplication of work and optimize the use of resources;

2 to continue taking appropriate measures within the Union in order to contribute to the reduction of the carbon footprint (e.g. paperless meetings, videoconferences, etc.) and leverage insights regarding the efficiency of online practices developed during the coronavirus disease (COVID-19) pandemic;

3 to report annually to the Council and to the next plenipotentiary conference on the progress made by ITU on implementation of this resolution;

- 4 to re-submit this resolution and other appropriate outcomes of ITU activities to meetings of relevant organizations, including UNFCCC, in order to reiterate the Union's commitment to sustainable global growth; and to ensure recognition of the importance of telecommunications/ICTs in mitigation and adaptation efforts as well as the critical role of ITU in this regard;
- 5 to continue to implement the set of principles and the theory of change set out in the United Nations' 2020-2030 Strategy for sustainability management in the United Nations system, providing a framework for environmental and social sustainability for all functions of the United Nations;
- 6 to cooperate with United Nations entities and others in activities related to climate change, working towards a progressive and measurable reduction in energy consumption and GHG emissions throughout the lifecycle of telecommunication/ICT equipment;
- 7 to report on the extent to which the telecommunication/ICT sector has contributed to the reduction of GHG and other emissions in other sectors through a reduction of their energy consumption based on methods and baselines agreed within ITU;
- 8 to encourage Member States in the various regions to cooperate in sharing expertise and resources and identify a regional cooperation mechanism³, including through support from ITU regional offices, so as to assist all Member States in the region in measurement and training;
- 9 to continue to cooperate and collaborate with other entities within the United Nations in formulating future international efforts to contribute to the achievement of the goals of the 2030 Agenda for Sustainable Development, in particular in relation to climate-change monitoring;
- 10 to assist Member States, in particular developing countries, in infrastructure development and capacity building, as well as with assistance from the ITU regional offices, within the available budget of the Union, in energy-efficiency measurement and development of guidelines for efficient e-waste disposal;

³ To be formalized by the relevant regional meetings.

11 to encourage the use of renewable energy technologies and systems, and to study and disseminate best practices in the field of renewable energy;

12 to support Member States, particularly developing countries, in adapting to and mitigating the impact of climate change in a number of areas, including smart water management, e-waste management and treatment methods and the use of ICTs in disaster prediction, early warning, mitigation and relief;

13 to leverage the ITU ICT Development Fund to assist developing and least developed countries to use telecommunications/ICTs for adaptation to and mitigation of climate change impact,

instructs the Directors of the three Bureaux, within the purview of their mandates

1 to continue promoting the benefits of using telecommunications/ICTs for monitoring, mitigating and adapting to climate change;

2 to help in the promotion of best practices and guidelines:

- i) to improve the energy efficiency of telecommunication/ICT equipment;
- ii) to measure the carbon footprint of the telecommunication/ICT industry;
- iii) to monitor water resources through the use of telecommunications/ICTs;
- iv) to mitigate and adapt to the effects of climate change through the use of telecommunications/ICTs;
- v) to adapt telecommunications/ICTs to the effects of climate change;

- vi) to enable telecommunications/ICTs to contribute to disaster prediction, early warning, mitigation and relief efforts;
 - vii) to promote the use and evaluate the potential of new and emerging telecommunications/ICTs to mitigate the effects of climate change and to reduce GHG emissions;
- 3 to support the development of peer-reviewed reports on ICTs, the environment and climate change, taking into consideration relevant studies, in particular the ongoing work of ITU-T Study Group 5 and ITU-D Study Groups 1 and 2 related to, *inter alia*, ICTs and climate change, and to assist affected countries with utilizing relevant applications for disaster preparedness, mitigation and response, and management of telecommunication/ICT waste;
- 4 to organize, in close collaboration among all three Bureaux, and within the budgetary limits of the Union, workshops and seminars to assist developing countries, by raising awareness and identifying their particular needs and challenges regarding the use of telecommunications/ICTs to address environment and climate-change issues, including e-waste collection, dismantling, refurbishment and recycling, as well as sustainable and smart management of water;
- 5 to conduct further studies on the impact of the use of new and emerging telecommunications/ICTs in the reduction of GHG emissions and on their role in mitigation of and adaptation to the effects of climate change,

instructs the Director of the Telecommunication Development Bureau

to ensure that ITU organizes seminars and training courses in developing countries at the regional level for the purpose of raising awareness and identifying key issues in order to generate best-practice guidelines in the area of environmental protection,

instructs the Director of the Radiocommunication Bureau

1 to ensure the widespread use of radiocommunications for mitigation of the negative effects of climate change and natural and man-made disasters by:

- i) urging the ITU-R study groups to accelerate their work, particularly in the areas of disaster prediction, detection, mitigation and relief;
- ii) continuing the development of new technologies to support or supplement advanced public protection and disaster relief applications;

2 to highlight the importance of using effective measures to monitor, predict, alert and mitigate the effects of natural disasters through coordinated and effective use of the radio-frequency spectrum,

instructs the Director of the Telecommunication Standardization Bureau

- 1 to share the outputs of ITU-T Study Group 5 on ICTs and climate change and any other related study groups, in collaboration with other bodies, in the development and enhancement of methodologies to assess:
 - i) the level of energy efficiency in the telecommunication/ICT sector and the application of telecommunications/ICTs in non-ICT sectors;
 - ii) the complete-lifecycle GHG emissions over the entire value chain, and other environmental impacts of telecommunication/ICT equipment, in collaboration with other relevant bodies, in order to establish best practice in the sector against an agreed set of methods for quantifying such emissions, to enable the benefits of reuse, refurbishment and recycling to be quantified in order to help achieve reductions in GHG emissions both in the telecommunication/ICT sector and in the use of ICTs in other sectors;
- 2 to cooperate with United Nations entities and others in activities related to climate change, working towards a progressive and measurable reduction in energy consumption and GHG emissions throughout the lifecycle of telecommunication/ICT equipment;
- 3 to conduct work on implementing the outcomes of ITU's activities on the development of energy-saving and e-waste standards;
- 4 to continue the work within ITU-T aimed at bridging the gap in environmental sustainability, in particular in developing countries, and gauge the needs of the developing countries in the field of telecommunications/ICTs, the environment and climate change,

invites Member States, Sector Members and Associates

- 1 to continue to contribute actively to work within ITU's sphere of activities, together with other bodies, and in all international, regional and national platforms on the topic of telecommunications/ICTs and climate change, and to exchange best practices with regard to law and regulation in the area of environmental protection and management of natural resources;
- 2 to continue or initiate public and private programmes that include telecommunications/ICTs and climate change, giving due consideration to relevant ITU initiatives;
- 3 to take necessary measures to reduce negative effects of climate change by developing and using more energy-efficient ICT devices, applications and networks, as well as more efficient energy supply solutions, and through the application of telecommunications/ICTs in other fields supporting the agreed aligned trajectories towards net zero;
- 4 to promote recycling, reuse of telecommunication/ICT equipment and efficient disposal of e-waste from telecommunications/ICTs;
- 5 to promote energy-supply efficiency, including through smart grids, and increase the use of renewable sources;
- 6 to consider promoting the ability of end users to make informed decisions regarding telecommunications/ICTs through the publication of environmental information on the impact of devices, services and certain uses;
- 7 to consider encouraging telecommunication/ICT companies to share relevant information in order to assess their environmental impact on the entire value chain, and to provide assistance where appropriate;
- 8 to continue to support the work of ITU-R in remote sensing (active and passive) for environmental observation and other radiocommunication systems that can be used to support climate and water-resource monitoring, disaster prediction, alerting and response, in accordance with relevant WRC and RA resolutions;

- 9 to integrate the use of telecommunications/ICTs as an enabling tool in combating the effects of climate change into national adaptation and mitigation plans;
- 10 to incorporate environmental indicators, conditions and standards into their national telecommunications/ICT plans;
- 11 to conduct work in their countries on improving access to, and expanding the use of, alternative energy sources in the telecommunication/ICT sector;
- 12 to promote the introduction of ecological innovations in the telecommunication/ICT sector;
- 13 to adopt and implement ITU recommendations to tackle environmental challenges such as climate-change adaptation and mitigation, as well as e-waste, and to promote SSC&C;
- 14 to cooperate to maximize the enabling effects of telecommunications/ICTs for combating climate change and protecting the environment, while reducing their environmental footprint as much as possible;
- 15 to increase investments in emerging telecommunications/ICTs to contribute to the reduction of GHG emissions and adaptation to and mitigation of climate change, and to provide improved e-waste solutions;
- 16 to consider increasing financing for telecommunications/ICTs to assist in adapting to and mitigating the effects of climate change and natural disasters.

(Guadalajara, 2010) – (Rev. Busan, 2014) – (Rev. Bucharest, 2022)
